

VALUATION MODELS: A PRACTICAL APPRAISAL

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We are introducing the term 'Maritime Financial Management' "MFM" to define the decision making process for value creation in investment, operation and finance in the field of maritime business. Asset pricing in MFM is considered one of the three essential components for value creation. In the case of real assets and, particularly, in vessel appraisal, asset pricing, assumes a leading role in achieving value creation as opposed to value 'destruction' (based on a zero-sum principal assumption). Shipping assets require the deployment of large lump sums of investments in both nominal and real terms, so setting the 'right' price can have multi-million dollar implications. Further, while asset pricing may be a private agreement between a willing seller and a willing buyer at a point of time, valuation has recently become a concern for banks, regulators, auditors and taxpayers. There is no doubt that these are times when 'right' valuation of assets is imperative; however, there is also no doubt that these are times of limited market activity for the sale of vessels, especially

modern and highly priced ones. The exercise is further complicated by a general dislocation in the freight markets and also the financial markets. Therefore, choosing the appropriate method for the 'right' pricing of a vessel becomes a practical imperative rather than a pure academic or philosophical exercise.

There are three well-known, generally accepted vessel pricing methods:

- The Market Comparable Method, known as 'marked to the market' approach or frequently referred to as 'last done' in shipping. In a simplified way, Karatzas (2009) describes it as: 'What someone paid recently for a similar asset is a representative way of assessing the price as long as assets as fairly marketable and there is a liquid market.'
- The Income Valuation Method, known as 'marked to the model' equates the vessel's value with the present value of the stream of FOpCF (free operating

cash flow) generating process.

- The Replacement Cost Method, known as 'marked to the cost', equates the vessel's value with the estimated required cost to replace the vessel. The last method is usually utilized when methods 1 and 2 cannot be applied, either because there is not enough liquidity in the vessel's market (method 1) and/or there are difficulties in estimating the cash flow generating process (method 2.)

From this brief synopsis, it appears that the three 'conventional' pricing methods do not share a common reference point: the first approach pegs the value to 'the market', the second 'to the model', and the third 'to the cost.' This simple observation raises a serious question from the Maritime Financial Management point of view: if the purpose of investing in the acquisition of a ship is 'value creation', how can one use 'appraisal' methods with different benchmarks in order to identify that value? How can values of the same

shipping asset converge when the guiding principles emanate from three distinctly different starting points? From an 'applied economist's' point of view, the only way to justify this is to accept that the vessel's market is efficient and equates a vessel's value with its price. Definitely, this is topic for debate: if market efficiency exists, then the heterogeneity of pricing methods is eliminated and the outcome of each one of them coincides with the single purpose of value creation; alternatively, we must cope with issues of underpricing and/ or overpricing. We do believe that this is a serious concern and should be addressed.

Another recent method to estimate the price of a vessel is by using a statistical method, namely regression analysis. Simply, this technique utilizes time series data, such as vessel new-building and second-hand historical prices, vessel age and size along with structural characteristics, freight rates, and calculates the expected mean value of the vessel. The mean estimated value of the vessel is known as 'dependent' variable

and the 'explanatory' variables such as, historical asset prices, vessel age and size, freight rates, etc. are known as 'independent variables'. This method, similar to the three approaches mentioned above, comes with its own set of merits, but also limitations.

The regression analysis method works fairly well in estimating the 'price' of a real asset when the second-hand market for that particular asset does not fluctuate widely. The regression analysis approach is particularly suited for assets where the market price of the asset in the second-hand market is always lower than that of the brand-new asset as a matter of decay and depreciation, and where the second-hand market is not at the mercy of variables other than the original cost and salvage value. The market for used commercially available cars is a typical, well-suited example of the regression analysis approach, as almost never is the price of a used car higher than the price of the same car at the dealership. In this case, the mean price estimation using regression analysis provides a good 'proxy' for pricing the asset. This is because the potential outcomes are fairly close to the estimated mean, since the distribution of prices is fairly tight. It is easily understood that the 'precondition' of low volatility in the case of a vessel's market value is not really met. As an illustration, historical data in shipping reveals that new building prices

have been observed to be lower than second hand vessel prices in good freight markets, and significantly so in the years of the recent super-cycle (for instance, in 2007 and 2008, the prices for prompt resale and modern VLCCs were more than 50% higher than new-building contracts; similarly, in today's depressed market, the 'posted' price of a prompt resale or modern VLCC is about 25% below the new-building contract.) Thus, the mean estimated price represents a wider dispersion of potential price outcomes, since the distribution of prices is 'wider' or leptokurtic in statistical jargon. Furthermore, there are some other statistical assumptions that need to be considered fairly extensively, for getting a valid mean estimated vessel's 'price.' Knowing though, that the mean value is the figure most commonly used in time series analysis, it is utilized as the reference 'price' of a range of potential pricing outcomes. Therefore, the regression analysis approach, with its solid statistical foundation, can be more accurately called as 'The Range Pricing Method'

Therefore, the trinity of valuation methodology referred to at the beginning of this article can be amended as follows:

- The Market Comparable Method, known as 'mark to the market' and or 'last done'.
- The Income Valuation

Method, known as 'mark to the model'

- The Replacement Cost Method, known as 'mark to the cost'
- The Range Pricing Method, based on the mean estimated price.

Advantages as well as drawbacks are associated with each one of these widely accepted valuation methods in the valuation of shipping assets. Indifferently, which one of the four is selected versus the others, or, better, if the mean price of the four of them is selected, it needs to be stressed that the decision concerning the outflow required in order to acquire the vessel, or 'the actual transaction price', needs to be evaluated, applying MFM (Maritime Financial Management) principles. 'Value creation', as the cardinal principle of MFM, dictates that the price for acquiring the vessel is actually only one side of the 'coin'; the other side is the expected stream of generated inflows. Therefore, the prevailing vessel's price in the market, indifferent of which one of the four methods is selected, is one of the fundamental inputs for the evaluation process mentioned in the beginning of this article. Fundamental inputs of a) the expected stream of generated FOpCFs and b) the cost of capital provided by 'the capital providers' are equally important for 'value creation.' Value is created if the expected stream of generated FOpCFs 'in present terms' is greater than

the transaction price. Value is destroyed if the reverse occurs. Thus, the prevailing price in the market, indifferent of the pricing method used, has limited signals if it is considered in isolation, but multiple signals if it is considered as part of the value creation or 'destruction' process. Therefore the decision about a vessel's 'right' price should be undertaken in the context of a value creation framework, which constitutes the core of the Maritime Financial Management discipline.



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