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Performance obligations for "*revenue from contracts with customers*" principle in the shipping industry

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Okan Duru
Nanyang Technological University, Nanyang, Singapore

Joan P. Mileski
Department of Maritime Administration, Texas A&M University at Galveston, Galveston, Texas, USA, and

Ergun Gunes
Essex Shipping Services Ltd, Essex, UK and Institute of Chartered Shipbrokers, London, UK

Abstract

Purpose – The aim of this paper is to investigate the gap between cost-based and time-based revenue recognition schemes in the accounting of ship-owning corporations, and to propose cost-based revenue recognition (as in general accounting practice) in connection with the performance obligations.

Design/methodology/approach – For a comparative analysis of time-based (traditional approach) and cost-based schemes, a sample of dry bulk ships is selected and voyage estimations are performed by certified professional shipbrokers (Fellow of the Institute of Chartered Shipbrokers) (data collection and voyage estimation by practitioner). Performance obligations are also defined by certified shipbrokers (i.e. survey and expert opinion) and certified public accountant based on common shipping business practice and accounting practice in general.

Findings – Empirical results indicate the significant gap between two alternative schemes. Cost-based revenue recognition accelerates the revenue recognition (benefit of shipowner), and it enables comparability among other industries since cost-based allocation is the common practice in accounting (matching principle, Generally Accepted Accounting Principles).

Research limitations/implications – It is obviously impossible to observe all kinds of freight market transactions for all different kinds of vessel particulars. The sample size does not undervalue the current study since the central idea of this paper is not the verification of the cost-based recognition in all possible transactions.

Practical implications – The proposed approach debiases the existing recognition practice as well as improving the speed of revenue recognition. In the existing practice, time-based recognition is still based on voyage estimations (time estimation). Voyage estimations conventionally answer two questions: "What is the cost of the voyage?" and "What is the duration of the voyage?" Therefore, the proposed approach does not require any additional work done. Common practice also clarifies the cost-based schedule for revenue recognition.

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Originality/value – This paper addresses the unconventional accounting practice and its incomparability problem for the first time. To the best of the authors' knowledge, this paper is also the first study on accounting economics of the shipping business. This paper proposes a practical solution to the debate raised by Financial Accounting Standards Board 2014-09 regulation on accounting standards by utilizing a staging approach and cost-based revenue allocation.

Keywords Accounting economics, Accounting standards, Performance obligations, Revenue recognition

Paper type Conceptual paper

1. Introduction

The basic objective of financial reporting is to provide financial information about the reporting entity that is useful to present and potential equity investors, lenders and other creditors in making decisions (Kieso *et al.*, 2012). Information must be relevant and faithfully represent what really happened or existed. Furthermore, there are basic concepts on how to recognize, measure and report financial statement elements and events.

The governing bodies for the accounting practices, known as generally accepted accounting principles (GAAP) or international financial reporting standards (IFRS), include the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB). The accounting practices for shipping firms (particularly vessel owning and operating firms) are unique to the character of the maritime business. Although the FASB and the IASB promulgate the way a transaction should be recorded, managers have some discretion in applying the standards.

The FASB and the IASB have initiated a joint project to clarify the principles for recognizing revenue and to develop a common revenue standard for US GAAP and IFRS. The FASB amends the FASB Accounting Standards Codification and creates Topic 606, Revenue from Contracts with Customers while the IASB issues IFRS 15 (also Revenue from Contracts with Customers). Both regulate the revenue recognition mechanism and provide principles for reporting relevant information about the nature, amount, timing and uncertainty of revenue and cash flows arising from an entity's contracts with customers (e.g. charter parties). The standard replaces International Accounting Standard (IAS) 18 "Revenue" and IAS 11 "Construction contracts", and it is effective since January 1, 2017 (earlier application is voluntary) (IFRS, 2014).

We ask the following research questions: What does this new standard mean for the maritime industry? How does this standard impact financial and operational management of shipping firms?

A critical component of the new requirement is the establishment of performance obligations to determine when revenue is earned. Shipping companies and their customers, through their contracts, will need to define "objective" milestones to clarify the degree of completion of service. These milestones, also known as performance obligations, will determine the timing for recognizing revenues through the period of service. Difficulty in applying this new standard for financial reporting arises when a shipping contract covers many services, each of which may not be separately delineated as to revenue earned under the contract. Further, the portion of the revenue related to each service must be recognized only when the service is complete.

This paper addresses the challenges maritime firms face in adopting these new standards. Further it adds to the current literature in that there is a paucity of accounting standards and revenue recognition papers for shipping companies. The paper is organized

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as follows: Section 2 reviews the current and proposed accounting practices. Section 3 discusses current maritime practices in financial reporting. Section 4 addresses the methods and strategies proposed for shipping firm adoption. Section 5 reviews implication for managers and the conclusion.

2. Current and proposed accounting practices

There is a paucity of academic literature addressing revenue recognition from an accounting standards perspective in the shipping industry. Whereas economics is frequently studied, the accounting rules for shipping transactions are not well addressed in the maritime literature. This may be because the maritime industry to date has been allowed to account for revenue in a way that is unique from other industries. This uniqueness is the focus on time for revenue recognition rather than on the performance of a task or transaction. Why this focus dominates is due to the length of time of a ship's voyage and the lack of understanding of the tasks that occur aboard ship with the handling of cargo.

Further, the shipping industry is global with differing accounting bodies controlling the accounting rules. As the accounting bodies converge on common methodologies globally, the shipping industry is now uniquely impacted by any accounting changes. There is a fair amount of literature on the new revenue recognition rules in the accounting academic literature. For example, Wall (2014) notes that the new rules will cause banks to recognize loan losses sooner. Yeaton (2015) shows how research and development partnerships will be impacted by this accounting standard. Bloom and Kamm (2014) and Holzmann and Munter (2014) both project the impact on publicly and non-publicly traded firms. Rick *et al.* (2016) address how the new rules may lead to a more aggressive revenue recognition for software companies. Finally, Dyson (2015) applies the rules to various industry-based scenarios.

This current unique accounting makes the industry not comparable to other industries. As the amount of investment dollars has dwindled, competition for investment has intensified. However, a few studies do address accounting for revenue in shipping. Ting and Tzeng (2004) address revenue recognition from a cash flow revenue management perspective. Barnes and Oloruntoba (2005) review revenue recognition from the perspective of assurance of security in maritime supply chains. Others focus on port and distribution center revenue recognition methodology (Bichou and Gray, 2004; Lu, 2004). Still others address the flux in shipping revenue as a result of the institutional and economic environments (Heaver, 1973). This paper will focus on the issues related to implementing the new revenue recognition requirement from the FASB and IASB as they pertain to a shipping company.

There are three conceptual frameworks under which the FASB and IASB standards under which accounting rules are set and financial reporting controversies resolved. The first is the basic objective of financial reporting which is to provide useful financial information about a firm to current and potential investors, lenders and other creditors in making decision about providing resources to the entity (Kieso *et al.*, 2012). There are fundamental concepts which include two qualitative fundamentals or characteristics that distinguish better information from less useful. One is relevance meaning accounting information must be capable of making a difference in a decision such as reporting details on transactions over a certain size or importance. The other is faithful representation meaning that the numbers and descriptions match what really happened or existed (Kieso *et al.*, 2012).

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For purposes of this paper, it is the third conceptual framework of the recognition and measurement concepts that we will focus. There are four basic assumptions under this framework, economic entity, going concern, monetary unit and periodicity. Economic entity refers to the assumption that economic activity can be identified with a particular unit of accountability. Going concern assumption relies on the perspective that a firm will have a long and continuing life. The monetary unit assumption means that money is the common denominator of economic activity and provides an appropriate basis for accounting measurement. Finally, the periodicity assumption implies that a company can divide its economic activities into artificial time periods (Kieso *et al.*, 2012). This periodicity assumption determines in timing of revenue and expenses recognition important to the change in standards explored in this research.

There are also four basic principles of accounting under the third conceptual framework. They are the measurement principle, the revenue recognition principle, the expense principle and the full disclosure principle. The measurement principle means that transactions are most commonly measured either by historical cost or fair market value. The full disclosure rule strives for sufficient detail to disclose matters that make a difference to users in an understandable and cost-effective way. The expense recognition principle states that expenses follow the recognition of revenue (Kieso *et al.*, 2012). Finally, the revenue recognition principle is the overarching principle we explore for this research.

Under the general principles of revenue recognition under the FASB Statement of Financial Accounting Concepts 5, Recognition and Measurement in Financial Statements of Business Enterprises and the US Security Exchange Commission Staff Accounting Bulletin 104, Revenue Recognition, revenue must be "earned" and either "realized" or be "realizable" before it can be recognized in the financial statements. Revenue is considered "earned" if the entity has substantially accomplished what it must do to be entitled to the contractual benefits. Now, FASB has adopted an amendment to the FASB Accounting Standard Codification on the recognition of revenue from contracts with customers (Topic 606) effective May 2014. The purpose of the amendment is to align the FASB and the IASB (IFRS 15) and to clarify the principles of recognizing revenue. Further, this amendment provides comparability of revenue recognition across entities, industries, jurisdictions and capital markets (Financial Accounting Standards Board (FASB), 2014-09).

There are, however, two other elements that companies must consider that constrain reporting on financial statements. There are the cost–benefit relationship and industry practices. Cost–benefit relationship refers to the cost of providing information verses the benefits derived from the information. Industry practices refer to the need for industries to depart from basic theory due to their peculiar nature (Kieso *et al.*, 2012). These two constraints will become important in our strategies for shipping company compliance with the new [Financial Accounting Standards Board (FASB), 2014-09] in Section 4.

The aim of the new [Financial Accounting Standards Board (FASB), 2014-09] is to make entities recognize revenue more consistently regardless of the industry in which they operate. Further, it purports to improve comparability of revenue recognition practices across entities, industries, jurisdictions and capital markets. It hopes to also remove inconsistencies and weaknesses in revenue requirements and reduce the number standards on revenue recognition.

The change impacts entities that either enter into contracts with customers to transfer goods or services or enters into contracts for the transfer of nonfinancial assets unless those contracts are within the scope of other standards [Financial Accounting Standards Board (FASB), 2014-09]. For the purpose of the maritime/shipping industries, this new FASB/IASB

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will impact entities which enter into multi-element (services) arrangements with customers to provide bundled solutions to transportation and logistics solutions under one service contract. Accounting for these multi-element arrangements may be significantly different under this new standard. Revenue from each element of the sale (known as performance obligations) will now be accounted for separately based on the relative fair market value (KPMG, 2010). This method is drawn from the customer consideration model of revenue recognition (Schipper *et al.*, 2008). The new revenue recognition standard eliminates the transaction- and industry-specific revenue recognition guidance under current GAAP/IFRS and replaces it with a principle-based approach for determining revenue recognition. So, the application of the new revenue recognition rule may now deviate from previous recognition departures for purposes of industry standards.

3. Current Maritime practices in financial reporting

Challenges for the shipping firms to comply with this new revenue recognition rules primarily relate to the timing of revenue recognition. Companies that currently use the percentage-of-completion approach for the recognition of revenue or that enter into contracts that contain multiple elements will be significantly impacted (KPMG, 2010). The percentage-of-completion method will no longer exist as a separate and distinct revenue recognition model.

Currently, shipping companies prefer the percentage-of-completion method of revenue recognition. However, shipping companies can continue to use the percentage of completion method only if it matches the timing of the completed service. So, a firm may recognize revenue consistent with the percentage of completion method when those activities concurrently satisfy performance obligations through the transfer of the control of assets (goods or services) to the customer such as in the case where the customer controls the product or where this is a continuous transfer of assets to the customer (KPMG, 2010). This means that the percentage of completion method is not appropriate for the recognition of the amount and timing of revenue if the control of an asset (service) is transferred at a time that is different from the transfer of risk and rewards or the stage of completion of the service. For example, currently time charter parties establish a proportion of revenue recognized for each day (daily T/C freight rate is earned) while voyage charter parties usually define an instant payment deadline for freight to be paid to ship owner.

So, recognition of revenue occurs upon satisfaction of performance obligations within the contract. This generally occurs when the control of an asset (a good or service) transfers to the customer. The criteria used to determine whether a performance obligation is satisfied are somewhat complex. However, the key concepts include whether the assets have an alternative use to the company and whether the company has a right to payment (IFRS, 2014).

What this means for shipping companies is they will need to identify all performance obligations, including those embodied in the terms and conditions of the arrangement including any constructive or statutory obligations. Further, if the shipping company enters into a contract with multiple elements (e.g. where goods and services are sold together but delivered at different times), then revenue must be assigned to each element and recognized when the performance is completed. The price under the contract must be allocated to each good and service under the contract based on a standalone selling price of each associated good or service. This means, however, that each good or service must be "distinct" (IFRS, 2014). Further, these prices may vary but must be able to be measured reliably (KPMG, 2010).

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The challenge to adoption of this new accounting standard is due to the particular processes for loading and unloading of a ship. Ships need to arrive at a particular time at the loading port for loading operations, and freight revenue is rarely paid before cargo is loaded securely. So, when is the revenue now recognized? Under voyage charter arrangements, is control continuously passed to customers over the course of the voyage or only at the completion of the contract? Further, there are "breach of charter party" codicils in shipping contracts that state that even when the freight rate is paid in advance, a ship owner is liable for any damages caused by failure to complete a safe cargo shipment service. Impairment losses can also complicate revenue recognition (IFRS, 2014).

This new promulgation can also impact recognition of revenue for obligations under the contract that are not usually sold separately such as bundled services which are provided at different times throughout the contract. For example, the dry bulk business spot revenues are currently recognized proportionally over time which may include several months of voyage (usually before steaming to a cargo discharge port). An industry acronym connected with this principle of revenue recognition is FDEDANRSAOCLONL – Freight Deemed Earned, Discount less And Non-Returnable Ship And Or Cargo Lost or Not Lost. The current practice of the industry recognizes revenue either at the completion of voyage or daily and proportionally distributed between either two discharge ports (Discharge-to-Discharge, D-D) or two loading ports (Load-to-Load, L-L). Since details and estimations for the next voyage are usually available at the discharge port of previous contract service, D-D approach is frequently preferred. D-D (e.g. Eagle Bulk Shipping Inc., National Association of Securities Dealers: EGLE) or recognizing rateably over the estimated transit time of each voyage (e.g. Navios Maritime Partners L.P., New York Stock Exchange [NYSE]: NMM) will now not be appropriate unless control of a good or service can be continuously passed to the customer. In other words, the timing of revenue recognition must comply with completed performance obligations under the contract.

3.1 Methodologies of current revenue recognition

Although this paper explores conceptually the issues for shipping companies under the new accounting promulgation, this paper collects data on the current methodologies of revenue recognition by global shipping companies. We review the annual reports of these shipping companies for the methodology used to recognize revenue using the latest (usually 2015) annual financial statements. We select these companies because they represent large publicly traded companies or large companies with publicly available financial statements. The authors review the notes in the annual reports for revenue recognition and report the findings in Table I.

Table I shows the various revenue recognition methods declared in the annual reports of the various shipping companies. A legend is provided below the table. As indicated on the table, there are various methods of revenue recognition across companies and market segments. The selection of a method must be consistent with generally accepted accounting standards but is at the discretion of management. Under general accounting rules, once a firm selects a revenue recognition method, it may not change without a significant event occurring. Otherwise, financial statements would be inconsistent across time periods confusing the results for investors. The percentage of completion approach at daily basis is the most common method used in the industry. The Japanese shipping groups (Nippon Yusen Kaisha, MOL, Kawasaki Line) and Bahri Chemical Tankers (The National Shipping Company of Saudi Arabia [Bahri]) prefer the completion of voyage method (an instant recognition) while cruising firms particularly utilize the per-voyage (by completing 10 days

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Company	Segment	Stock exchange	Revenue recognition method declared in annual reports
Maersk	*Container*	CSE	D/P
Carnival	*Cruise*	NYSE	P.V.
MISC	*Diversified*	KLSE	D/P
Royal Caribbean	*Cruise*	NYSE	P.V.
Mitsui O.S.K.	*Diversified*	TSE	C/V
NYK	*Diversified*	TSE	C/V
K-Line	*Diversified*	TSE	C/V
Tidewater	*Offshore Vessels*	NYSE	D/P
NSCSA	*Chemical Tanker*	SSEX	C/V
Teekay	*Tanker*	NYSE	D/P
Hyundai Merchant Marine	*Container*	KSE	D/P
Frontline	*Tanker*	OSE	D/P
OOCL-OOIL	*Container*	HKEX	D/P
Seacor Holdings	*Offshore Vessels*	NYSE	D/P
Alexander & Baldwin	*Container*	NASDAQ	D/P
NOL	*Container*	SGX	D/P
Hanjin Shipping	*Container*	KSE	Not declared
Cosco Singapore	*Dry Bulk*	SGX	D/P
OSG	*Tanker*	NYSE	D/P
Evergreen	*Container*	TAIX	D/P
Bergesen World Wide Gas	*Diversified*	OSE	D/P
Stolt-Nielsen	*Chemical Tanker*	OSE	D/P to "Budgeted voyage legs
ACL	*Barge*	NASDAQ	D/P to distance sailed
Torm	*Product Tanker*	CSE	D/P
Qatar Shipping	*Tanker*	QSE	D/P
Euronav	*Tanker*	EB	D/P D-D
Yang Ming	*Container*	TAIX	D/P
OMI (*acquired by Teekay and TORM*)	*Tanker*	NYSE	D/P D-D
Wan Hai	*Container*	TAIX	D/P
Wilh. Wilhelmsen ASA	*Car Carrier*	OSE	D/P
China Cosco Holdings	*Container*	HKEX	D/P
Norden	*Dry Bulk*	CSE	D/P D-D
Great Eastern	*Tanker*	NSE	D/P
CMB	*Dry Bulk*	EB	D/P
Odfjell	*Chemical Tanker*	OSE	D/P
Iino Kaiun	*Tanker*	TSE	D/P

Source: Compiled from annual reports and many other sources by authors. *Abbreviations for Stock Exchanges:* CSE: Copenhagen Stock Exchange; EB: Brussels Stock Exchange (EURONEXT); HKEX: Hong Kong Stock Exchange; KLSE: Kuala Lumpur Stock Exchange; KSE: Korea Stock Exchange, Seoul; NASDAQ: National Association of Securities Dealers; Automated Quotations, New York; NSE: National Stock Exchange of India; NYSE: New York Stock Exchange; OSE: Oslo Stock Exchange; QSE: Qatar Stock Exchange; SGX: Singapore Stock Exchange; SSEX: Saudi Arabia Stock Exchange, Riyadh; TAIX: Taipei Stock Exchange; TSE: Tokyo Stock Exchange. *Some abbreviations used in the table:* MISC: Malaysia International Shipping Corporation (Berhad); Mitsui O.S.K.: Mitsui Osaka Shosen Kaisha (also MOL); NYK: Nippon Yusen Kaisha; K-Line: Kawasaki Line; NSCSA: The National Shipping Company of Saudi Arabia (Bahri); OOCL-OOIL: Orient Overseas Container Line and Orient Overseas International Limited; NOL: Neptune Orient Lines Ltd; OSG: Overseas Shipholding Group; ACL: American Commercial Barge Line; OMI: Ogden Marine Inc.; CMB: Compagnie Maritime Belge (also Bocimar & Delphis); D/P: Daily and/or Proportionally, Percentage of Completion; D-D: Discharge-to-Discharge schedule for revenue recognition; C/V: Completion of Voyage; P.V.: Per Voyage (~10 days)

Table I. A Sample of publicly traded shipping companies and their revenue (charter) recognition methods

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at each voyage) method in a similar way of completion of voyage. Percentage of completion method is always applied based on time spent for the shipping service (a few exceptions with distance-based staging). The choice of methodology is determined by management.

Some companies particularly emphasize that percentage of completion approach is performed for the period between two discharging ports (discharging previous and subsequent cargo), which is called D-D distribution of revenues. Utilizing D-D approach instead of L-L has a number of advantages such as availability of details on the next charter.

For some shipping services, making an estimation of a voyage is a complicated problem. For example, chemical tankers usually carry parcel cargoes which are carried for several different terminals and owned by several shippers. In addition to that, these tankers can charter a single tank space even before discharging all cargoes completely. Therefore, Stolt-Nielsen (Oslo Stock Exchange: SNI) prefers "budgeted voyage legs" approach which is based on estimations of fixtures for each parcel cargo (each freight revenue payment is proportionally distributed for its own service period).

3.2 Performance obligations in the shipping business practice

According to the new revenue recognition approach, charterers and shipowners are required to define certain performance obligations so they may assign particular amounts of freight revenue to each of these obligations. Freight revenue is recognized when services are delivered and revenues realized. In the current practice, this means that the lump-sum amount of freight revenue is usually distributed over the duration of voyage (daily basis) based on the voyage estimations prior to the intended voyage charter. However, it is obvious that if a ship sailed half of its entire route between a loading port and discharging port (ship sails to discharge its cargo), it will not be paid in a half of agreed freight revenue unless the shipowner terminates the contract.

There are a number of common industry practices such as Before Break Bulk (BBB), i.e. before discharging, arrival to discharge port, or FDEDANRSAOCLONL. In case of conflicts, jurisdictions and insurance companies handle cases based on the breach of charter party, general average and other common legal regulations. Currently, freight revenue is paid with a single payment at the time of departing the loading port (before steaming) or arriving the discharge port (before delivering cargo), and that the single payment practice causes oscillations of cash flow recognition.

Distribution of freight revenue (or recognition of revenue) through the shipping service is needed for establishing a proper financial reporting practice. That is also needed to ensure comparability across different industries. In current shipping practice, freight revenue may be deemed earned before a complete delivery. Freight revenue is recorded as deferred revenue (as liability) when paid. The liability is then reversed to recognize revenue gradually in exchange of shipping service.

Key question behind the staging of shipping services is the definition of performance obligations (milestones) for relevant timing of revenue recognition. In the ship broking and operation practice, there are four major services delivered through a voyage charter:

(1) Ballast voyage before loading (arriving a loading port);
(2) Loading a cargo (completion of cargo loading);
(3) Steaming (sea route); and
(4) Cargo discharging (final delivery of cargo).

FDEDANRSAOCLONL refers to advance payment at the second stage (cargo loading), while BBB refers to the third-stage payment (before discharging, arrival to discharge port).

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In this four-stage classification system, ballast voyage and complete delivery of cargo are usually not considered as a point of freight payment. However, the four-stage approach may be utilized as performance obligations to recognize revenues earned from a voyage charter party. With the proposed staging approach, valuation of each stage is required, and fair market value of these stages cannot be estimated directly since there are no independent markets for these stages themselves. In many other industries, cost-based valuation is frequently used, while time spent for each stage may be an alternative (similar to time charter basis). For illustrating the differences between these valuation methods, a number of representative dry bulk voyage contracts are selected from transaction database of Essex.

Shipping Services (Table II) and both cost-based and time-based value of stages (percentage of entire freight revenue) are estimated by given average numbers (Table III).

For representative route and tonnages, the length of each stage (days) and total expenses are estimated based on the industry practices as well as average cost items recorded in the database. Steaming periods are estimated by using average speed of representative tonnage (economic steaming speed) and average time spent at given ports in the past few years (excluding extraordinary cases). Bunker expenses [both Intermediate Fuel Oil (IFO) and Marine Gas Oil (MGO)] are based on the current market prices, while port disbursement accounts are based on average of invoices paid in the past few years for given ports.

According to the market value estimations, there is a significant gap between time-based and cost-based approaches (Table III). Time-based approach (current practice of the industry) emphasizes the period spent for steaming between loading and discharging ports, which is usually the major section of the entire voyage, while cost-based approach (current practice of other industries) highlights port expenses for Handymax and Supramax tonnages. Panamax bulkers usually spend a long time at steaming between ports, and therefore, cost of steaming is still the major portion of the entire cost of shipping service.

The gross averages of cost-based valuation indicate that one-third of lump-sum freight revenue (roughly) must be recognized in the last three stages (one-third for each stage) of

Type	Size (dwt)	Representative route	
		Loading	Discharging
Handysize	29,000	Odessa	Rotterdam
Supramax	58,000	New Orleans	Gijon
Panamax	82,000	Houston	Kandla

Source: Essex Shipping Services Ltd

Table II. Representative routes for valuation of performance obligations

Tonnage	Time basis				Cost basis			
	Ballast (%)	Loading (%)	Steaming (%)	Discharging (%)	Ballast (%)	Loading (%)	Steaming (%)	Discharging (%)
Handysize	4.52	24.16	45.30	26.02	2.32	40.13	23.23	34.32
Supramax	3.24	27.75	41.26	27.75	1.85	45.09	23.52	29.55
Panamax	2.08	11.57	72.63	13.72	1.18	29.27	41.13	28.42
Gross average	3.28	21.16	53.06	22.50	1.78	38.16	29.30	30.76

Sources: Essex Shipping Services Ltd.; authors' calculation based on the data

Table III. Time and cost basis assessments for representative routes

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completing cargo loading, completing the sea voyage and completing cargo unloading. The practical meaning of cost-based approach is the current industry practice (percentage of completion at daily basis) causes delayed recognition of revenues.

Underlying reason behind the D-D basis approach is usually accounted for the availability of voyage details (fixture) before discharging previous cargo. Having details of the next charter enables to estimate the length of entire service and distribute freight revenue through the shipping service at daily basis (similar to time charters). Ship operators are also able to estimate the cost of the service, and it is even conducted before fixture to find a breakeven value for negotiations (e.g. for almost all ports, port dues and invoices are well known before a fixture.) Therefore, cost-based recognition of revenues does not require an additional work, but actually rationalizes earlier recognition of revenues than the time-based approach.

Currently the percentage of completion method is most often used by shipping companies to recognize revenue. Since this methodology is no longer allowed under the new accounting standards, it must now be abandoned. When costs are incurred may be a good substitute and have similar results to the percentage of completion. Further, these data on the various methods currently employed by shipping companies to recognized revenue show that cost is a good proxy, under the new accounting rules, for revenue recognition when each service provided in a voyage has a similar profit margin or revenue/cost ratio. Further, this methodology is an efficient way in line with industry operations to recognize revenue in the appropriate accounting period.

4. Methods and strategies for shipping firm adoption

The stock price of a company is impacted by the results of operations. Since the financial statements report the results of operations, how transactions are reported affect the stock price. Further, this information can have a significant impact on several external decisions such as ratings, credit opportunities or attracting new equity investors. So, a change in the way a transaction is reported can have the effect of changing the stock price and making the reported results not comparable over several reporting periods (Ferraro and Mcpeak, 2000). Consistency across periods prevents stock price volatility and manipulation.

In addition to non-comparability of results from period to period for a given firm caused by a change in accounting for the same type of transaction, comparability is needed across firms in the same industry for similar transactions. Ship valuation is made with reference to the current market price of the ship or long-term asset value (LTAV) derived from discounted cash flow method. So, a loss to the ship's value from any impairment is calculated with reference to this current market across all firms. After the financial crisis of 2008, ship valuation has become a hot topic of ship finance and LTAV became the preferred method of valuation due to the sudden decline in current market prices of ships. If there were differences in accounting between periods for revenues and costs used to derive the discounted cash flows, whether a ship loan was in default would have been further impacted.

Managers have to use their discretion regarding assumptions made in financial reporting. However, consistency between companies and between periods is important. The IFRS does not have a required mandatory restatement retrospectively across periods (IFRS, 2014).

To appropriately adopt the new revenue recognition rules, there are five steps a firm should consider in how it presents revenue. These five steps appear in the academic accounting literature (Wall, 2014; Bloom and Kamm, 2014; Holzmann and Munter, 2014; Dyson, 2015; Gallagher, 2016). We attempt to apply the steps to the shipping industry. The

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first step is to identify the contract with a customer. This means the essential agreement between the firm and the customer that creates enforceable rights and obligations. Further collectability must be reasonably assured to recognize revenue.

The second step is to identify the performance obligations in the contract. The contract may contain more than one distinct good or service and, if so, the related revenue streams must have accounted for separately. Under Financial Accounting Standards Board (FASB) (2014-09), separate performance obligations may be implied through customary business practices or valid expectations. Inconsequential items or administrative activities may be excluded.

For Step 2, a staging approach given in Section 3.2 may be utilized independently to ensure the new regime of FASB and IASB. On the other hand, a more structural revolution, a revision of standard voyage charter parties, is thought to be needed for establishing more consistent solution. If carrier and charterer define performance obligations and make valuations at the time of fixture, accounting for these contracts would be much easier and straightforward. For example, GENCON 94 standard voyage charter party form may be revised to include performance obligations.

In Step 3, the transaction price is determined. Under GAAP, having variable elements, the revenue is recognized only when the related contingency is resolved. Under Financial Accounting Standards Board (FASB) (2014-09) now, all variable consideration that is likely to occur should be included in the transaction price and the inception of the contract. "Likely to occur" does not mean the customer's credit risk is considered. Up-front fees will have to be reviewed under this step.

Step 4 discusses the most contentious part of the new promulgation for shipping companies. The transaction price must be allocated to performance obligations using the relative standalone selling price of good service. If standalone prices are unknown, they must be estimated. A process and documentation on how these prices are estimated must be developed.

Step 5 addresses satisfying performance obligations. The timing of revenue recognition is determined in this step. Revenue is recognized when or as control of the asset or service is transferred to the customer. This differs from previous rules where revenue was recognized when the risks and rewards of ownership have transferred. Timing of revenue may change for shipping companies as it is evaluated separately for each identified performance obligation. There is no guidance under this rule on transfer as a point in time or over a period of time.

However, in addition to these revenue recognition rules, there is a FASB and IFRS standard that is known as the matching principle. Under the matching principle, revenue earned and the expenses incurred to earn the revenue should generally be recognized in the same period. So, the percentage of completion method can be calculated based on expenses incurred through delivering services (e.g. Manitowoc Co., MTW: NYSE). Considering the matching principle, cost-based revenue recognition may be more suitable and fair to the shipping industry as the standard for the timing of revenue recognition. Therefore, costs incurred may be a good proxy for revenue recognition provided that each service has a similar margin (Figure 1).

5. Implication for managers and the conclusion

In conclusion, shipping company managers should be able to identify the various performance obligations under each contract. If the margins earned on each obligation under the contract are similar, the use of costs when incurred as a proxy for the timing of revenue recognition may provide a simpler solution to adoption of this new FASB/

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IASB standard. Costs, it can be argued, are only incurred when performance occurs. Thus, the matching of cost and revenues is the best satisfaction of a performance obligation.

Managers should also consider the requirements of this standard before negotiating contracts (IFRS, 2014). Tax implications not addressed here should be reviewed. Further, they may wish to unbundle contracts. However, this may be considered difficult since shipping customers traditionally have seen the contract as a single package, the services are performed as a continuous sequence and the risk associated with delivering each element are similar (KPMG, 2010).

Further, judgment by management is needed when defining voyage under a contract. Consideration should be given to whether a round trip or leg-to-leg basis is more appropriate. The actual number of days it takes to complete a voyage when a large proportion of ocean freight is delivered late should be used rather than an estimate. Also, the voyage definition should consider contracts that contain several destination ports (KPMG, 2010).

Renegotiations of charter contracts as markets change will provide further challenges. Also swap or sharing arrangement as well as leveraging embedded in the contracts will need to be carefully reviewed. These items will impact revenue recognition such as when the actual service is deliver (not when the swap is sold) or treated as a separate contract.

The methodologies, assumptions and decisions used regarding revenue recognition by shipping companies must be disclosed in the financial statements. This includes methods used to determine contract revenue and the methods used to determine the stage of completion (KPMG, 2010). The five-step approach to contract analysis may help to resolve questions regarding the timing of revenue recognition for the shipping industry.

How revenue is recognized in financial statements impacts a shipping company's ability to obtain financing whether it is through the stock price or from debt instruments. This paper presents a cogent argument for a cost-based revenue recognition approach for shipping companies under the new accounting rules. The argument reiterates that cost is a good proxy for revenue recognition when each service provided in a voyage has a similar profit margin or revenue/cost ratio. Accounting methods are required to fairly present the results of operations of companies and this suggested methodology follows how the industry does business.

Further research is needed when shipping companies begin to show the results of operations using the new revenue recognition rules. Questions will remain on the impact of this accounting rule on contract negotiations, voyage practices and cost as a proxy for revenue recognition.

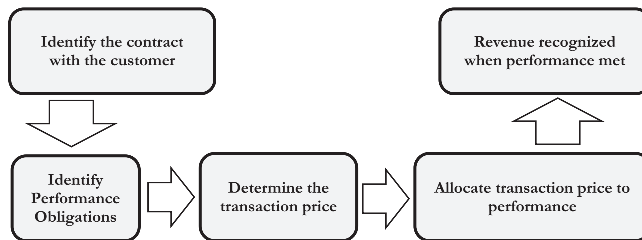

Figure 1.
Revenue recognition process with performance obligations

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References

Barnes, P. and Oloruntoba, R. (2005), "Assurance of security in maritime supply chains: conceptual issues of vulnerability and crisis management", *Journal of International Management*, Vol. 11 No. 4, pp. 519-540.

Bichou, K. and Gray, R. (2004), "A logistics and supply chain management approach to port performance measurement", *Maritime Policy & Management*, Vol. 31 No. 1, pp. 47-67.

Bloom, R. and Kamm, J. (2014), "Revenue recognition: how we got here and where it will take us", *Financial Executive*, Vol. 30 No. 3, pp. 48-53.

Dyson, R.A. (2015), "Case studies in the new revenue recognition guidance", *The CPA Journal*, Vol. 85 No. 3, p. 22.

Ferraro, S. and Mcpeak, C. (2000), "Managing earnings … or cooking the books", *The Graziadio Business Review*, Vol. 3 No. 3.

Financial Accounting Standards Board (FASB) (2014), FASB Accounting Standard Codification on the recognition of revenue from contracts with customers (Topic 606) effective May, 2014. (2014-09).

Gallagher, M. (2016), *Evaluating the Impact of ASU 2014-09*, CPA, NJ, January- February.

Heaver, T.D. (1973), "A theory of shipping conference pricing and policies", *Maritime Policy & Management*, Vol. 1 No. 1, pp. 17-30.

Holzmann, O.J. and Munter, P. (2014), "New revenue recognition guidance", *Journal of Corporate Accounting & Finance*, Vol. 25 No. 6, pp. 73-76.

International Financial Reporting Standards (IFRS) (2014), *IFRS Revenue from Contracts with Customers: Project Summary and Feedback Statement*, IRFS Foundation, London, May.

KPMG (2010), *Impact of IFRS: Shipping - Section 6*, Revenue and Cost.

Kieso, D., Weygandt, J. and Warfield, T. (2012), *Intermediate Accounting*, 14th Ed., John Wiley & Sons, Hoboken, NJ.

Lu, C.S. (2004), "An evaluation of logistics services' requirements of international distribution centers in Taiwan", *Transportation Journal*, pp. 53-66.

Rick, B., Churyk, N.T. and Reinstein, A. (2016), "Recognizing software revenue: ASU 2014-09 likely will lead to more aggressive revenue recognition for software companies", *Strategic Finance*, Vol. 97 No. 8, pp. 39-46.

Schipper, K.A., Schrand, C.M., Shevlin, T. and Wilks, T.J. (2008), "Reconsidering revenue recognition", *Accounting Horizons*, Vol. 23 No. 1, pp. 55-68.

Ting, S.-C. and Tzeng, G.-H. (2004), "An optimal containership slot allocation for liner shipping revenue management", *Maritime Policy and Management*, Vol. 31 No. 3, pp. 199-211.

Yeaton, K. (2015), "A new world of revenue recognition: revenue from contracts with customers", *The CPA Journal*, Vol. 85 No. 7, p. 50.

Wall, L.D. (2014), "The adoption of stress testing: why the basel capital measures were not enough", *Journal of Banking Regulation*, Vol. 15 Nos 3/4, pp. 266-276.

Corresponding author
Okan Duru can be contacted at: duruokan@yahoo.com

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