

Column



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Commercial aspects of shipping

Market Dynamics

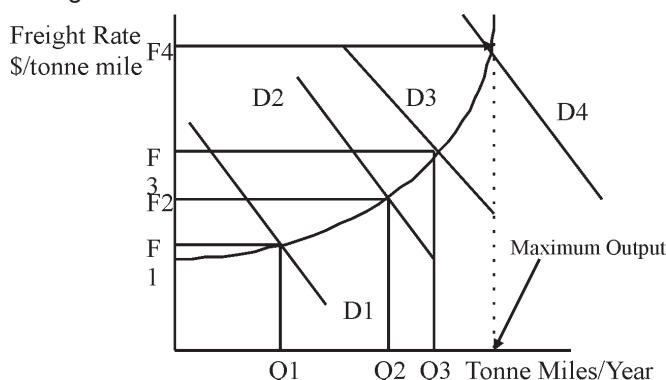
Part 3

(The views expressed here are solely those of the author, and do not necessarily reflect the views of the organization he represents.)

In the October issue, we looked at demand and supply models and their short run interaction to arrive at freight rates. This month, we will review the effect of port congestion, scrapping and increased supply on the demand and supply model after a quick revision of the equilibrium freight rate.

The market is defined as the interaction of supply and demand, and both together determine the equilibrium freight rate and quantities sold at that rate. Figure 1 below shows different possible short run market equilibrium, each determined by different demand conditions. The key factors that make demand conditions alter relate to the volume of world trade, which is driven by overall economic activity, and changing degrees of openness towards trade by individual nations. Demand curves further to the right represent larger trade volumes.

Figure 1 Short Run Market Interaction



Demand volumes increase from D1 to D4. Between D1 to D3 there is a relatively small rise in the market freight rate and a large rise in tonne miles produced. But between D3 and D4, the increase in demand is translated into large increases in rates, because supply becomes very inelastic, and the scope for increases in supply becomes increasingly limited.

The above model can be used to examine short run fluctuations in market conditions, but not long run ones. This is because the supply schedule represented in Figure 1 is drawn for a given stock of ships. It is a useful framework to explore fluctuations in freight rates in the short term however.

Consider the shift in demand from D3 to D4. Rates move up very sharply, and supply does not increase

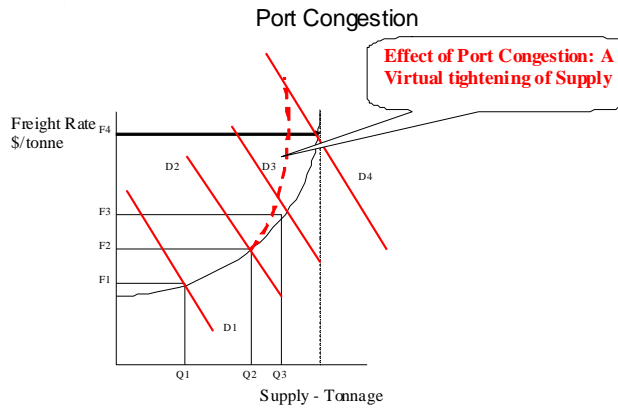
much. This creates large profits for existing shipowners, who will be encouraged to order new vessels. The value of existing vessels will also rise, reflecting the markets' expectation that profits are going to be healthy in the future. The increased number of orders will translate into a rightward shift in the supply curve in the long term, and this will lead, to a fall in rates if demand remains at D4.

On the other hand, a fall in demand from D2 to D1 means a fall in supply and a rise in vessel lay-ups. Remember that in the short run, some vessels will be trading at rates which do not cover their full costs. While this is acceptable in the short term, it is not the case in the longer term. Some vessels will be laid up, or scrapped. The scrapping of vessels leads to a leftwards shift of the supply curve. This process will help raise rates if the supply shifts far enough.

Given are various scenarios and examples with brief comments. I hope you will find them useful now and in future as reference material. However, please note all this material is for an understanding of the subject and the author, KC Maritime Ltd. and the concerned publication(s) are not responsible for any losses resulting from any reliance, whatsoever, on this series of articles on "Commercial Aspects of Shipping" in Sailor Today and in other publications by the author.

Scenario

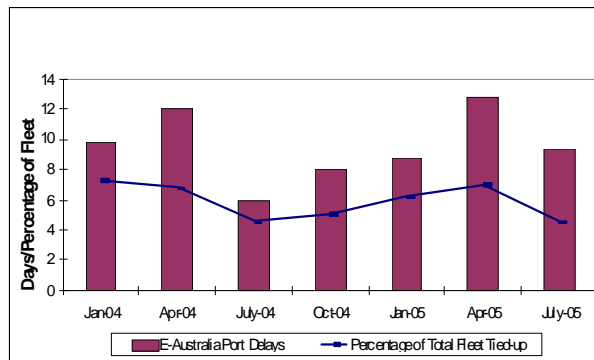
Demand & Supply Model



Comments

The effect of port congestion is to tie up the ships in the ports. This means that less tonnage is available to carry new cargo stems and thus a short term shortage is created. In cases of demand surges, when the port infrastructure is unable to cope up with the cargo handling requirements, this phenomenon occurs.

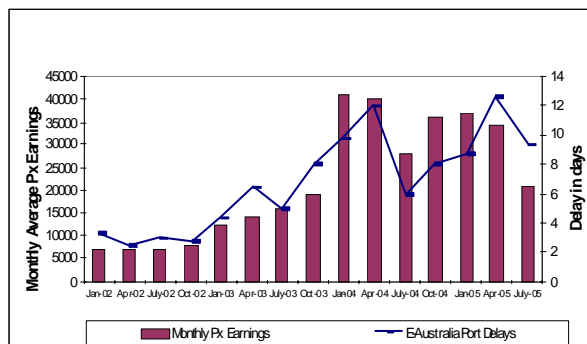
Effect of Port Delays on % Fleet Tie up



Data Source: SSY and RS Platou

The Y-axis scale is both for the number of days (columns) for the port delays and in terms of percentage for the fleet tie up (line). See the effect of port delays (in days) in the East Australian ports on the percentage of total fleet tie up due to congestion., this much percentage of fleet is then out of circulation, resulting in virtual tightening of supply for a given demand.

Effect of Port Delays on Earnings

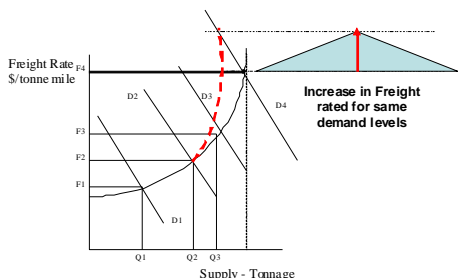


Data Source: SSY

In general and in most cases, we can see in the accompanying graph, the sharp increase in the charter hire is experienced when the percentage of fleet tied up in port increases. The X-axis data is from Jan 02 to July 05 on quarterly basis i.e. each column and line represents the average of previous 3 months.

Demand & Supply Model

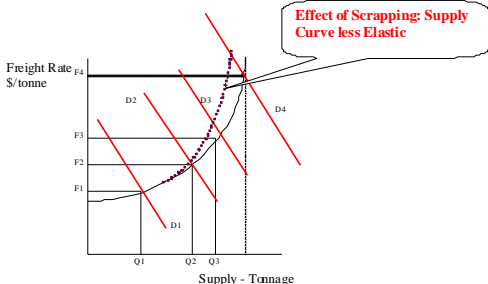
Port Congestion



Step rise in the freight rates is shown in this model (for the same demand) due to port congestion. Recall and note from above graph, the levels to which charter hire rose to in 2004 and early 2005 due to this factor.

Demand & Supply Model

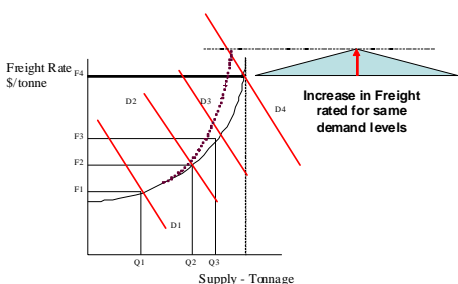
Scrapping



The effect of scrapping is similar to above but on a reduced level and spread over a period (assuming not all vessels scrapped in the year would be taken to the scrap yards in a very short period, say in a month), on a like to like basis. However, if the new supply delivery is tight (not much tonnage pouring into the market) from the shipyards, effect of scrapping is comparatively more lasting than the virtual shortage caused by port congestion. In recent times, the scrapping levels are very low, thus this factor is of academic value only at this point of time.

Demand & Supply Model

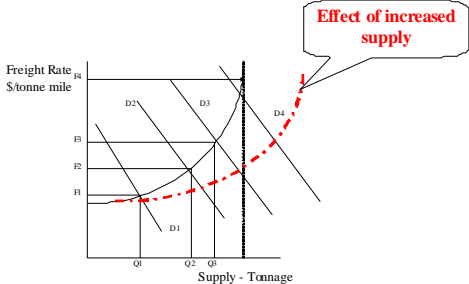
Scrapping



The impact of scrapping is shown as increase in the freight rates for the same demand (provided the net effect of new deliveries and scrapping is still negative in terms of fleet growth). If more ships are being delivered as compared to tonnage scrapped, logically the effect will be reversed for the same demand.

Demand & Supply Model

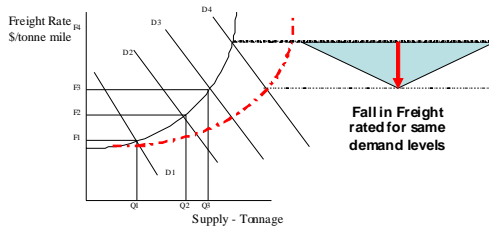
Increased Supply



Effect of increase in tonnage entering the market is to increase the elasticity of supply. This means that more ships are available for a given demand and come into service to cater for this demand. The supply curve shifts to the right.

Demand & Supply Model

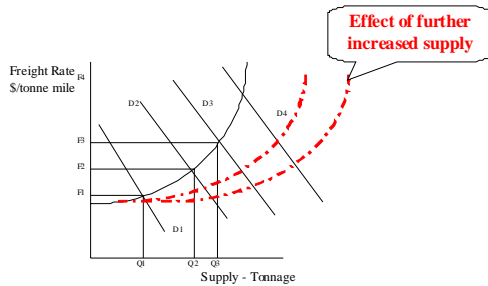
Increased Supply



The effect is thus a fall in the freight rates for the same demand. Unless the demand level increases (either in absolute terms or by virtue of change in trading patterns i.e. increase in tonne-miles), the induction of new ships will depress the market.

Demand & Supply Model

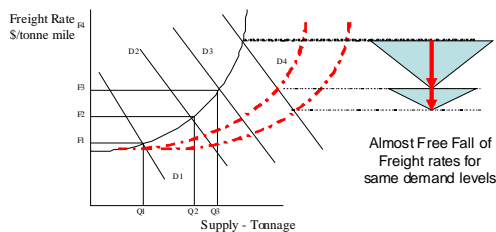
Further Increased Supply



This is an extension of above, where a rush for ordering new ships in a good market results in heavy deliveries in near future. This then causes a sort of crash. Recall early 80's, late 90's and 2001!

Demand & Supply Model

Further Increased Supply



When the freight market is good, a perception (an illusion in most cases) that it is going to last forever injects optimism in the minds of bankers and investors (recently the IPOs with tons of retail investor funds). The result is heavy ordering and an inevitable crash, unless of course demand keeps up with this increased supply, both fundamentally or by way of non-fundamental factors. Following table by Dr. Martin Stopford in "Shipping Economics" helps explain this well.

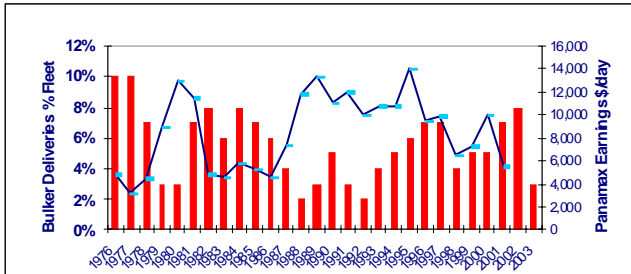
Shipping fundamental trends

(Dr. Martin Stopford)

Period	Demand Tendency	Supply Tendency	Market Tone
1869-1914	Fast	Expanding	Competitive
1920-1930	Fast	Over-capacity	Weak
1930-1939	Falling	Over-capacity	Depressed
1945-1956	Very Fast	Shortage	Prosperous
1956-1973	Very Fast	Expanding	Competitive
1973-1989	Falling	Over-capacity	Depressed
1988-2000	Slow	Expanding	Competitive

We can see that it is the interaction of the supply and demand that produces the resultant called the "market tone" or the trend of the "freight rates". Even during the period when the demand tendency was fast, the market tone was either competitive or weak because of expanding or over capacity in the supply. What does the future hold with a large number of Capes, Panamaxes, Superhandymaxes and Handys on order? Difficult one to answer because it will depend upon what will be the demand tone in the short to medium term.

Effect of Deliveries (as %age of total fleet) on Freight Rates



This graph is adapted from Clarkson Intelligence Weekly 509 dated 1st March 2002. An excellent piece of analysis which to my mind can be termed as the "writing on the wall" seen as early as March 2002. As foreseen then, the market experienced a boom most of the times when the new deliveries fell below 3% of the total fleet. For bulkers, this percentage was 2% for the year 2003. We all know what happened then in 2003 to early 2005, coupled with a surge of demand from China and resulting multiplying impact of port congestion!

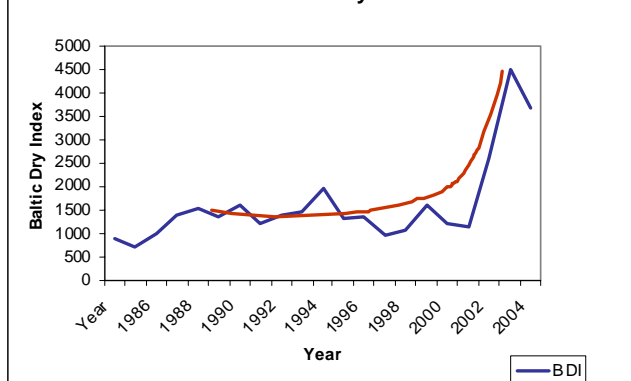
Practical Interaction Supply & Demand



This is a good example of the interaction between Supply and Demand. The graph shows some offset (out of phase) between the change over (intersects) and the actual boom points. Further the future projection shown is only an opinion and not a statement of fact.

Base Graph from SSY, inserts by Author

BDI over the years



Please note how the BDI (an index of dry bulk market) has moved over the years since 1985 and compare this graph with the superimposed curved line. Does it not remind us of the basic model given right on top of this article!

With this article, we complete the "Shipping Economics" part of the "Commercial Aspects of Shipping". In the next month's issue, we will look at the "Market Players" in shipping.

References:

Tutorship Material, as necessary, adapted from the Tutorship Material with kind permission from Director General, ICS, UK for promoting Shipping Education and the Institute of Chartered Shipbrokers.

"Freight Markets - Wishing for a Jeane Dixon and her crystal ball" - Jagmeet Makkar, Intercem Asia (Delhi) presentation on 8th September 2005.

For feedback and/or comments, please contact: shiplearn@yahoo.com