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# No. 5 – Tanker Market Outlook – Fleet Utilization & Availability

February 3, 2014

***This is the second of a four part series of Industry Notes regarding McQuilling Services 2014-2018 Tanker Market Outlook.***

McQuilling Services recently released its 2014-2018 Tanker Market Outlook that provides a spot rate forecast across eight tanker classes and 13 major trading routes. This year's edition also includes a forecast of asset prices over the same period for newbuilding, 5-year old and 10-year old tankers in these eight classes.

Forecasts are estimations of future activities based on models designed to mimic reality. As such they are abstractions that are highly dependent on data, analytical methodologies, and specific assumptions. Whether complex mathematical formulations or simple projections based on experience and observation are used, forecasting the future in most industries is an imprecise and inaccurate activity. The spot market for tanker freight rates is no exception; however, our methodology has steadily yielded results within 10% of market actuals.

This note discusses an important element of McQuilling's forecasting process, fleet utilization and availability.

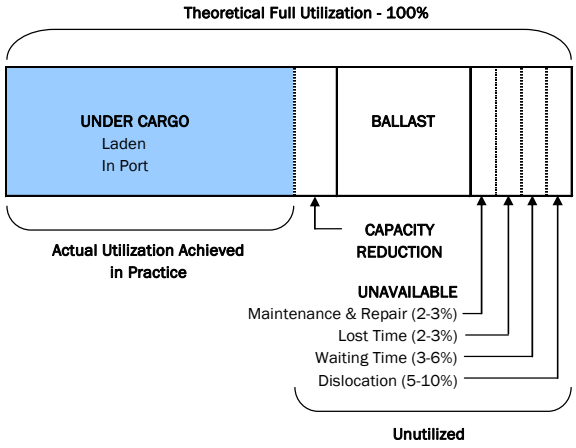
The marine transportation system described by the global carriage of crude oil and petroleum products is by nature imperfect and highly inefficient. If it were perfectly efficient, tankers would be able to load their next cargoes in the same location that they discharged their last cargoes and sail loaded at full capacity on all voyages. However, in reality, tankers spend a significant portion of their trading lives sailing empty or otherwise inefficiently deployed.

As a result of these inefficiencies, the actual supply of tonnage available to meet transportation demand is less than implied by the mathematical summation of the carrying capacity of the world tanker fleet. This is because the total number of vessels available at any given time is reduced by the inefficiency that stems from the nature of the transportation system and by commercial decisions of owners and charterers in the marketplace. Characterizing and quantifying these inefficiencies is of significant value in understanding how vessel supply relates to demand in the tanker industry.

***Vessel Use*** - A vessel is either in use for material gain to its owners or it is unused. Technically speaking, the designation is more complex: Vessels have a time and a space dimension related to use. Therefore, the vessel is fully in use if it is filled to capacity with cargo (space dimension) and deployed in a service transporting this cargo in exchange for monetary gain (time dimension). All other deployments of the vessel represent some form of non-use and inefficiency.

The term ***utilization*** is widely employed. It has many different interpretations and it is important to know with clarity the specific meaning that is intended. In our discussion of vessel use, we consider that any time spent on a vessel in a condition where cargo is not on board is time that the vessel is not being utilized. Less than full capacity use is also underutilization, but is more conveniently included in discussions related to reductions in tonnage availability. Therefore, we consider time spent with no cargo on board to be time counted as unutilized.

**Figure 1 – Vessel Use Summary**




*Source: McQuilling Services*

The foregoing discussion establishes the category of use for vessels on laden passages, in other words, when carrying cargo: ***under cargo.*** This category would include time spent in transit with cargo on board, time spent in port with cargo on board consuming laytime or on demurrage.

The next category of use would be ***ballast time***, or spent without cargo transiting to the next load port. Technically speaking, the industry has come to accept ballast transits as a necessary requirement due to the locations of loading and discharging areas. Strictly speaking, these transits all

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represent inefficient use of vessels in the marine transport system and operators should try to minimize time spent without cargo.

***Availability Factors*** - The last category of use describes cases where the vessel is unavailable for a variety of reasons. In this category we discuss inefficiency factors that reduce the overall carrying capacity of the world tanker fleet. Vessels are required to be serviced and maintained at regular intervals during the course of their lives. Certain maintenance requirements necessitate removal of the ship from trading for repairs either afloat or in a shipyard in dry-dock. A total reduction in use due to a ***maintenance and repairs factor*** of perhaps 2.5% is required, implying that in order to meet a demand for 200 vessels, 205 actual ships are necessary.

As mentioned previously, delays and lost time incurred by vessels underway due to weather or slow steaming results in increased elapsed time for scheduled itineraries. A ***lost time factor*** of perhaps 2-3% of a vessel's time is assumed due to weather slowdowns, discretionary slow-downs, re-routing and other delays.

Owners of vessels may need to accept loading dates that are later than the optimal arrival dates of their vessels at the load ports. Awaiting lay days is a ***waiting factor*** that in practice may consume 1-2 days per voyage cycle or perhaps as much as 10-20 days per year (3-6%), depending on trade and vessel class.

As noted previously, equipment utilization has both a time and a space dimension. The foregoing discussion has concentrated on the use (or non-use) of time. Underutilization of the available cargo capacity (space) of the fleet may occur as a result of the custom or practice of the specific trade or draft restrictions in ports. Previous McQuilling research has established a 10% to 29% ***capacity reduction factor*** due to this underutilization.

Finally, while the most difficult to ascertain, a significant factor influencing the availability of the tanker fleet is due to the structural characteristics of the marine transportation system within which tankers operate. This factor can be referred to as the ***dislocation factor*** and arises due to the fact that the ideal vessels to optimally transport given cargoes in given timeframes are not geographically positioned to do so or are otherwise unsuitable for the cargoes intended. As a result, more vessels are required to meet a given demand level than would be implied mathematically.

The value of the dislocation factor varies by trade and vessel size classification and estimates for the aggregate world fleet effect range from 5% to 10%, meaning that a fleet of 100 vessels could meet the demand for 90 to 95 vessels.

McQuilling uses the vessel utilization and availability concepts described in this note to adjust the average inventory of tankers across tanker sectors able to meet tanker ton-mile demand.


*Visit www.mcquilling.com or contact us to obtain your copy of the McQuilling Services 2014-2018 Tanker Market Outlook publication.*

*The 120+ page report also includes:*

- *Global Economic Outlook*
- *Tanker Market Fundamentals*
- *Previous Freight Market Performance*
- *5-Year Outlook for 13 Major Trades/8 Vessel Classes*
- *Asset Market Outlook*
- *Investment Attractiveness*
- *Operating Cost Structure*
- *Comprehensive Analytical Appendix*
- *80+ Figures/20+ Tables*