

# Analysis Of Demurrage/Detention/Storage Reasons For Consignments & Alternative Way To Minimize Charges

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**Abstract-** Shipping parties are prone to high additional costs, other than sea freight, due to the positioning and movement of containers. In shipping terms, these additional costs are referred to as Demurrage/Detention/Storage costs. The main reason is due to the container traffic, delay in returning the empty container unit, lack of space in the terminal/port to store container & inventory models of end consignee. In the current model, we find a suitable way to reduce container traffic as well as the additional costs.

**Keywords-** Sea freight, Demurrage, Detention, Storage, Age of business, Container traffic

## I. INTRODUCTION

The Additional/extra costs (Demurrage/Detention) are imposed when the shipping party fails to bring in the Cargo Full Container (in case of Export)/return the Empty Container (For Import) on time within the allotted free days. The various terms involved, reason and our solution to avoid the costs are discussed below.

## II. GLOSSARY

### 2.1 DEMURRAGE

A penalty or rent paid by the shipper or consignee to the shipping line when the container is not moved out of the terminal or port within the agreed time frame set out on the contract (Contract may vary based on country or shipping line).

In short, it is the charge paid for storing the container at the port terminal beyond free time.

### 2.2 DETENTION

A penalty charge against shipper or consignee, imposed by shipping company, when the respective party fails to return the Full nor empty unit within the free time. Simply, it is the charge paid for storing the container at outside of the port terminal beyond free time.

### 2.3 STORAGE

Storage is the charge levied by the port on the shipping line (since they have the account with the port) if the container is not moved out of the port within the specified free days offered by the port.

And the shipping companies' in turn collect the above fee from the responsible party in the same name.

### 2.4 FREE TIME

At Pick-up or Delivery, the time allowed shippers or receivers to load or unload containers before Waiting Time charges accrue (usually 2 hours).

The amount of time that a carrier's equipment may be used without incurring additional charges (ex: on an Import situation, the Free Time is the time - usually 3 to 10 working days - allowed idle at the terminal before incurring demurrage).

Usually, the DEM will be calculated once the import container is discharged from the vessel to the empty container received at the yard. This is the time frame when the DEM/DET is calculated.

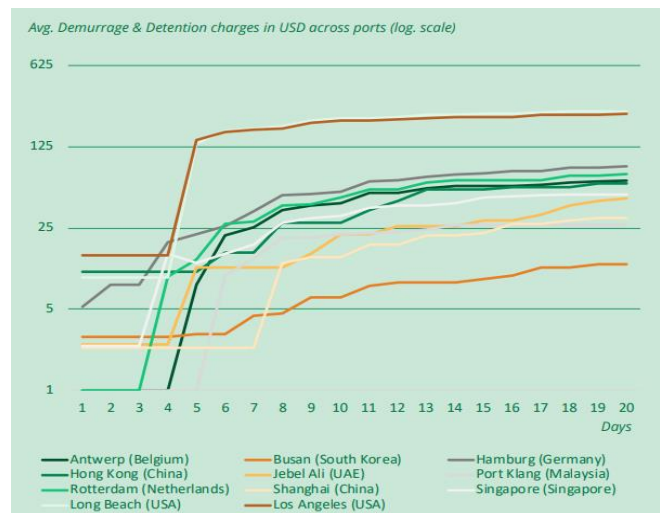


Fig 1.1 ~ Average DEM/DET(USD) for certain ports

## III. COST SUMMARY IMPLIED

Demurrage charges apply for the usage of container equipment inside the port terminal. It is billed per container and per day by the ocean carrier, and the charged amount will vary per location and equipment type. During the export phase, demurrage starts when the full cargo container enters the port terminal and ends when it is loaded onto the ship or when the ship departs.

The ocean carriers decide on the effective end of the demurrage period, depending on the container’s type and location. During the import phase, demurrage starts when the ship arrives at the port or after the container has been discharged. Similarly, to the export phase, ocean carriers decide the starting date of the demurrage period, factoring in both the container’s type and location.

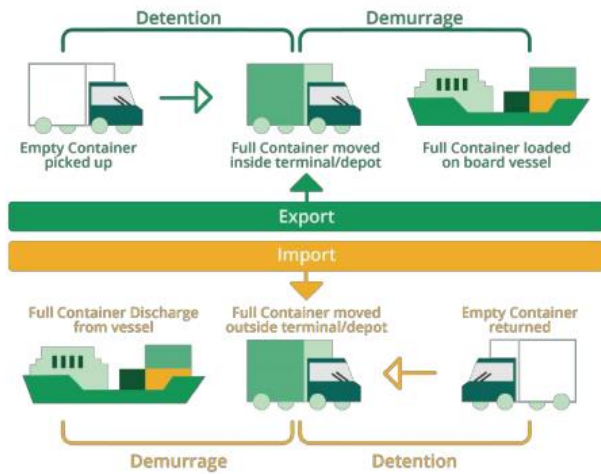


Fig 1.2 ~ Container moves (Import/Export)

Demurrage ends when the container is picked up from the terminal for delivery by truck, rail or barge to the consignee. For demurrage, providers have to offer a reasonable free-time period in all instances.

Detention charges are similar to demurrage costs, but they arise outside the port terminal. It is billed per container and per day, and the charged amount will vary per location, carrier and container type.

During the export phase, detention starts when the empty container is picked up from the container yard and ends when the full container arrives at the port terminal.

During the import phase, detention starts when the full container is picked up from the terminal, continues during its delivery to the consignee, and ends upon return of the

empty container to the container yard. For detention, providers have to offer a reasonable free time period in all instances.

And in-case shipper nor consignee hold the container unit at their premises beyond the allowed free time, the above charges begin to accumulate for the number of days the unit is delayed.

And these costs are very high currently owing to various reasons, as listed below, which are address in our current approach.

Reasons concentrated here for **HIGH DEM/DET** Costs,

- Shipping companies need the empty container to reuse them for export & so expect a quicker return of empty units.
- Lack of space inside terminal/port to store full units & due to high tariff rates per day, shipping lines expect the consignee picks the unit out of port as soon as possible to avoid congestion in the port terminal premises.
- Traffic nor congestion in the port caused due to container positioning and movements. Problem with a truck backup plan leading to delay in picking nor dropping the unit.
- Inventory models of shipper & consignee prolong bringing in full & empty unit so as to minimize costs at their end.

**IV. EXISTING MODEL IN FIELD**

When the full cargo container is discharged at the port, the Demurrage calculation starts. And the calculation ends when the empty container unit is handed over to the depot.

In between the time, the full unit is moved to the end consignee and the cargo is unloaded & the empty unit returns to the depot of the Container Company nor shipping company.

*Let's assume the full container to be discharged today marking the start of demurrage.*

DAY SLAB	NO OF DAYS	TARIFF ( \$ )
Non-billable days (first 5 days from Discharge of full unit)	5	00.00
L1 (next 5 days )	5	100
L2 (remaining days )	Undefined (until unit returns)	200

\*After a set number of L2 days & if the full unit is still not picked up, it will be declared Abandoned unit and the cargo in it will be auctioned (Under this scenario for illustration).

The consignee picks the full unit after 7 days from the port & returns the empty unit after 6 days & thus making it to a total of 13 days.

**4.1 CALCULATION FOR COSTS INCURRED**

Total days = 13

Total billable days = Total days – Free days,

13 – 5 = 8 days.

For first 5 days within L1 rate slab, Demurrage,

5 \* 100 = \$ 500

For the remaining days within L2 rate slab, Demurrage = 3 \*

200 = \$ 600

**Total Demurrage to be paid by consignee,**

**500 + 600 = \$ 1100**

\*In certain locations, the first 7 days, until full container is picked by consignee, is invoiced as Demurrage & the next 6 days, until empty container is returned, is invoiced as Detention with separate tariff rates & free days.

**V. PROPOSED MODEL**

We place a cargo storage warehouse, approved by customs, nearby the port – truck coverable distance to have the cargo’s escorted within the free days after getting the consignee approval.

By doing so, the line Demurrage to shipper and port will be reduced & instead, a storage fee will be charges which is much lesser than the calculated demurrage depending on the location.

With the above sample, we’ll pick the cargo as per client request and then, return the same container (Under such scenario) within 5 free days.

Then the charge will be lesser than \$1100 depending on the location/time-frame – the actual charge will be invoiced.

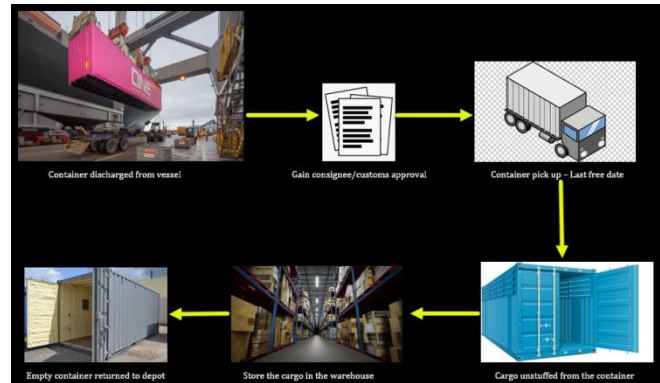


Fig 1.3 Proposed model

Applying the proposed model for the same Import cycle explained above,

Let’s assume the full container to be discharge today marking the start of demurrage.

Day 1 -> Full unit is discharged

Day 4 -> We get consignee approval to pick up the full unit & move it to our nearby warehouse.

**Break-even point** ~ Day 5 (End of free days) -> We pick up the full unit from port & after unloading the unit, we store the cargo in our warehouse & return the empty unit to depot of shipping company.

**(BREAK EVEN POINT** – Day on which we move the cargo from container to warehouse.

It should be optimal day to balance the free days at port and the charges levied by us.

And usually, it is the last free day at port which is selected to be the break-even point). Thus, we incur no demurrage from shipping nor port as we return the empty unit within 5 free days.

Our tariff rates (example shown below & may vary in real life instances).

DAY SLAB	NO OF DAYS	TARIFF ( \$ )
L1	5	50
L2	5	100
L3	Undefined (until unit returns)	150

For the same 13 days spent by consignee,

First 4 days -> Full containers rests in the port without any cost

**5<sup>th</sup> day -> Full cargo container in our premises -> Start of Demurrage calculation**

13<sup>th</sup> day -> Cargo picked up by end consignee

Total Billable days = 9 days

Total demurrage (split up between L1 and L2) =  $5 * 50 + 4 * 100 = \$ 650$

**TOTAL SAVING TO CONSIGNEE,**

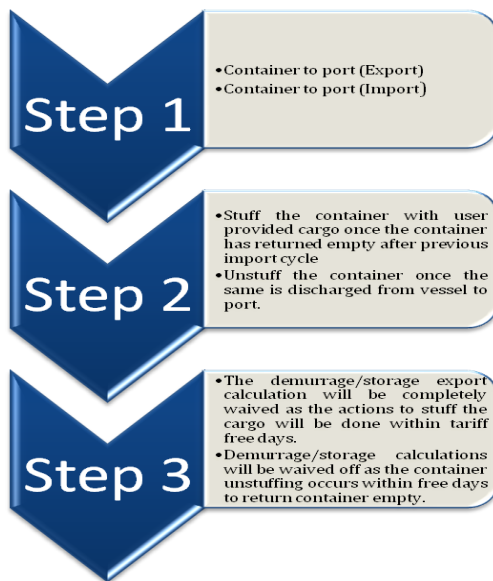
**1100 – 650 = \$ 450.**

The shipping party (shipper/consignee) saves \$450 for every container being shipped.

*\*The same scenario applies to Export units also where the full unit is moved to warehouse before being moved into port and loaded onto ship.*

**VI. PRIMARY OBJECTIVE – SUMMARY**

Alternative method to reduce the Demurrage/Detention/storage cost for the shipper/consignee & to return the Full nor empty container to shipping company / port on time.

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