COST BREAKDOWN AND SURCHARGE MAPPING FOR SEA FREIGHT

- A study for Tetra Laval Group

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This article is based on a master thesis conducted at Tetra Laval Group, Lund, Sweden in the autumn of 2008. The purpose of the thesis was to get a better understanding of surcharges within sea freight procurement and construct update models for different surcharges that vary during the contract periods. This article starts with explaining the background and purpose of the study. Then after a short frame of reference the result and conclusion for the three surcharges that was analysed are discussed separately.

INTRODUCTION

The sea freight industry has been confronted by a major market change, meaning that the price and surcharge cooperation within the liner shipping conference agreements in Europe has been abolished since October 18th 2008. This means that all sea freight carriers that have traffic to and from Europe now have to set individual prices and surcharges. [1] This has direct effect on almost two thirds of Tetra Laval's goods flow that has origin or destination in Europe. This market change resulted in that the Tetra Laval Group wanted to take control over the variable costs within the annual sea freight contracts. The general perception within the industry is that a similar development with deregulation will take place in the rest of the world as well.

Tetra Laval Group consists of the three companies; Tetra Pak, DeLaval and Sidel. The companies' activities are focused on systems for processing, packaging and distribution of food and accessories for dairy production and animal husbandry. The individual companies all generate large sea freight container goods flows mostly consisting of packaging material.

The master thesis was done at Tetra Laval Group Transport & Travel (GT&T) which is the purchasing unit for goods transportation and employee travels for the entire group.

PROBLEM DISCUSSION AND PURPOSE

The problem for GT&T consists of the uncertainty in price development for sea freight and a lack of understanding of the cost structure used by the carriers. These two problems are closely linked together and to avoid the uncertainty that is currently increasing due to the abolition of liner shipping conferences, one has to understand the cost structure for the carriers.

Tetra Laval has one year contracts with their suppliers of sea freight which consist of a fixed base price and surcharges that are varying during the year. The focus has been on three surcharges that prior to October 18th 2008 were set by the liner shipping conferences; bunker adjustment factor (BAF), currency adjustment factor (CAF) and terminal handling cost (THC).

The purpose for the surcharges was:

- An update model for BAF that was implemented in the contracts for 2009. This was the main objective of the study and therefore the most discussed subject in the master thesis.
- An update model for CAF that for the coming contract year will be an internal tool to monitor the carrier's own updates of this surcharge and for 2010 a full implementation of the CAF model might be possible.
- The THC has been fixed for the full contract year historically and the purpose is to review if this is a suitable way to handle the surcharge and if it should continue to be fixed with the new market conditions.

The models are not supposed to be simply theoretical, but shaped to fit Tetra Laval's way of business. The overall purpose for implementing these models for Tetra Laval is getting total control over fixed and variable costs and a better ability to compare offers from the carriers because the variable costs will have the same development for all carriers when using the same update models.

METHODOLOGY

The study has been based on both statistical data and interviews in order to get theoretically correct data as well as subjective input from concerned parties. In addition to this content analysis and literature reviews was made to obtain a broad and deep understanding of relevant areas. An analysis of the gathered data was done through logical reasoning and discussion.

FRAME OF REFERENCE

Bunker fuel is technically any type of fuel oil used aboard ships and is stemmed and purchased all over the world. Bunker fuel is one of the least refined oil products and therefore is similar in quality and consistence to crude oil. The price of bunker and crude oil are therefore almost identical and highly correlated. Today a low quality bunker fuel (IFO 380) is mostly used but in the future environmental aspects might lead to demands on higher quality and more expensive bunker fuel. [2]

The bunker fuel and the associated costs are a large concern for sea freight carriers. In the summer of 2008 when the bunker price reached record levels of between 600-700 USD/MT[1] the bunker costs was approximately 60 % of ship costs and 40 % of total costs for carriers. This implicates the need of a BAF surcharge for the carriers to be able to get compensated for the price volatility. [3]

The income currency in the sea freight industry is almost exclusively the US dollar but because of the global coverage of sea freight, the carriers' expenses are in many local currencies. This together with the high currency volatility from one time to another gives the will to use a CAF surcharge to cover for this risk.

The handling of containers in port is associated with costs for lifting the container, administrative costs, duty etc. To cover for these costs carriers charge a THC. This has historically been fixed for long periods often many years but in some cases it has been variable without any obvious reason and at different levels for different origins and destinations in the same port.

RESULTS

BAF model

The BAF model constructed for Tetra Laval is as follows

BAF change = Bunker fuel consumed (MT/TEU) x Bunker Price Change (USD)

The including factors are built up by the following parameters

Bunker fuel consumed (MT/TEU) = Bunker Consumption * Average Transit Time * (1 – Time in Port) / (Average Vessel Capacity * Utilization)

Bunker Price Change (USD) = Average Bunker Price for calculation period – Tender Bunker Price

Bunker Consumption is the amount of bunker fuel that a container vessel consumes in one day at sea. This is multiplied with the time at sea for the vessel, which is the trade lane specific *Average Transit Time* exclusive the *Time in Port*. This is divided by the average amount of containers onboard the vessel, which is the *Average Vessel Capacity* multiplied with the vessel *Utilization*. This together gives the total *Bunker fuel consumed* in metric tonnes per twenty foot equivalent container (MT/TEU).

The parameters that are trade lane specific are Average Transit Time, Average Vessel Capacity and Bunker Consumptions which is dependent on the vessel size and speed. A trade lane is a route between two geographical areas, e.g. Europe – Far East. Tetra Laval has divided the world into 12 different areas, which results in that they occupy about 60 trade lanes on a global basis.

In order to make the model more manageable and easier to use in practice some parameters such as vessel utilization and time in port are the same for all trade lanes.

The *Bunker Price Change* is a comparison between the new *Average Bunker Price* for a given calculation period with the *Tender Bunker Price* that is set from the valid period during the negotiations in November with the carriers. The calculation period is when the average bunker price is sourced based on a world average of bunker prices. This is followed by a one month announcement period and a three month valid period for the Bunker Price Change. In this way all years' months is included in the calculated and valid price. This is illustrated in figure 1.

[1] Metric tonne

If the bunker price has increased during the time period the Bunker Price Change will be positive to that amount and if the bunker price has decreased the Bunker Price Change will be negative to that amount. This means that the model will adjust the surcharge both positive and negative depending on the market prices. The model includes a De Minimis Rule that states that there will be no update if the price development has been below 10 % during one calculation period to another.

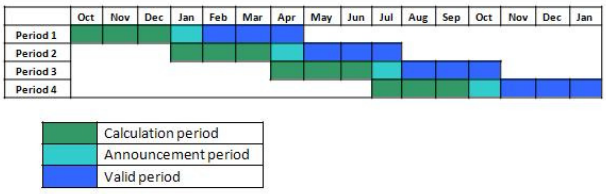

Figure 1 – Update periods

The main goal when deciding on the different parameters was that the model should be as fair, transparent and accurate as possible so that neither Tetra Laval nor the carriers would lose or make money from the model. Carriers should only get paid for actual costs in a fair way. Since the model adjusts both up and down the model can be considered as risk-sharing.

It should be mentioned that there are other existing BAF models in the sea freight industry, mainly constructed by different carriers. The Tetra Laval BAF model is in many ways similar to these but streamlined to fit Tetra Laval. Most notable differences are that the ratio between BAF change for 20' and 40' containers has Tetra Laval set to 1,5 instead on the more common factor 2 and that this model also excludes an imbalance factor that some other models contain. An imbalance factor, when used, is supposed to compensate the surcharge amount for the imbalances in world goods flows.

CAF model

The CAF model constructed for Tetra Laval is as follows

CAF (%) = ∑ (Currency variation x weighting of currency)

Summation for all currencies included in basket

The *Currency variation* is the local currency in relation to the US dollar and the *weighting of currency* is how large part the specific local currency constitutes of the currency basket that is supposed to reflect the carriers costs associated with a specific trade lane. This gives a CAF percentage that is multiplied with the sea freight price and this gives the surcharge amount. This approach is the absolute most common way to construct a CAF model on in the industry. A proposition for how currency baskets should be constructed is to set up one basket for the origin area and one for the destination area and the average of this gives the CAF development of the trade lane. This means that every geographical area is given a currency basket with local currencies that reflects where Tetra Laval is active. The geographical areas and update periods are the same for the CAF model as for the previous mentioned conditions for the BAF model.

THC

The THC surcharge should be fixed for the whole contract period, this opinion is shared by both shippers and carriers. It should be geographically specific for a region or unique port. The intentions among carriers and also Tetra Laval are to reduce the amount of THC's to a regional specific level to remain accurate but at a reasonable lower degree of complexity.

CONCLUSIONS

BAF model

Tetra Laval tries to have long-term relationships with carriers which makes the model something that should be seen as part of contracts for many years to come. However some of the parameters in the model will change over time and will therefore have to be looked over prior to a new contract period. Most important are to review the trade specific parameters such as transit time and the vessel size and speed that have direct impact on the bunker consumption. The general parameters; utilization and time in port will most likely not change that much over time and their small changes will not have great effect on the bunker price change. By reviewing parameters annually the model will always be up to date and in that way it is easier to get carriers to accept it as a part of the contract.

Models of this kind are a great way to take control over variable costs in contracts. However they might by very hard to implement. Tetra Laval is in a position where they have large goods flows and therefore are able to obtain key account status with most carriers. This fact also makes it easier to getting carriers to accept the model since they then get the benefit of securing large volumes for the coming year. It is important that all carriers accept the terms of the model since the advantages of having an own BAF model cannot be fully facilitated and offers cannot be compared on the same basis before negotiations unless if not all carriers use the model.

CAF model

A general conclusion for the CAF surcharge is that it will not vary that much with the three month updates. It has in addition a small impact on total costs. It should therefore be considered to try to have a fixed CAF for the whole contract period.

It is recommended that the CAF model is to be used only when necessary and requested, those years when high currency variation is expected or a high market uncertainty exists. If it is decided to have a fixed CAF a general De Minimis rule of for example if EUR/USD drops 20% during the year the CAF update will be restored, may be considered.

THC

The reason that Tetra Laval and other shippers should keep the THC surcharge specification is that it gives a hint of understanding the specific carrier's costs and therefore gives better input to contract negotiations with the carriers.

General conclusions

If it is decided to either have a fixed CAF or the CAF model is implemented Tetra Laval will take control over the updates for the two major sea freight surcharges that vary along one contract year. Today there are no other surcharges or variable costs related to sea freight that are considered necessary to assess in a similar way. It is important that one of these ways is decided upon since it will eliminate the problem with having major surcharges updated both internally and externally.

A possible future development in the shipping industry after the abolition of shipping conferences is that the amount of different surcharges will decrease and the price transparency will increase.

IMPLEMENTATION

The general response from the negotiations with the carriers was positive since the BAF model was implemented in 2009 years' contracts for most carriers.

One circumstance that made the implementation more complex is the fact that bunker fuel prices has descended significantly in the autumn of 2008 and the market uncertainty is very significant because of this and the related global economic recession. The container freight rates have also descended at a broad perspective and because of this some carriers with very low priced backhaul trade lanes have gotten fixed all in prices for all their nominated volumes for the whole following contract year, but with a clause saying that if prices and bunker fuel costs will reach for the sky again, Tetra Laval's BAF model will come into effect.

Of the parameters in the model it was mainly the ratio between TEU and FFE[2] that some carriers had remarks on. This ratio is in most carriers' BAF models stated as 2, and therefore the logic of choosing 1,5 had to be emphasised. In the end neither this nor any other parameter had any remarks that could not be explained or agreed upon.

In conclusion all Tetra Laval's contracts for 2009 will contain the BAF model or be all in prices.

The CAF model, as mentioned before, is suppose to be an internal tool to monitor the carrier's own updates of the CAF surcharge during 2009 and for 2010 a full implementation of the CAF model might be possible.

The THC is supposed to be managed as earlier and stay fixed for the whole contract year.

REFERENCES

[1] Guidelines on the application of Article 81 of the EC Treaty to maritime transport Services, SEC (2008) 2151 final, COMMISSION OF THE EUROPEAN COMMUNITIES, 2008-07-01.

[2] Bunkerworld,
Available from: <www.bunkerworld.com>.

[3] Notteboom, Theo E. & Vernimmen, B. (2008): "The effect of high fuel costs on liner service configuration in container shipping", *Journal of Transport Geography*, In Press, Corrected Proof, Available online 7 July 2008.

[2] forty foot equivalent unit container