

# Overcapacity in dry bulk bargaining; can governments help the market?



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## Introduction.

Overcapacity is a problem that can be found in almost every market. In the inland shipping market however, the problem is different. Most other markets face overcapacity, but not structural, as the capacity grows or declines according to the demand, and price, for it. The normal situation is as follows: high prices lead to new entrants, those new entrants are responsible for extra supply, or capacity. Once the capacity is higher than the demand, we speak of overcapacity. Luckily, if supply exceeds demand, prices decline and lots of entrepreneurs in the market decide to leave, thus decreasing capacity (Gale, 1995).

Overcapacity has occurred in the inland waterway market for a very long time, sometimes disappearing at all, to reoccur later. These 'waves' of overcapacity go back many decades (Nonneman, 1976). The 'wave' that is currently troubling the market started with the economic crisis around 2008 (van Hassel, 2013). The current wave is hurting the entire market: dry bulk, containers and liquid bulk, the main segments of the inland waterway market suffer from it. The segment of liquid bulk has the biggest overcapacity (25% as compared to the other two segments, both at about 14% in 2013), but the segment that suffers the most is dry bulk barging. In 2012, the number of dry bulk barge owners that was behind on his payments was at 35%, and this number was increasing in 2013 (ING Economisch Bureau, 2013). Apart from an economic crisis, the dry bulk segment is plagued by unintentional governmental influence causing overinvestment, barge operators who have the firm believe that increasing their personal capacity will increase their profits, and fragmentation, meaning that most companies in this segment are very small (van Hassel, 2013).

That overcapacity is a problem that was faced by the inland waterway market not only today, but also years ago becomes clear when looking at the literature. The same is true for the intervention of governmental bodies, which is also quite broadly discussed and mostly found inaccurate (Konings J. W., 1991). There are also a lot of papers describing why overcapacity occurs, and why it is such a problem (van Hassel, 2013). A paper about the unintentional influence of the government on the market is presented by Nonneman in 1976 when he concludes that the Belgian government causes overcapacity by fixing the market

price, while the intention was to make sure the barge operators were paid well enough to make a living (Nonneman, 1976), such actions have also appeared more recently in Belgium (CBRB, 2013). The problems of overcapacity are described, for instance, by Konings in 2003. His paper states that barge operators face high fixed costs, a reason why it is very bad to have to transport less tonnes than the barge can carry (Konings R. , 2003). Van Hassel states that, for a barge operator, losing his company vehicle is the same as losing his house, because barge operators often live on their barge. Therefore, they cannot leave the market easily (van Hassel, 2013).

This thesis will focus on the market for dry bulk inland waterway transport, its problem of overcapacity and the measures governments can use to reduce it. The European Union and the national governments are very involved in this market. By laws and regulation they influence it, and that influence may or may not be intended. The main question that should be answered in this research is as follows: how can governments help the dry bulk barging market to overcome overcapacity? To answer this question, the research will focus on reviewing the governmental influence through the years. This will include: evaluating governmental attempts to help the market and to find out what unintentional influences the governments have on the market and how those affect overcapacity. The research will also include a look at other sectors that face or have faced overcapacity.

Sub questions that will be answered are: Why are current governmental actions not solving the problem? How is the problem negatively influenced by governments? What can governments learn from other markets? By combining the answers to these questions, a couple of possible measures are presented which can be used by governments to reduce overcapacity in dry bulk barge transport.

Details about the results can be found in the concluding chapter, but the main finding is that overcapacity is largely caused by the fragmented state of the dry bulk inland waterway market. Without decreased fragmentation, overcapacity will reoccur over and over again, and the decreasing of fragmentation is something that only the dry bulk segment itself can do.

## Literature Review.

Overcapacity in Inland Waterway transport is not a new problem. In 1976, the University of Antwerp was already very interested in this topic. In the article ‘a simple model for explaining overcapacity’, W. Nonneman states that also then, the problem was not a new phenomenon and he explains the subject (Nonneman, 1976). In 1984, W. Albers delivered the results of his study in a report to the (European) Committee on Transport and Community measures. Albers was ordered to research what should be done to reduce overcapacity, he criticizes old measures and proposes new ones in his final report (Albers, 1984). In 1991, overcapacity in barge transport was also a problem. J.W. Konings did a research about what caused the seemingly unceasing problem, he explained the problem kept existing because of entrepreneurs favouring bigger-and-bigger ships and the re-selling of a ship after the bankruptcy of its owner (Konings J. W., 1991). That overcapacity kept occurring in the new century was proven by multiple works on inland waterway transport in the early two thousands, the authors do not focus on this problem, but are very aware of its existence (Amez, 2007) (Panis, De Vlieger, Cornelis, Joul, Broekx, & Lambrechts, 2004). In Table 1. The figures for the years 2004 to 2013 back this up (Menkveld, 2014).

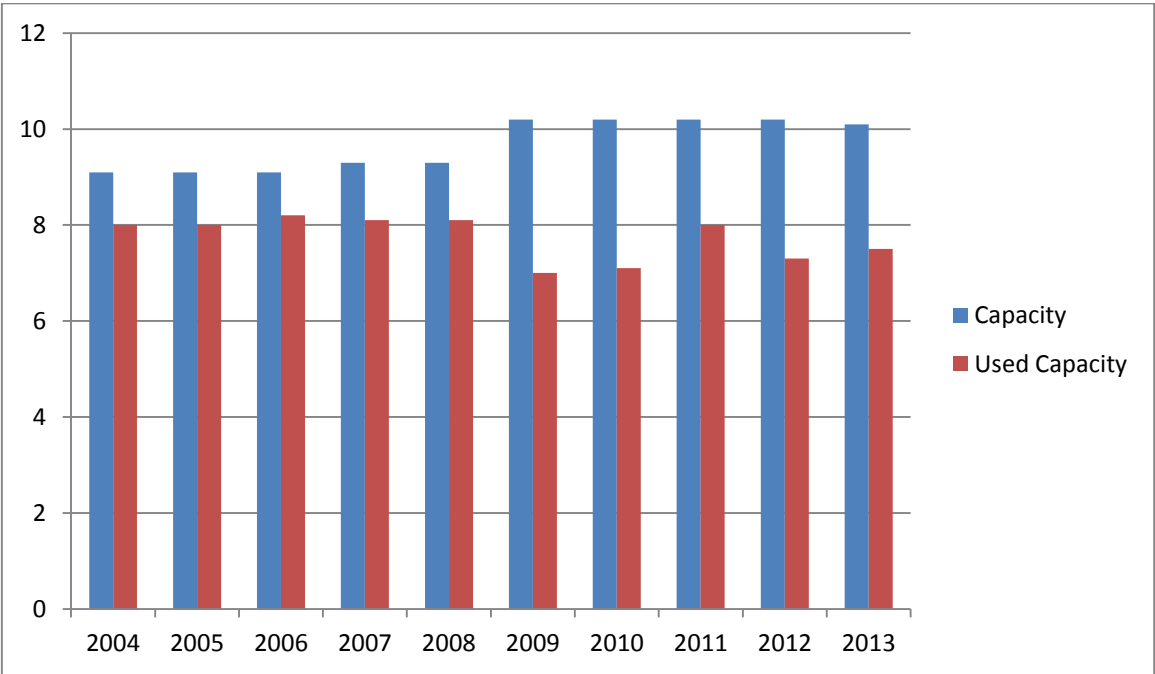


Figure 1. Available capacity in inland waterway transport (Dry Bulk) and the used capacity in Million tonnes per year. Western European market. Source: ABN AMRO market insight (Menkveld, 2014).

Now it is clear that overcapacity has a long history in inland waterway transport, it is time to look at the present. Very recently, two Dutch banks presented reports about the market, and of course overcapacity is the main problem (Rabobank, 2015) (ING Economisch Bureau, 2013). Two academic papers are delivered by E. van Hassel. He reviews the markets of dry bulk barging and of tanker barging, in 2013 and 2015 respectively, and explains why overcapacity is such a big problem (van Hassel, 2013) (Hassel, 2015).

The market for dry bulk barging is described by a few authors. First of all, in 2013, the Rabobank saw a 50% share of total tonnes carried for the dry bulk segment, 40% was liquid bulk and containers made up 10% of the total volume. Of all Dutch barges 80% can transport dry goods, either dry bulk, general cargo or containers (most vessels are not specialised to one of the mentioned categories), the tanker fleet consists of the other 20% (Rabobank, 2015). Overcapacity in this segment was around 14% according to the ING (ING Economisch Bureau, 2013). The second important thing is the fact that, according to A.S. Grzelakowski, the Rhine itself does not face a capacity shortage, in fact the current number of vessels is too low to create structural problems like congestion (Grzelakowski, 2010). Van Hassel then uses his paper of 2013 to explain that the market consists of many small suppliers and a few agents that work for the demand side. Van Hassel clearly states that this gives the suppliers, usually the owner of one barge, or sometimes two, a minimal market power (van Hassel, 2013).

Many authors mention the problem, but the number of them that actually did research on why overcapacity exists, and why it is a problem in this market is somewhat smaller. W.A.G. Blonk was asked to write a paper about inland waterway transport with respect to sustainability for the Commission of the European Communities. He also briefly touches the subject of overcapacity. His explanation is that the incoming and outgoing streams of goods in seaports are out of balance, making it very hard for barge operators to make two full trips (Blonk, 1994). In 2003 R. Konings explained that barge operators face large amounts of fixed costs. He estimates that a break-even point for most barges will be around 75% of the maximum capacity (Konings R. , 2003). Nonnemans research focussed on Belgium and he found that the price regulating measures taken by the government had a negative effect on the market (Nonneman, 1976). Konings and van Hassel both state that the trend towards

bigger ships is increasing overcapacity, and making the consequences of overcapacity worse. Overcapacity is enlarged because big ships cannot reach every part of the river network, and thus not every destination and the problem is worsened because it is harder to load a big ship at its break-even point than it is for a small ship (Konings R. , 2003) (van Hassel, 2013).

When looking at the literature that gives a description of governmental measures against overcapacity, it is important to note that almost all authors on this subject got their work assigned to them by a governmental body. A recent example of this is the work of A. Kraaijeveld, he was the chairman of a committee that was tasked with evaluating the current problems in inland waterway transport. Kraaijeveld did an evaluation of a working plan his committee presented to the Dutch government, he gives an update on what the government has done with the presented recommendations. The recommendation focussed on more cooperation within the market and on possible ways to stimulate the barge operators to keep using small barges, but this is hard to accomplish because of juridical problems. Kraaijeveld also states the points on which the government is delaying action (Kraaijeveld, 2014).

Similar work has been done by Van der Waal in 1991 and Albers in 1984. Albers did his work for the Committee on Transport and Community measures to improve the situation in the inland waterways sector. He proposes some measures to tackle the problem, but also makes clear that European cooperation is needed to solve it. National scrapping measures, for instance, were not effective enough to reduce the overcapacity (Albers, 1984). Van der Waal worked for the Committee on Transport and Tourism on inland navigation. His work is in some aspects similar to that of Albers: he is also in favour of a European solution. However, he also proposed some other points of action, like a more structural scrapping fund (Waal, 1991).

Concluding, there is a great deal of literature on the subject to be found. The works of Van Hassel and Albers are similar to this thesis with respect to the way of working, and the presentation of solutions. Other work, for instance the work of Nonneman, is less theoretical and has a higher focus on empirical research.

## **The Dry Bulk Barging Market.**

The market for dry bulk barge transport is big. It makes up 50% of the total Dutch barging market, which is grossly 70% of the Western European barging market, and over 4000 independent barge operators are a part of it (Rabobank, 2015) (van Hassel, 2013). Almost all of those barge operators own only a single barge, and usually it is not just their barge, but also their home. The supply side of the market therefore is highly fragmented.

This fragmentation reduces the market power of the barge operators, but they also need to deal with another problem. The demanders of barge transport do not negotiate directly with the barge operator, but use agents. The number of demanders is estimated at roughly 200, but there are only around 50 active agents. The agent buys journeys from the demander and sells them to the suppliers at a somewhat fixed price. Agents estimate what the lowest price to offer to barge operators should be. In times of overcapacity, barge operators have minimal possibility to negotiate about the price of their service and can only decide between taking the trip and letting it pass (van Hassel, 2013). This is clearly not a case of perfect competition, and it is easy to understand how hurtful this situation is for barge operators in times of crisis. As barge operators are faced with high fixed costs, a low price will be devastating for their income, but they will still be better off than when declining the offer and making no money at all. This means agents do not have an incentive to keep prices above the break-even level of barge operators (Konings R. , 2003) (van Hassel, 2013).

In the past two to three decades, a large amount of new barges has been built. Most interesting about this is that the capacity did increase a lot, about 10 % for the Netherlands alone, but the transported cargo did not, it is still 9% lower than before the crisis.

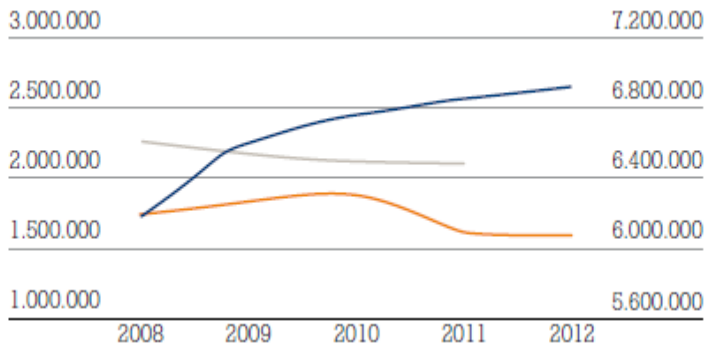


Figure 2: Belgium (Orange, left axis),

German (Grey, left axis) and Dutch (Blue, right axis) development of the capacity in tonnes in the dry bulk barging market. Source: (ING Economisch Bureau, 2013).

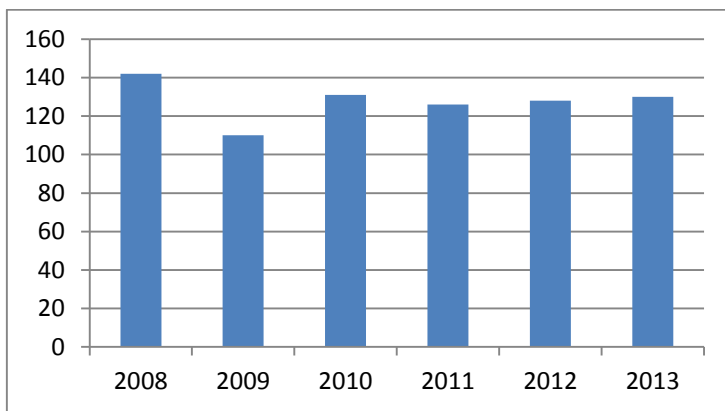


Figure 3: The total amount of dry bulk transported in Western Europe. Numbers represent millions of tonnes. Source: (CCR, 2014).

Another fact to notice is that in the past decades the biggest category of inland ships was highly increased. It seems the trend for barge operators is to want a bigger and bigger barge (van Hassel, 2013). By achieving this wish however, they do not serve the interest of the market as a whole. The inland waterway network of Western Europe is one of the best in the world (Grzelakowski, 2010), but not all of its waterways are accessible to the huge barges that are so popular right now (Quist & Verheij, 2010). This would not be a very big problem if the water would always be on a stable level. Unfortunately, this is not the case. The water level in the rivers and canals deviates to some degree. When the water level is low, ships cannot be loaded to their full capacity, otherwise they would run aground, so the biggest barges can only load to a low percentage of their maximum capacity. Because of the trend for bigger ships (and bigger ships need a deeper river), this problem has become larger over the past years (van Hassel, 2013).



The supply of cargo to be transported by barge is not a steady flow, but it is done by seagoing bulk carriers that drop of huge amounts of dry bulk at the same time. This means the demand for barge transport is always in waves: when a huge amount of bulk arrives in a seaport most barge operators will be able to get their barges loaded at or above their break-even percentage, but when this is not the case, some of them will not have that luck. This is called structural overcapacity or reserve capacity and the market needs it to cope with an arrival of a seagoing bulk carrier or a sudden boost of the economy (Konings J. W., 1991). The downside is that when the economy is not doing well, and demand for dry bulk decreases, the sector faces overcapacity on a big scale.

Finally, it is good to realize that barges have a very long lifespan (Konings J. W., 1991). On average they last sixty years, but there are also examples of barges that are on the market for a hundred years (van Hassel, 2013). Due to the long lifespan, capacity is fixed, unless the barge in question is demolished (Konings J. W., 1991).

### **Causes of overcapacity in the market.**

In most markets, overcapacity would only be a temporary problem. The excess of supply would cause a decline of the price and thus a decline in profit, forcing entrepreneurs to cease their actions in the market. This trend stops when supply is decreased to a level that allows the price to rise. In the dry bulk barging market, this is not the case.

In this market, the barge operators have an abnormal reaction to low prices. Where a normal entrepreneur would close his business when he is making a loss for too long, a barge operator has no incentive to do so. By ceasing operations, meaning he has to sell his barge, he is sometimes left with a debt to the bank because the barge is worth less than the mortgage on it. The main reason however, is that he loses his home. For the barge operator, making a loss for a very long time is still preferable over leaving the market and becoming homeless. The banks also do not force barge operators that make a loss and are behind on

mortgage to cease operations. The latter means the barge will have to be sold, but because of the low prices for barge transport, the price will be low. This means the barge operator will usually owe the bank a lot of money without having an option to pay this money back. Banks understand this and will not make barge operators cease operations, but will let them continue their business and hope that they will pay the money back eventually (Konings J. W., 1991).

Because of governmental guarantee systems, in which the government will guarantee the bank a percentage of the mortgage sum, banks are willing to lend huge amounts of money to the market. This money is used by barge operators to increase their scale of operations: they buy a bigger barge (van Hassel, 2013). Also, the barge operators have very high expectations of Rotterdam's 'Tweede Maasvlakte'. This project is expected to increase the amount of goods handled in the port (Port of Rotterdam, 2011). The barge operators expect that this will also mean an increase of (dry bulk) goods transported to the hinterland, but that remains unsure. There are also signs that the majority of extra goods will be transported to other ports by smaller seagoing vessels (ING Economisch Bureau, 2013). Chances are that these high expectations will not be met and the sector as a whole may suffer from it.

The fact that most barge operators expect to operate in the market for a very long time makes them able to plan ahead. In times of overcapacity, freight rates decline. This means that a barge operator earns less money per tonne of cargo transported. Many of them have come to the conclusion that this means they have to transport more tonnes of cargo, and therefore need a bigger barge. So, with overcapacity already occurring, most entrepreneurs decide to enlarge their personal capacity. This makes the competition even fiercer and will have a negative effect on the prices (van Hassel, 2013).

Apart from the causes mentioned above, the problem is sometimes negatively influenced by governments. The Belgian government for instance thought to help barge operators by regulating the price and thus making sure that barge operators were not under paid. What happened was far from what the government hoped to achieve. Instead of a market where barge operators were sure of work but unsure about their income, the market changed to a situation where barge operators were unsure of work and sure of income per trip. The

demanders of transport did only use barges when the benefits were higher than the costs. The government accidentally made sure barge transport was used less (Nonneman, 1976). This was the case when Nonneman wrote his article, but is also a recent issue (CBRB, 2013).

Everything taken into account, this market faces negative influences of being fragmented, few bankruptcies, easy loans and high expectations, the fact that bankruptcies do not reduce capacity and governmental attempts to help the market.

## **Why are current governmental actions not solving the problem?**

### **Capacity reducing attempts.**

#### **Scrapping.**

The national governments of the countries with large inland waterway markets have all attempted to reduce overcapacity in their national market. These measures were not successful however. In the late 1960's a lot of countries involved decided to implement scrapping programs (Albers, 1984).

In Germany, the program consisted of a fund, mostly paid by the market and a back-up welfare program, to help former barge operators in need. Total expenses were around 75 million D-mark and the government was responsible for only 25% of this. In three and a half years, approximately 900.000 tonnes of capacity were scrapped and more than 1000 barge operators had left the market. The programme itself was a success, but it did little to counter the wish to invest of the remaining barge operators. Overall, very little was changed, but Germany now had a much more modern fleet (Frerich & Muller, 2004). The other nations had even less success and the Netherlands is a good example of this. This scrapping programme was paid by the government by a higher degree, but the amount of capacity that was really scrapped was rather small. While Germany succeeded in scrapping 900.000 tonnes, the Netherlands were only able to get rid of a small 200.000 tonnes (Staatssecretaris Verkeer&Waterstaat, 1974). The problem was that the program left room for

misunderstanding and not all barge operators were sure about what it would mean for them. Questions like 'if I sign up for this programme, when will my ship be scrapped?' were not easy to answer. Another indicator for an unclear view of what the program would do and when, is that it raised many questions in the Dutch parliament. Barge operators were unsure of what the program would mean for them, some were undoubtedly scared away from it because of this uncertainty.

When looking at national scrapping measures, it is further necessary to notice that the Dutch scrapping program may be used to let go of an old barge, only to buy a new barge in Germany. Coordination of these programmes is therefore needed and it is the best to leave this to the European Union. The EU can implement scrapping programmes which are active in the entire Western European inland waterway network (Waal, 1991).

The European Union decided in 1989 to start its own scrapping program. This program was supposed to only be active for one year but it was lengthened several times, for instance in 1995 (European Commission, 1995) and in 1998 (European Parliament, 1998). The plan was simple, within one year 10% of the available capacity for dry cargo should be scrapped. All barge operators had to pay a fee, related to their maximum capacity in tonnes to the scrapping fund and barge operators who offered their barge for demolition received money from this fund in return.

This was largely the same as the national scrapping programmes, but it was far more easy to understand and implement. Within that first year, the program was able to scrap 8% of the dry bulk barges in the market. Although this was not the desired 10% it seems to be a sign that the program worked, it was more effective than the national programs. The downside however, was that the scrapped barge were mainly the smaller ones (Waal, 1991). Even back then, the trend was to buy the largest barge possible and to dump the smaller vessels, thus the program actually did little in terms of reducing capacity in tonnes. The EU attempted to tackle this problem by lengthening the scrapping program, but that did not work, as the same trend is still popular right now (ING Economisch Bureau, 2013).

Both individual states and the European Union failed to solve the problem by scrapping. Although the EU did better, because of simplicity and coverage of the entire market. If the problem should be solved by scrapping, the EU should implement the program, but scrapping alone does not seem to be able to reduce overcapacity to an acceptable level.

### **Old-for-New.**

Another measure that was often used to reduce overcapacity is an old-for-new scheme. In 1998 for instance, the EU ordered such a program for the duration of four years. This meant that during those years, everyone who wanted to bring a certain amount of tonnes of capacity into the market had to scrap a certain amount of tonnes, or had to pay money. The amount of tonnes to be scrapped or the sum of money to be paid could easily be found. The EU used a certain ratio for this, so a (potential) barge operator had only to multiply the capacity of his new ship by the ratio to find out how many tonnes of capacity he had to scrap. The latter then corresponded to a certain amount of money to be deposited in the inland waterway fund, if that was preferred over scrapping. This ratio reduced over time and after four years would be zero, meaning that bringing a new barge in the market required neither scrapping nor a donation (European Parliament, 1998).

Old-for-new usually is a side measure to a scrapping program and is responsible for the same, somewhat disappointing results. Old-for-new is however very useful to control capacity inflow for the market, the EU can adjust the ratio to what they deem appropriate for the current situation.

Scrapping and old-for-new measures are mostly parts of the same capacity reducing programs. Unfortunately, these programs have failed. They are responsible for a lot of scrapping, but the inflow of new capacity always remained high and most scrapped barges were small (van Hassel, 2013). The latter is the big problem with all past capacity reducing programs. Every one of them failed to make the scrapping of big, sometimes new, barges attractive. This is logical because every barge operator follows the trend that bigger is

better, so obviously the owners of small barge will always be the first to offer their barge for scrapping. Since small barges are not a big part of the problem, this is worrisome.

If capacity reduction through scrapping and old-for-new measures stays the preferred option of the European Union, it should at least reform these programs to only attract big barges. First of all, it would be wise to simply exclude small barges from the programs, they are not what is causing the problem and need not disappear. Second, because the owner of a big barge thinks he has good chances to make a living after the crisis, the sum of money given to barge operators who offer their barge for scrapping should be increased.

### **Attempts at improving cooperation.**

Governments understand that the problem of overcapacity cannot be solved by simple scrapping alone. Therefore, they also try to make the actors in the market join forces. By cooperation, barge operators can strengthen their position, and possibly decrease the impact of overcapacity on their businesses.

The first way the government seeks to improve cooperation is by trying to make all branch organizations merge. By doing so, the government hopes to strengthen the position of the inland waterway sector as a whole. Promotion, lobbying and the general representation of the sector can all be handled by that organization and the government further hopes that this organization can manage some of the negotiation with the agents. Thus strengthening the position of every single barge operator (Kraaijeveld, 2014). The Dutch government is doing a decent job in this aspect. They have managed to get almost every branch representational organization to merge. The BLN now consists of many, formerly independent organizations, though there remain some that have refused to merge (Kraaijeveld, 2014).

The second option, is trying to improve the level of cooperation between individual barge operators. In container barging, the forming of pools is not uncommon. In 1990 a German pool, or 'Fahrgemeinschaft' was formed by the largest players in the market to overcome the effects of overcapacity. This strategy proved to be very useful (Langen, Horst, & Konings.,

2006). And also in the dry bulk market, the forming of pools is a reality. Most of these currently existing pools were founded a long time ago by private parties. The percentage of dry bulk barge operators that have joined such a cooperation is not that high, only 13% of the available capacity is handled by a cooperation (STC-Nestra & Maverick, 2015). The Dutch government was recently advised to try to form several pools in the dry bulk barging market (Kraaijeveld, 2014).

The German container barging companies were able to use the pool to avoid taking a big hit from overcapacity because the pool had the ability to manage an enormous amount of capacity. This advantage of a central management makes measures like slow steaming, lay-up, or less incentive usage per barge possible. Those measures will reduce the capacity available at the same time. The dry bulk market however, will have more advantages of pools. A central management will increase the market position of the dry bulk barge operators, they do not need to negotiate with the agents one by one, but can let the pool management do this. The pool will also be able to offer a more certain schedule and give the customers more certainty about when the bulk will be picked up and delivered. The latter is possible because the pool management has several ships at their disposal, which makes them more likely to offer a trustworthy schedule than a single barge operator (van Hassel, 2013).

This process, however, is still being developed. It is not yet sure how many pools there need to be and when they are going to start. Recent research showed that, in terms of the government stimulating the forming of pools, not much had happened (STC-Nestra & Maverick, 2015).

### **Other measures.**

The trend of bigger ships is worsening the problem of overcapacity in the market. When confronted with low water, or a small waterway, these big ships are not a solution (van Hassel, 2013). It would then be much easier to own a small vessel, that can cross a small waterway and still make trips with most of its capacity used in times of draught. But small barges also have several disadvantages over big barges: technical systems like a radar are

compulsory, but weigh much heavier on the profit of a small ship than on that of a big vessel, the same is the case with staff expenditures.

To overcome the current problematic trend, a couple of Dutch branch organisations ordered a rapport to be made of the current situation and asked for a list of possible actions that might help to overcome this problem. This rapport was then offered to the ministry of infrastructure. The recommendations in the rapport mainly focussed on the aspect of making the costs of staff and technical systems easier to bear for the barge operator. It was highly recommended to scrap some of the technical rules that were not really necessary and to change the fiscal structure in favour of the operators of a small barge. Another recommendation was that the working time of the staff (usually only the barge operator) should be lengthened (EICB, 2011). However, although the government was willing to follow most of the recommendations, the important fiscal changes are not yet made (Kraaijeveld, 2014). The government seems to understand the problem, and wants to help, but not by changing the fiscal regime.

## **Conclusions.**

In conclusion, and to answer the question, current governmental actions are not solving the problem because of several reasons. Attempts to reduce capacity failed because small barges were not excluded from these programs, thus giving owners the chance to easily get rid of small barges, and worsening the problem. The attempts to improve cooperation were successful in merging many branch organisations, but failed to implement pools. The attempts to make small barges more attractive are implemented, but on important points, the government simply refuses to give in.



## **How is the problem negatively influenced by governments?**

Governmental actions to solve the problem might work or not, but some measures have an unintended negative influence on the market.

### **Price regulation.**

Governments have tried to help barge operators by setting a minimum price in the past (Nonneman, 1976). The trend is not only of the past however. EU regulation aims at setting a lowest price possible, or forbidding the usage of a barge below its break-even point (CBRB, 2013). The intention is to make sure that no barge operator is forced to accept work at a price lower than his costs (i.e. the costs of a trip: fuel, wages, costs for maintenance and port dues (NEA, 2009)), but this has a very negative side with respect to overcapacity.

Already in 1967, Nonneman understood that taking away the price uncertainty would result in a work uncertainty. Normally, the market functions so that every barge operator has a high chance of work, but does not know for sure what he will earn by accepting said voyage. When the price is regulated, customers might conclude that shipping their bulk is not profitable enough, and switch to other forms of transport, or simply stop delivering bulk for a while. The barge operator now knows exactly what price he will get for his work, but is uncertain whether or not he will have work to do at all (Nonneman, 1976). And although the current regulation only implements a minimum price, this will still have the effect of driving some customers away from the market, increasing overcapacity. Measures like these are best to be avoided.

### **Guarantee systems for medium and small businesses.**

In times of crisis, entrepreneurs have a hard time getting a loan from a bank. To stimulate the economy, governments sometimes choose to guarantee some part of that loan. By doing this the government hopes to stimulate banks to lend money. The government is willing to take on some of the risk of the loan, so that banks have the safety of seeing at least a part of their money back.

In the Netherlands, such a system is available for small- to medium sized businesses, including most barge operators, after all, most only own one barge, and are thus running a small company. In the past the system proved to work precisely as the government hoped it would: banks were far more willing to give loans to barge operators. A large part of the barge operators then chose to take the highest loan possible and buy a big barge, thus creating one of the pillars of the current overcapacity, and still, new (big) barges are being bought with loaned money that is partly guaranteed by the government. The overcapacity in the sector is only partly caused by this system of course, but it also has a role in the maintaining of the problem. It is already made clear that a part of the problem is the small amount of barge operators going bankrupt. Barge operators are determined to carry on, and banks are reluctant to file for bankruptcy because they would then own a low-priced barge. The better option, by far, is to let the barge operator continue his business. After all, the bank will get a percentage of the money back from the government anyway, and maybe the barge operator can afford to pay another term of his mortgage. The bank has nothing to win in case of a bankruptcy (van Hassel, 2013).

This guarantee system is partly responsible for the creating and the maintaining of the problem and governments should seriously reconsider whether or not barge operators should continue to profit from systems like this one.

### **The neglect of small waterways.**

One of the benefits of inland waterway transport as a whole is that it is able to reach so many destinations in Western Europe. By using small waterways, the smaller barges are able to deliver goods to a destination that is unreachable by big barges (van Hassel, 2013). These small barges are competing with trucks, and it is therefore very hurtful for the market that lots of these small waterways are neglected by the governments responsible for their maintenance. Another troublesome point is that many municipalities allow for building recreational structures on the local inland harbours. This means that many small industrial areas are hard to reach by barge (Quist & Verheij, 2010). These measures have a negative effect on the modal split, because it has to shift to trucks to reach small industrial areas, which is bad for the dry bulk barging market and the environment.

## **Conclusion.**

The problem of overcapacity is negatively influenced by price regulation and by guarantee systems. Governments should think twice before trying to help the market with big measures like these, and should know when an attempt to help the market has done its job. Local governments should also realise what it means to close a local inland port.

## **What can governments learn from other markets?**

Dry bulk barging is not the only sector in the world that has to deal with overcapacity. Before jumping to conclusions about what governments should do to overcome this problem, it is worth to take a look at other markets, where governments were forced to intervene because of overcapacity.

## **Fishing.**

Overcapacity is a big problem for the fishery sector because it is the first step to over fishing, catching so much per year that entire species go extinct. Naturally, it is a task for governmental bodies to reduce this overcapacity.

In New-Zealand, the government decided to do this by using the so called individual transferrable quota's, or ITQ's. First, the government estimated the total allowable catch, TAC, by calculating how many tonnes of fish could be caught without disrupting the environment. Next, each ITQ was determined to represent a certain percentage of the TAC. Authorities then began to sell the ITQ's to the companies, important here is that the government can regulate the TAC, by either buying back ITQ's or by selling new ones. This system proved very effective. The New-Zealand fishery fleet has grown, but it was a growth deemed acceptable by the government. Another interesting thing is that, over time a small change of ownership of ITQ's was seen, the biggest companies gradually owned a higher percentage of ITQ's than at the system's start (Cunningham & Gréboval, 2001). Whether or not a system like this is the best for the dry bulk barging market is the question, but this

system was a success and proved that it could be regulated by the authorities. So if the managing authority understands that the market needs a reserve capacity and is effective enough to quickly buy or sell ITQ's when needed it could be an option. This system also proves a small relation with increasing the scale of the companies, the latter would be very healthy for the dry bulk barging market (van Hassel, 2013).

In 2002 the European Union was advised to change the way of dealing with overcapacity in the fishing sector by C.J. Jensen. The European usage of scrapping- or buy-back programmes and quota systems (similar as the one described above), was criticized. These measures could not eliminate the shippers' incentive to increase the scale of operation, and were too expensive. According to Jensen, the best measure against overcapacity would be taxation of capital. This tax should be only around 3% of the insurance value of the vessel. The tax is a negative factor for buying a bigger ship: a bigger ship has probably a higher insurance value, and thus the total sum of money paid increases (Jensen, 2002). Taxation is fairly cheap and easy to implement, and its negative influence on the trend to buy bigger ships can be very useful in the dry bulk barging market. However, this tax also means extra costs for small barges, and extra costs for barge operators that consider buying a second barge. Since small barges are not a part of the problem and having more ships under control of one owner/manager increases the market power, this would be a negative effect of such a tax.

A popular measure among governments is a buyback program. In this program, the government buys certain vessels and either sells or scraps them to remove capacity from the market (Cunningham & Gréboval, 2001). These programs are similar to the scrapping programs that were used by the local governments and the European Union. Holland, Gudmundsson and Gates analysed many of these programs from all over the world and found that the vast majority did not succeed in reducing the capacity on the long term. Also, many of these programmes were found to be scrapping old and unwanted vessels (Holland, Gudmundsson, & Gates, 1999). So, these programs have the same results as the scrapping programs in the dry bulk barging market.

Governments that want to reduce capacity in the dry bulk barging market can learn from similar attempts in fishing. Of all the measures imposed here, a quota seems the most

attractive and buyback programs the least. The advice given by Jensen is very attractive to take into consideration.

### **Deep-sea shipping.**

Deep-sea transport also struggles with overcapacity from time to time. Although deep-sea transport is a much more integrated market, the ways to overcome overcapacity are worth a look.

The first one is the slow steaming phenomenon. This implies that the ships sail very slow, it cannot be done in segments where the customers value time very high, but in all other segments it can be helpful in times of overcapacity. This is mainly because in times of overcapacity, the freight rates are usually very low, meaning a voyage will not bring much profit. By slow steaming, the ship owner can significantly reduce the amount of fuel used by the ship per voyage (Cariou, 2010). In times of crisis, a situation that usually accompanies overcapacity, this strategy can save the shipping company from bankruptcy. Slow steaming, however, has another advantage in times of overcapacity: by making a voyage take longer, the ship will be off the market for a longer time (Kontovas, 2011). This is a form of temporary capacity reduction and this can have an influence on the market if slow steaming is used by a large part of the shipping companies. Slow steaming has proven itself an effective measure against overcapacity in the deep-sea markets (Cariou, 2010), but it is far from sure it could be used in the dry bulk barging market. First of all, if a barge operator only owns one barge, will his advantage be big enough? Since the market is so fragmented, it is not easy to predict whether or not a big share of barges will start slow steaming. And secondly, this is only a measure to overcome a temporary crisis, it does not really reduce capacity.

The second measure companies in this market take in times of overcapacity is lay-up. When a ship is in lay-up, it is not actively used, reducing the costs to a minimum. Ships are laid up in times of overcapacity when not all ships are used, it is a way to temporarily reduce the capacity of the company fleet. Lay-up is usually used for ships that are in abundance, but worth too much to be scrapped, after the crisis, these ships are taken out of lay-up and will

be operational again. Lay-up is not entirely costless, as the spot where the ship is laid up will usually need to be rented and being laid up is not optimal for the condition of the ship, but it proved to be useful in the market of deep sea bulk carrying (Scarsi, 2007). By using lay-up in the dry bulk barging market, capacity can be temporary reduced during a crisis. However, it is unlikely that a single barge operator would lay-up his only barge, this would cost him all his income. By doing this it could be that he reduces his losses, but it is also a giant risk, because he might miss chances to make a profit.

The third measure is very simple. In deep sea shipping, the company decides on which route the ship will be used. It can decide almost everything, ports, routes, and even on which continent to call (B.W. Wiegmans, 2008). So when it is not profitable enough to make a trip to a certain area, the ship is simply used in another one. This seems logical, but it is not what is going on with dry bulk barging, where barge operators have strong ties to a certain country, and many will not consider to take their barge to, for instance, Eastern Europe or Southern France. The idea of moving capacity from one area to another itself however, is an attractive one.

## **Conclusion.**

Governments can learn a lot from other markets. In the fishing sector, governments are fighting overcapacity for a long time now and it is very clear that the reduction of capacity by the governments has not been able to solve the problem. Quota systems were able to regulate capacity, but come at high costs. The most interesting option is perhaps the system of taxing the insurance value of ships, it is far less costly and can be implemented in a way that fits the dry bulk barging market. In the market for deep sea transport slow steaming, lay-up and simply moving capacity are used in times of overcapacity, but the main message from this sector consists of the benefits of a less fragmented market.

## **What should governments do to reduce overcapacity?**

To conclude this thesis, the main question will have to be answered. However ‘what should governments do to reduce overcapacity in dry bulk barging?’ has no simple answer. Governments should improve used measures, stop harmful initiatives and consider new options. A list of possible actions can be found below. The main message to governments should be that the market is currently so fragmented, that permanently reducing overcapacity is very hard. Reducing fragmentation, however, is a task of the market itself, the governments can only create a situation in which strong entrepreneurs have the chance to set up a big business of several barges, instead of owning only one.

### **1. Reconsider scrapping programs.**

These programs are costly and have proven to be of limited use, so using them is not the best option. Should it be the wish of governments to keep using them however, some changes might improve the effect of these programs a bit. First, the small barge should be excluded from scrapping, it is not a part of the problem. Second, to reduce costs, the barges can also be sold to other markets, Eastern Europe for instance.

### **2. Stop any attempts to help barge operators by setting a minimum price.**

Price regulation has a negative effect on the market as a whole, because it can make customers stop transporting goods by barge. Further, a minimum price reduces the income uncertainty, but that is then replaced with work uncertainty.

### **3. Exclude inland waterway businesses from guarantee systems.**

Inland waterway transport as a whole profited from these systems because banks were more likely to give out loans to barge operators, the latter increased the capacity of the sector. However, in times of overcapacity, this market should be excluded from these systems. They encourage the building of new barges and are partly responsible for the low number of bankruptcies, which is worsening the problem.

#### **4. Consider taxation to reduce overcapacity.**

Implementing a tax on the insurance value of a vessel is a negative factor for barge operators that are considering to buy a bigger barge. It is also adding extra costs for small barges however, so it might be wise to exclude smaller barges from this tax. This measure is relatively cheap and can help to reduce overcapacity. It is also possible to make this a structural measure in the sector, but the effects are far from clear.

#### **5. Consider a quota on capacity.**

The implementation of a quota is neither cheap nor simple, but it might be worth the effort. Quotas can be reasonably successful in reducing capacity, but it depends on the authority managing it. If the EU can be quick enough to react to the market, a quota can solve the problem and makes it possible to manage the capacity in the market for the longer term.

#### **6. Make small barges more attractive to operate.**

Expensive technical requirements have been set aside, but there still remain fiscal rules that can be changed to improve the attractiveness of a small barge. Apart from the changing of these rules, the infrastructure in the hinterland should be maintained, and local governments should be pressed to protect small inland ports. When all these actions have been taken, small barges will be in a good position to compete with road transport (Quist & Verheij, 2010).

#### **7. Make bankruptcies actually reduce capacity.**

When the guarantee system is abandoned, this will possibly increase the number of bankruptcies. So when the banks come to own the barges, governments must make sure that these barges are sold to barge operators in other areas. Total demolition is also an option, but that is likely to earn the bank less money. By doing this, a bankruptcy will actually mean that capacity is reduced, restoring some of the regular market mechanisms.

#### **8. Consider a lay-up program for barges.**

In deep sea shipping lay-up is used when the freight rates have dropped to a point where the ship cannot make a trip without making more costs than the generated income by that trip. This is a temporary measure, because when the price increases above the variable costs, the ship is taken back into business. The dry bulk barging market is in a crisis, caused by the economic crisis of 2008,



demand for dry bulk barging has dropped. This seems like a situation in which deep sea shippers would think about lay-up, but a single barge operator cannot lay up his barge because he would have no chance at all to make a profit during that period.

Therefore, the governments might have to stimulate the laying up of barges by offering compensation to the owners, so the latter still has some income. Because of the negative externalities of old and small barges, the costs for this category will be lower than the benefits (i.e. the reduction of pollution during lay-up) of laying them up (Reeven, Nijdam, & Kuipers, 2009). However, small barges have access to some parts of the inland waterway network that big barges cannot reach, so targeting them with a lay-up program might force customers to hire trucks for some trips. This program can also be used to lay up the big barges, but since these vessels tend to be newer, and thus less polluting, the benefits will possibly not exceed the costs of laying them up. However, since big barges are largely responsible for overcapacity, the latter option might still be the best.

Some of these measures are easy to implement, measures two and three, for instance. Other measures, one, six, seven and eight, require more governmental effort and money, while measures four and five are in need of further research. Point four could possibly be tested during a pilot, in which a small sub segment of the market is used as a case study, to determine whether or not taxing capacity has the desired effect. The case of point five should be more extensively researched, the main question in this case is if governmental bodies will be able to adjust the quota to the right amount of capacity that is needed in the market.

If the governments involved in the dry bulk barging market choose to use measures 1 to 3 and 6 to 8 and consider points 4 and 5, they will help the market. Not by immediately solving the problem, but by giving the barge operators a chance to do business in a healthier market. This will hopefully give them the opportunity to decrease fragmentation and thus take a big step towards a normal market. A market that will keep facing overcapacity from time to time, but that will also have the possibility to overcome that problem on its own.

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