



The time dimension and value of flexibility in resource allocation: The case of the maritime industry



Kostas Axaroglou^a, Ilias Visvikis^{b,c,*}, Stefanos Zarkos^c

^a Democritus University of Thrace, Dept. of International Economic Relations and Development, Greece

^b World Maritime University, Sweden

^c ALBA Graduate Business School at the American College of Greece, Greece

ARTICLE INFO

Keywords:

Maritime industry
Resource allocation
Strategic flexibility
Commitment
Real options
Market conditions

ABSTRACT

The study empirically analyses the time-varying properties of the spread between voyage and time-charter rates and presents evidence that these properties are directly related to the business cycle (market demand) of the maritime industry, to the expectations for the future market demand and to market volatility. Using a real options methodology, it is demonstrated that the time-varying properties of the spread is the outcome of the strategic decision to time-commit company resources in the industry. During a market upturn (downturn) managers choose to commit company resources for a short period (long period), and thus, maintain flexibility (commitment) in better exploiting the upcoming business opportunities (protecting company resources from lack of business opportunities). Overall, the fluctuations of the time-varying spread between voyage and time-charter rates offer managerial insights in resource allocation that can better shape up chartering, budgeting and financial management decisions on the time commitment of resources in the maritime industry.

© 2012 Elsevier Ltd. All rights reserved.

1. Introduction

“We believe that employing short-term time charters generally increases our flexibility in responding to market developments and assists us in enhancing the amount of charter hire that we are paid, particularly during periods of increasing charter hire rates, while long-term time charters provide us the benefit of relatively stable cash flows” (Diana Shipping Inc., Annual Report 2005)

The current study empirically analyses the time-varying properties of the spread between voyage and time-charter rates, concluding that these properties are directly related to the industry business cycle and other industry characteristics. Moreover, it is shown that the fluctuation of this spread is the outcome of resource allocation decision-making in the maritime industry; that is, managers decide the length of time commitment of company resources (vessels) in a given project (charter contract), and thus, choose between flexibility and commitment in managing key company resources. Methodologically, the study, using a real options framework to formulate testable hypotheses and to identify relevant empirical variables, analyses theoretically how managers in the maritime industry deploy company resources (vessels) by chartering them for various time spans. This decision-making results in variations in the volume of voyage and time-charter fixtures in the market (volume effect), which consequently influences the spread between voyage and time-charter rates (spread dynamics). Finally, using industry data, the study empirically tests relevant hypotheses about the time-varying properties of the spread that stem from the decision-making in the industry.

* Corresponding author at: World Maritime University, Citadellsvägen 29, PO Box 500, S-201 24 Malmö, Sweden. Tel.: +46 (0) 40 35 63 72; fax: +46 (0) 40 12 84 42.

E-mail addresses: axarlog@otenet.gr (K. Axaroglou), ivisvikis@wmu.se (I. Visvikis), szarkos@alba.edu.gr (S. Zarkos).

¹ ALBA Graduate Business School at the American College of Greece (on leave).

1.1. Flexibility and commitment in resource management

Managers are frequently asked to make timing decisions on resource allocation that are especially important in industries that work on a project-basis, such as the construction or the maritime industry, among others. In such industries, and during the execution of a given project, the company incurs an opportunity cost for committing its resources (vessels) with a certain project (charter contract), since it gives up more profitable opportunities that potentially come up (*on-going* opportunity cost).² However, it is not certain whether the company can still find profitable business opportunities after the completion of a project (charter), and actually it may end up having its resources idle (*afterwards* opportunity cost).³ Thus, the *afterwards* opportunity cost reflects the cost of company's flexibility from not committing its resources into a given project.

In essence, these two types of opportunity costs measure the value of the company's flexibility and commitment that stem from the decision to tie up its resources to a project of certain time duration.⁴ Naturally, as the *on-going* opportunity cost increases, flexibility becomes more valuable, and thus, the company has a strong incentive to commit its resources in projects of shorter duration. Similarly, as the *afterwards* opportunity cost increases, the value of commitment is also increasing, leading the company to commit its resources in longer duration projects. The magnitude of these two types of opportunity costs is directly related to the market conditions that the company faces during and after the completion of a project. On the one hand, in a market upturn, when increasingly more profitable projects arise, the *on-going* opportunity cost is quite high (higher value of flexibility), while the *afterwards* opportunity cost is rather low (lower value of commitment). On the other hand, during a market downturn, increasingly fewer profitable projects come up and the *on-going* opportunity cost is low, while the *afterwards* opportunity cost is quite high. Flexibility (commitment) is then less (more) valuable, increasing the value of lengthy time-charter contracts. Consequently, the managerial decision of committing company resources in a project of certain time duration is a strategic one and not a simple choice found in the domain of short-term decision-making.

In the relevant literature there is a long discussion about the trade-offs between flexibility and commitment in managing company resources. Ghemawat and del Sol (1998) claim that there is no any single answer in this debate and managers should find ways to balance the trade-offs between flexibility and commitment in their decision-making. They further argue that the company (or usage) specificity of resources and capabilities play a pivotal role in this trade-off. As such, company (or usage) specific resources reflect increasing company commitment to these resources. Raynor and Leroux (2004) analyse these trade-offs when companies choose R&D projects, while Krishnan and Bhattaraya (2002) analyse company's commitment in a new technology during a new product development process. Moreover, Del-Almeida et al. (2008) claim that longer resource accumulation lags make flexibility less valuable and thus lead companies to earlier commitment. Finally, Kouvelis et al. (2001), Axaroglou and Kouvelis (2007) and Li and Li (2010) analyse the trade-offs of flexibility and commitment when a multinational company penetrates a foreign market. They find that flexibility is more valuable in the presence of an uncertain economic environment and when market demand is stagnant.

1.2. Resource management and freight rates

The dry-bulk market resembles a perfectly competitive one since there are many buyers (charterers) and sellers (shipowners) that negotiate a homogeneous freight service, they possess pretty much the same level of information, and there is relatively easy market entry. Shipowners and charterers come together in fixing freight contracts and equilibrium freight rates are determined through supply and demand in each point of time. In a weak market environment, an increase in demand only marginally increases freight rates, since the least efficient vessels are laid up and the active fleet is slow steaming. In contrast, in a strong market environment, an increase in demand boosts freight rates, as almost all vessels are active and in full speed. Thus, freight rates are quite volatile, especially for short duration freight contracts. In fact, Kavussanos (1996) argues that the shorter the duration of the freight contract, the higher the volatility of freight rates, since the supply curve of time-charter contracts of longer (shorter) duration is rather flat (steep) and thus, time-charter freight rates are less (more) responsive to changes in demand.

Furthermore, voyage and time-charter contracts are related through an equilibrium term-structure relationship. In particular, assume that a shipowner has the choice of hiring his vessel under a 6-month time-charter contract or under six consecutive monthly voyage contracts. The sum of the discounted earnings on the 6-months time-charter should be equal to the expected discounted earnings of six consecutive monthly voyages, plus a time-varying risk-premium. Kavussanos and Alizadeh (2002) argue that shipowners are ready to offer a discount in time-charter rates over voyage rates, because when they employ a vessel under a voyage contract, they face the risk of: (i) not finding employment for the vessel when the contract

² Managers in the maritime industry recognise the *on-going* opportunity cost claiming that: "our vessels that are committed to long-term charters may not be available for employment on short-term charters during periods of increasing short-term charter hire rates when these charters may be more profitable than long-term charters" (Diana Shipping Inc., Annual Report 2010).

³ Managers in the maritime industry seem to evaluate the *afterwards* opportunity cost by claiming that: "as a result of the volatility in the dry bulk carrier charter market, we may not be able to employ our vessels upon the termination of their existing charters at their current charter hire rates" (Diana Shipping Inc., Annual Report 2010).

⁴ Notice that the resource allocation decision that is examined in the current study follows the "now or later" decision, when managers are asked to decide whether they should commit company resources immediately or postpone the decision for some time. However, the analysis of the "now or later" decision, although very important, is beyond the scope of the present study as it has been researched elsewhere (see for instance, Kouvelis et al., 2001). Instead, the study focuses on the time decision on resource allocation, and thus, it takes the "now or later" decision as given.

Download English Version:

<https://daneshyari.com/en/article/1023480>

Download Persian Version:

<https://daneshyari.com/article/1023480>

[Daneshyari.com](https://daneshyari.com)