

Motivations behind irrationality in the shipping asset management

Shipping asset
management

Review of fundamental theories and practical challenges

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Abstract

Purpose – The purpose of this paper is to investigate and clarify “irrationality” problem through the maritime industry practices and leading incentives behind common investors.

Design/methodology/approach – This paper includes a review of broader business and economics literature; review of shipping business practices and detection of institutional pathways and misleading mechanisms behind the irrational preferences; investigation of data (for some arguments); and introduction of a theoretical approach.

Findings – There are several industry practices and norms well established and followed by decision makers, which may cause and initiate illogical and irrational (long-run) preferences. Short-termism is an erroneous habit of common shipping investors, which is embedded and forced through traditional financial math (i.e. discounted cash flow), financial system (e.g. initial public offerings with high-frequency transactions, interest rate governance and asset valuation mechanism) or flawed contracting tradition (i.e. commission bias).

Practical implications – Both shipping business and financial institutions need to redesign their working mechanisms, evaluation systems, risk detection and assessment procedures. As discussed in Section 4.7, commission-based (float) services must be converted to regular flat rate payments with long-term contracts to protect investors from rational choices of intermediaries in the short-run which encourages investor’s irrationality. Having a long-term service contract will also improve sustainability of intermediaries and lower their business risk (win-win).

Originality/value – The impact of this paper is two-fold. First, it raises critical questions about professional decay and drawbacks of some traditional instruments in the shipping business. For the first time, this paper emphasises on various challenges which deteriorate credibility of the industry and causes ill-defined investments. Some arguments have extreme priority for strengthening the foundations of the industry. Second, this paper establishes a new stream of scholarly research

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highlighting weaknesses of conventional economic approach and demand for outsourcing other schools of economics (e.g. institutional and behavioural) into the shipping business.

Keywords Behavioral economics of shipping, Irrationality, Ship investment, Short-termism, Temporal myopia

Paper type Conceptual paper

1. Introduction

The following statement is from *Fifty Years' Freights: 1869-1919*, one of the oldest publications in the freight market research, written by [Angier and Watson, 1920](#):

This state of things was brought about by the large OVER-PRODUCTION OF TONNAGE during the three previous years, fostered by RECKLESS CREDIT given by the BANKS and BUILDERS and over-speculation by the irresponsible and INEXPERIENCED SHIPOWNERS.

The comment made by [Angier and Watson \(1920\)](#) is undisputedly striking and impressive. During regular and guest lectures around the world (e.g. Texas A&M University at Galveston and Nanyang Technological University), this phrase was presented to undergraduate and graduate students, and they were asked to estimate when this comment may have been made in the history. Without a single exception, all of these students predicted not earlier than 1980s, but 2007-2012 period in particular. Considering published articles in mass maritime media in the past decade, it is not surprising to expect that interpretation should be very fresh. It is more than a century since 1869, and two major sources of oversupply remained unchanged: *incentives behind financial backers* and *unqualified investors*. In general, such inconsistencies and irrationalities (especially consequences in the long run and for the entire industry) may be revisited with the novel and growing school of economic thought, *behavioural economics*.

In the past few decades, behavioural economics is emerged by developments on behavioural research in both economics and decision-making. The major motives of the emergence of behavioural research stand on the inconsistencies between conventional assumptions behind economic interpretations and the practice of economic decision makers (particularly individuals' preferences). The prospect theory and subsequent theories of [Kahneman and Tversky \(1979\)](#) played a significant role, and it is thought to be a milestone in behavioural research. The prospect theory ignited a stream of scholarly publications and sophisticated research on behavioural aspects of economic decisions. The modern Austrian School of Economics is closely interested in behavioural economics, and its heterodox viewpoint is also one of the drivers of the field. Behavioural economics is broadly a reaction to implicit assumptions and a strong criticism of neo-classical economic approach. The major debate is arisen from the *rational actor* assumption (i.e. *rational choice theory*, *rational expectations* and *homo-economicus*) and its spillover to several associated principles (e.g. *efficient markets*).

In addition to the developments on social science research, medical science has contributed to the problem from physiologic and neuroscientific perspectives. In the past decade, a stream of empirical research is performed to clarify functions of brain on decision-making and economic behaviour. Neuroimaging methods (i.e. functional magnetic resonance imaging) are used to visualise brain activity in case of particular mental conditions. One of the change-making discoveries of neuroimaging is the role of amygdala (an inner part of brain) on emotional reactions and memory. The term *amygdala hijack* is used as a biological reasoning behind the irrational exuberance (i.e.

mental state of market bubbles). *Neuroeconomics* is arisen as an interdisciplinary field which uses neuroscience tools and concepts for explaining the economic phenomenon (Lo, 2011; Rangel *et al.*, 2008). From neuroscientific viewpoint, rationality postulate is unfeasible and biologically irrational, as we are all humans with amygdala, which drives us unconsciously. Even research on patients with amygdala damage indicated the impossibility of rationality while presenting merits of overlooking and being imposed emotionally. Without amygdala, human brain is enforced to think purely rationally and execute every piece of information to reach optimal solution by calculating the equilibrium for every single decision. Therefore, a simple shopping decision would become a burden of cognitive process without this small section of human brain. One of the thought-provoking outcomes of amygdala discovery is the medical collapse of hypothetical rationality postulate in economics.

Another change-making research is indicated by *endocrinology*. There is a stream of studies significantly that showed that steroids such as dopamine and testosterone dramatically change our risk behaviour and economic psychology. A phenomenon called “winner’s effect” is boosted by consecutive victories and is somewhat related with testosterone. The level of testosterone grows gradually till the winner is drunk with victories. Finally, overconfidence is built, which blinds human such that he or she can no longer think clearly or assess economic problems.

Rationality seems like a kind of perfection which has no biological evidence at all. Real rationality can only (if possible) be achieved by computers not by humans (the gap between *econs* and *humans*). Zweig (2007) uses a novel term, “prediction addiction”, to emphasise on the human desire for forecasting random processes and resistance to recognising randomness. Humans tend to predict the unpredictable, which originates in the dopamine secretion glands of the reflective brain, leading humans to capture patterns where none really exist (Zweig, 2007).

The economic analysis of shipping business has a substantial volume of scholarly works, and majority of academic interest is derived from the conventional economic perspective, including supply-demand framework, fair competition and market efficiency. Although these studies and attributed models contributed literature significantly and clarified the dynamics of shipping markets at the macro level, they are limited to global interpretation and somewhat lack in illustrating the individuals’ selections (or practical dynamics at the micro level). Economic models are very useful and practical for policy development, whereas it seems less practical for individuals or they somehow tend to ignore them.

The critical question is the function of economic models in the shipping business under the irrationality debate. Although political economists reject these models entirely, an alternative interpretation is suggested as a theoretical justification of existing tradition by *rational irrationality* theory which assumes systemic biases. As irrational preferences are repetitive (*predictably irrational*), rational actor assumption does not coincide with the common mind (theoretical optimality of decisions), but it is transformed in the meaning from optimality basis to systemic preferences of individuals by the relaxation of existing orthodoxy (following section discuss the theory in detail). Based on the rational irrationality (rational ignorance in political science), models of shipping markets are valid at some degree, whereas ambiguity of irrationality is retained (that is probably an explanation for unknown and changing part of model

estimations). However, the validation of economic models is still incapable of describing the market bubbles and unexpected price fluctuations. Irrationality does not invalidate *ad hoc* economic models entirely but criticises the practical use of information provided by these models and theories. An intellectual interest on foiling ignorance and systemic biases is growing in the behavioural economics and management science.

Risk attitude of shipping investors is a key dimension of behavioural economics of shipping, and drivers of irrationality may not be eliminated or removed even in strong risk aversion. Risk perception in the shipping business is discussed and reviewed in a number of studies, and the fundamental characteristic of shipping investor is the level of risk aversion decline when the market liquidity rises (Adland and Cullinane, 2005). In other words, shipping investors are more likely taking risks, and the risk of default is much higher than any other period of the shipping market. This paradoxical nature of investor amplifies the volatility of freight markets and asset cycles. Regardless of the risk appetite of shipping investors, the surrounding industrial and financial mechanism encourages short-term rationality rather than long-term rationality of asset preferences (details will be discussed in Section 4).

The motive of irrationality research in shipping business is the emergent need for academic clarification of the phenomenon in the maritime industry and finding ways to avoid false reasoning, misconceptions and bias in business decisions. This paper contributes to the literature as the first comprehensive definition of irrationality and drivers of irrational preferences, in addition to the misleading factors in shipping business. There are a number of major (specific) drivers of irrationality in shipping business, and this paper deals with some of them.

For the analysis of irrationality in the shipping business, this paper follows a theory-to-practice approach and first clarifies the rationality concept in both philosophies of economics and applied economics. In the second step, drivers of irrationality are investigated. There are a number of reasons which create incentives for being irrational in the industry. These factors cause false motivations, and the unexpected irrational outcome is triggered. Finally, the assumptions behind ship investments are discussed as a reason of irrational practices in the corporate governance of shipping enterprises.

2. Rationality postulate and theory of rational irrationality

The validity of rationality postulate was more of a philosophical topic till the past few decades. However, novel methods of testing and illustrating the human action improved our understanding of individual preferences. As this paper deals with the irrationality problem, it is needed to clarify the opposite, rationality, as it is a conventional basis for much intellectual perfections, simplifications and models. As an orthodox conception of the market, rationality is implicitly assumed in economic literature as an *a priori* proposition (a metaphysical proposition). It is regarded as empirically non-refutable axiomatic doctrine.

Rationality (under broadly accepted circumstances) has a number of particulars such as satisfying the expected utility axioms (maximizing the expected utility) (Becker, 1962; Camerer, 1995), Bayesian probability axioms (recognizing and executing the probability of preferences) and stability of preferences (unbiasedness). In addition to these dimensions, rational behaviour is a kind of purposeful human action, and profit maximising is the major economic role (von Mises, 1998). Basel and Brühl (2013)

investigated the concept of rationality and presented five axioms to clarify rational economic behaviour (homoeconomicus) (based on von Neumann and Morgenstern, 1944): order of preferences, choice of preferences, transitivity, independence and invariance. Basel and Brühl (2013) also ask a fundamental question: “How is this normative model of a social actor reached by real human beings?” Actually, there is a significant reason for rejecting rationality postulate, which is the marketing industry. The huge marketing industry and the related academic literature significantly imply that there is a space for such efforts somehow to lead people for purchasing a particular product and service. If humans are pure rational creatures, the marketing itself would be worthless and meaningless to a large extent. Although a customer can easily reach related information about two products (content, quality, reputation, etc.), a marketing campaign and a number of primers can help people to reduce cognitive distress and pain caused by task load of rational thinking and push crowds for purchasing an expensive and even less quality one (Zurawicki, 2010). Ariely (2008) addresses several examples of such marketing tricks with a plain language.

Stanley (1994) conducted a stunning empirical research and showed how conventional statistical tests mislead and how market behaviour known to be irrational can be found rational in terms of statistical significance. This study clearly indicated the weakness of statistical methods on measuring rationality or rational bubbles. In contrast with the fundamental perception, irrationality (null hypothesis) cannot be rejected based on vast number of empirical evidence (Shiller, 1986). It is well known that individuals systematically undervalue opportunity costs compared to out-of-pocket costs (losses hurt more than gains feel good, i.e. loss aversion). Therefore, freight market rises slowly but drops suddenly (ramp shape cycles).

The conventional statistical methods play a rationalisation role in preserving rationality as sacrosanct. Rationalisation is a cognitive recovery process which is cheating us against cognitive dissonance or mental discomfort. For example, a student might blame a poor exam score on the instructor rather than his/her lack of preparation. According to the definition on *Wikipedia* website:

Rationalization encourages irrational or unacceptable behaviour, motives, or feelings and often involves ad hoc hypothesizing. This process ranges from fully conscious (e.g. to present an external defence against ridicule from others) to mostly subconscious (e.g. to create a block against internal feelings of guilt).

Based on above circumstances, the role of existing tradition is an unavoidable question. What happens to existing econometric models and statistical efforts in general? Do we reject them at all and blame as useless? From a practical perspective, we know that these models are still useful in deriving general rules about the market behaviour. Nobody rejects the existence of business cycles, and patterns exist while somewhat changing with the novel dynamics of trade and traders. Rational expectations theory assumes that people do not make systematic errors, and any remaining error is only random. As it is discussed in the Introduction, the relaxation of the theory produced the theory of rational irrationality, which accepts systematic errors. However, the level of certainty or predictability is a big question, and it is quite difficult to separate systematic (pure rational or biased) and irrational parts. There is no method for measuring the extent to which a model captures predictable patterns rather than irrationality. Stanley (1994) indicated that the existing testing procedures are insensitive to estimate deviations from rationality.

3. Irrationality in shipping business

It is not surprising that the vast volume of the shipping literature indicates that *a priori* assumptions of the neo-classical school of economics such as rationality or market efficiency may not work in the shipping industry (Alizadeh *et al.*, 2007; Adland and Cullinane, 2005; Adland *et al.*, 2004; Glen, 1997; Kavussanos and Alizadeh, 2002a, 2002b; Veenstra, 1999, among others). The existing efforts almost invalidate the rational actor assumption while illustrating the potential of systematic bias (rational irrationality). Alizadeh *et al.* (2007) explain the reason behind the profitability of chartering strategies as follows.

There are two competing hypotheses to explain [...] results:

H_1 . The observed profitability is a result of a time-varying risk premium.

H_2 . The observed profitability cannot (fully) be explained by a time-varying risk premium, but is rather a result of predictable mispricing of the implied forward freight rate. This would imply that the market is inefficient.

However, as we restrict our attention to combinations of 12-month and 6-month period TCs in this paper, the finding of profitable chartering strategies cannot be easily explained away by a time-varying risk premium.

The term “predictable mispricing” indicates the rational ignorance or rational irrationality in the shipping markets.

As irrationality is in-action, prediction models should also be selected for capturing irrationality. About the prediction methods, Makridakis and Hibon (2000) investigated a change-making study and indicated that the simplest forecasting methods (statistical methods) perform better than complex algorithms (one of the most cited papers in the forecasting science). Complex forecasting methods are incapable of capturing irrational ups and downs. There are also simpler methods which may outperform the traditional methods of forecasting, which are usually preferred based on a conventional habit (because of the practicality). Judgmental forecasting is frequently found superior to statistical methods and even in the shipping business. Duru and Yoshida (2008, 2009) investigated the market psychology and tested accuracy of judgmental forecasting in the dry bulk freight market. The rule-of-thumb approach outperformed the statistical models and indicated how perception of irrationals can be derived from themselves by an irrationality-based forecasting approach.

Studies in the stream of market efficiency and trading strategies implicitly assume liquidity and convenience of ship broking negotiations (fixtures) same as stocks. The theory of time-varying risk premium is imported from the mainstream discussion of the economics literature, which is usually interested in stock markets. Stocks are very liquid items which can easily be traded (even in minutes), and the trading strategies may have practicality in the high volume of market transactions. In contrast to the stock markets, shipping markets may not be liquid, as it is usually assumed as *a priori* proposition. A charter party (particularly, time charter parties) is an outcome of series of negotiations. The technical complexity of the shipping business, the business reputation of the shipowner and many other aspects are considered in the process of negotiation. Even many shipowners are not able to fix a time charter based on the technical constraints (age of fleet, trading history, etc.) Therefore, we cannot assume the same liquidity as the stock markets have. Although chartering strategies can be derived from these models, a limited number of shipowners may have the capability of applying it easily and precisely. In the derivatives market, necessary liquidity may be found for shifting

between time charter contracts based on profit-seeking through term structure. However, physical market may not have practicality of these conclusions. Shipowners may not easily shift between long-term and short-term period charters. This problem is also related with the charterers' perspective.

Another problem is the passive charterer assumption. In the mainstream standpoint, scholars are one-sided on the shipowners' perspective, and a charterer is assumed to behave like a goal keeper rather than a striker. From the game theoretical viewpoint, charterers will also have public information and have own adverse strategies against the proposed shipowners' strategies. When the shipping markets begin to decline, no charterer tends to fix a long-term time charter contract. As a result of the hindsight effect, decision makers are able to address shifting through contracts with different risk premiums. However, they are not dealing with the shifting time (turning point), existence of charterers accepting these terms and availability of existing physical assets (ships) without a period liability (an existing time charter contract). In business practice, these conditions are rarely ensured at the same time. When the level of freight rates is high, shipowners tend to stay in spot and vice versa (risk seekers). Therefore, a shipowner needs to fix a time charter before the theoretical optimum investment timing, which is publicly known by entire players in the market and it leads herding by both charterers and shipowners. When the direction of the market begins to change, every market player wants to shift position to risk-averse one (e.g. long-term period charter), whereas there is no potential for entire players to realise their intention based on the adverse position of charterers.

The contradictory results of the existing efforts are also conflicting issues. There are several studies for testing market efficiency, unbiasedness, etc. However, some of them reject assumptions, whereas others accept. These studies cover different data sets (different section of historical data), and, thus, different (reversing) results may be presented. Even the most up-to-date studies (based on a recent literature review) do not consist of the last super cycle (approximately 2003).

The term *irrationality of shipping business* was first mentioned in Duru (2013) for indicating deviations from optimal investment behaviour in shipping business. The theory of irrational shipping markets illustrates the decision-making process based on the *wisdom hierarchy* (i.e. data-information-knowledge-wisdom). Recent maritime research and existing documentation describe the common dynamics of shipping markets, and know-how (knowledge) is thought to be present as an input of the decision process. However, there is a kind of cognitive noise and destruction (i.e. cognitive bias) which misleads decision makers. The distinction of two behaviours lies in the gap between information-knowledge and action-knowledge (Kirzner, 2005). The theory of irrationality debates the level of awareness and the loss of critical thinking and sceptic view at the time of excessive positive (boom) and negative (bust) mood, which triggers cognitive bias and ill-defined context (Belsky and Gilovich, 1999).

Bulut *et al.* (2013) investigated the problem through a holistic viewpoint. They first figure out the rational asset management based on the general rules such as purchasing ships at recession and selling out at peak market (Lorange, 2009). As the herd behaviour drives most of the market, asymmetric investment strategy appears to be the optimal scenario (profit maximising). Finally, the real market data are used to find optimum market entry timing (roughly), which actually clarifies the deviation of mainstream investors' behaviour. Bulut *et al.* (2013) indicates a time lag of 4-10 years with some disturbances of data noise. From a graphical analysis, it is not difficult to capture the existing gap between the booms of new

building contract volume and the busts of the freight market. The huge waves of asset prices and the impatience of shipping investor collaboratively charge up consecutive oscillations of the shipping markets or instability in other words. The primers of such anomalies are one of the popular interests of neuroeconomists.

4. Drivers of irrationality in shipping

The irrationality in the shipping business might only be credited for the erroneous nature of human action. Cognitive bias of the investor (e.g. false reasoning and misconception), the errors of crowds (e.g. herding and group thinking bias) and the adverse motivations stimulated by the industry and organisations play a significant role in priming the irrational actions.

There are two major sources of irrationality in the shipping business practice:

- (1) capital-related incentives; and
- (2) industrial and financial traditions, including unethical rationality.

Each concept may have various instruments to mislead/drive investors, and a number of them will be discussed in this paper.

4.1 Incentives behind the source of capital

Irrationalities are not always arisen from individual's independent preferences. In many cases, temptations driven by suppliers, intermediaries or consultants may lead to ignoring long-term consequences and/or severe risk of sudden market collapse (particularly soon after a massive upturn). Source of capital is a key component of ship investments, and it affects several functions and processes in the shipping asset management. Among these impacts, cost (capital cost and interest rate), provisions (collateral and rate of return) and convenience of funding deals are some major dimensions initiating some of posterior breakdowns. Liquidity shortages and abundance, public investor effect (stocks), asset valuation trap and incentives behind lenders will be discussed in the following five sub-sections.

4.1.1 Liquidity cycles. Shipping business is a capital sensitive, and it is also a liquidity-sensitive industry. Daily needs of shipping companies and the working capital management are some difficult issues among other financial problems. The liquidity management has another importance based on the opportunity risk. The opportunity risk refers to risk of missing good deals in the market. A shipowner with a strong balance sheet and high level of liquidity will be able to consider purchase of cheaper assets in the deep market (i.e. asset play). However, it is not easy to apply in the business practice. The problem is that most of the shipowners spend their capital accumulation at the peak of market for new assets and even borrow debts for sharing a part of their risk (bank finance). As a result of increasing debt-to-hull leverage and liquidity reduction, shipowners lose their capability of considering opportunities at the deep market (low asset prices). Therefore, their irrational purchasing behaviour triggers another irrational choice or incapability by taking risk of not investing (opportunity risk).

In *Bulut et al. (2013)*, the market entry-exit preferences of ship investors are investigated through real return on equity (ROE) performances. The unconventional approach of this study focuses on the ROE metrics comparing to the real market realizations, and an explicit gap between relevant investment timing and business practices (e.g. contracting volume at new building market) emphasises on the impairment of liquidity at the expense of

overvalued shipping assets (or late liquidation of assets), which reduces counter-cyclical asset play opportunities. Shipping markets do not self-calibrate (self-correction) the gap between the freight market cycle and the liquidity cycle to stabilise markets and reduce volatility. Concurrent cycles eventually amplify the price volatility (e.g. the second half of the twentieth century) and shortage of free cash flow.

4.1.2 Stock market effect: public vs private entity. Many shipping companies need to be financed with a variety of equity/debt options. One of the equity financing methods is initial public offering (IPO); in other words, being publicly traded in stock markets by raising capital through the public offering. IPO issues were particularly popular in shipping business in the past decade, and the volume of IPOs has risen rapidly by the millennium. The IPO method gives an opportunity to the existing owners to raise capital without debt-related liabilities and taking risks. Therefore, it is also a kind of risk sharing. In private equity financing, the shared risk is carried by a few shareholders (e.g. venture capital), whereas IPOs are usually held by thousands of individual investors in stock markets (i.e. securities exchange). Once a company is publicly traded, a number of periodical responsibilities are required from the board of directors such as publish quarterly financial reports which are used for monitoring the company and the future of share prices. Not only the company's state but also the state of industry contribute to such assessments.

However, an IPO issue transfers the risk at the expense of being pushed by short-termers on the stock markets. [Marginson and McAulay \(2008\)](#) indicated that short-termism is a critical problem, and short-termers, i.e. impatient capital, may rapidly change their investment prospects, which in turn cause instability of shares. The lessons learnt from this phenomenon by managing directors are to keep shareholders happy, to satisfy their needs and to tell what they want to hear. The owner of Stolt Tankers, Jacob Stolt-Nielsen, indicates the advantages of private companies and concludes that:

Families can think long-term. If we had been a public company at the start, we would have never started in aquaculture. It took us 15 years of research and experiments to learn to farm Dover sole! A public company does not have that kind time [...] [...]. A public company must show profits every quarter. They can't afford to be patient ([Larocco, 2012](#)).

Managers of publicly traded shipping companies encounter a trade-off between "being rational for long-term but irrational in terms of short-termers" and "being rational for short-term stimulus at the expense of long term value". Chief executives are responsible to show current figures of the company and keep their shares attractive for individual investors and getting on with the intermediaries of stock trading. They should submit more good news and suppress bad news as they can. The development of management stimulus for long-term orientation is an emergent topic in management science, and shipping companies also need instruments for rewarding long-term success more than the short-term performance. For example, the Japanese business system (network economies, *Keiretsu*) eliminates the short-termism by its long-term oriented structure and organisational system. The delusion of discounting cash flow method also contributes to the problem. The recent nature of global business system broadly sustains the irrationality of short-termism based on asymmetric stimulus of investors' perception of time and value.

4.1.3 Collateral improvement and asset valuation trap. Asset bubbles and the unexpected peaks of new building ship prices are very common in the shipping business. [Duru \(2013\)](#) and [Bulut et al. \(2013\)](#) investigated the debate and somehow indicated the irrationality of the case (luxury product metaphor for ships). However,

there is limited knowledge about the reasons behind such naïve-like behaviour of investors. Also, it is quite difficult to find a statistical evidence for clarifying the phenomenon. For understanding the puzzle of asset bubbles, first, the ship financing business and the dynamics of *leveraging–deleveraging* procedures must be looked at. A merchant ship is what we called shipping asset whether it is almost launched (in-operation and/or second-hand ship) or just signed (future ships on papers). In the conventional ship credits, ships play a securing instrument for lenders, which we called *collateral* (therefore, it is usually called asset-backed financing). In addition to that, lenders have a monitoring tool which is called *covenants*. Shipowners and lenders agree on a number of conditions about the financial structure of the company and primarily about the numbers on balance sheets and ratios derived from them. Lenders want to be sure that the shipping company is managed in a fair, robust and ethical way, and it keeps in mind that there is an existing liability at the time of corporate governance. For example, lenders want to secure the affordability of debt based on the value of collateralised assets (*minimum value clause*), leverage of the liability and liquidity of the company. The major concern is the credit default risk which a lender tends to reduce its exposure or want to be able to retain its risk (debt).

The vague question is how we value ships. In the past few decades, there is an emergent need for professional-independent institutions for ship valuation which can be adopted by both parties as trustable and accurate source of knowledge. There are many companies serving as ship valuation agent. However, it is not fair enough even if a ship valuation agent performs well. The value of ship is usually the market price, which is defined by the recent dynamics of the market (prices for new buildings and second-hand buildings, the level of freight earnings and the volume of shipments) and can play a significant role in the collateral value (Duru, 2014).

4.1.4 Lenders' adverse stimulus. The lenders' adverse stimulus has two dimensions: number-stimulated (tangible) and sympathy-stimulated optimism (intangible). Number-stimulation refers to motivations triggered by current statistics and data (kind of manipulation). Sympathy stimulation refers to the exaggerated interest of lenders for financing customers, which in turn creates illusory optimism.

For example, the US Central Bank reduces interest rates below the natural rate of interest and boosts up liquidity (i.e. liquidity engineering). Investors' calculation misleads, and unprofitable projects seem profitable and feasible. The market boom of May 2008 was somewhat stimulated by the irrational exuberance of the liquidity engineering. Action bias and bandwagon effect drive crowds. In such economic climate, it is quite difficult to resist herd behaviour. You should stay in liquid assets, but you cannot defence yourself in investors' society. You do not want to regret later (fear of regret), and you may be seen as a dumb businessman. For securing your status (like luxury shopping), you will be hauled for purchasing ships.

In Figure 1, interest rate levels of various countries, Euro area and London InterBank Offer (LIBOR) rate are illustrated. The period between January 2008 and January 2009 shows how the liquidity engineering created illusory value. Although most of the developed economies waited for decreasing rates till the beginning of 2009, US Central Bank performed an early action with a year's time lag. That action also led to a sharp decline of LIBOR.

Interest rates are usually a basis for defining discount factor and also for loan amortisation. Decline of interest rates rationalises projects and creates an

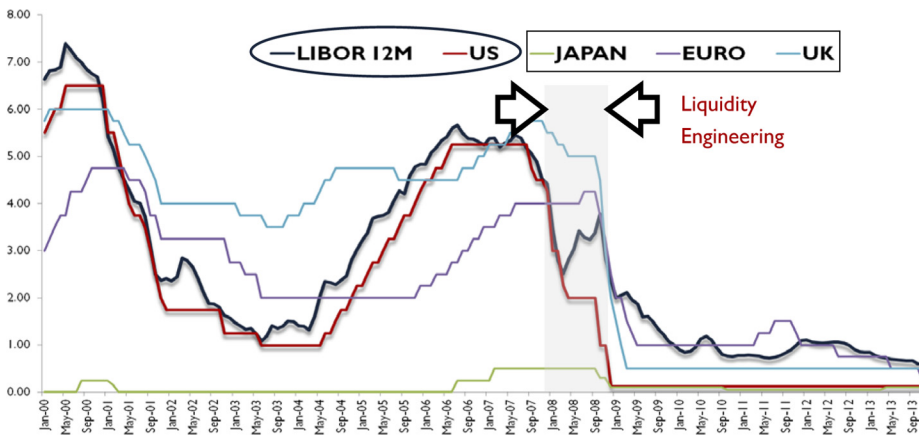


Figure 1.
Interest rate gap
between countries

Sources: Bloomberg.com; Finance.yahoo.com

investment boom. The liquidity of lenders and the liquidity of borrowers (shipowners) double the optimism, and lenders tend to be more sympathetic to shipowners. They tend to be easier issuing debts. The positive mood and sympathy of lenders mislead shipowners.

4.1.5 Security bonds: who secures the lender? When everything goes well and the market is at peak, lenders are very confident, as there are secondary protections. Lenders already secure them with minimum value clause and other collaterals, in addition to “security bonds”. Shipping investors need capital to purchase ships and apply for a loan agreement with conventional banks. The shipping loans are usually (almost) mortgage loans, and lender (bank) secures the capital raised by a number of collaterals, including the ship itself, i.e. mortgage. In addition to that, a minimum value clause is inserted to the agreement which serves as a safety valve if the market value of ship declines below the remaining debt (debt-to-hull ratio gauge). Commercial banks have got a critical experience about the sudden market crashes, and the asset price fluctuations may dramatically wipe out capital invested. However, the process does not finish yet. In the next step, commercial banks with huge shipping portfolio tend to secure themselves with an additional instrument, security bonds. Security bonds are same as high-yield bonds, but the difference is that bond issuer is a lender. Security bond is the state-of-art product of financial engineering which secures commercial banks against credit default by third parties (real debtors, i.e. shipowners). The portfolio risk of shipping loans is transferred to potential investors, for example, pension funds in the bond market (*ship mortgage debt*).

In bloomberg.com news, a reporter indicates the following statements (Brautlecht, 2013):

The debt will offer yields as high as 5.75 per cent and provide funds to companies struggling to obtain bank loans [...].

“We can’t solve the shipping crisis, but we can solve investor problems with shipping,” said Brueckner, who worked at Commerzbank’s wealth-management unit for five years.

We are focusing on institutional investors with no shipping experience, but who have more capital than the banks exiting ship financing.

Commerzbank has said it wants to exit ship lending and Nord/LB, as Norddeutsche Landesbank is known, in May raised loss provisions against marine loans sevenfold. Moody's Investors Service this month cited HSH Nordbank's shipping loans as a reason for lowering the lender's credit rating to Baa3.

Security bonds and minimum value clause and other collaterals are behind the lenders' puzzling stimulus. Security bond is one of the driving forces of lenders' asymmetric push on shipowners.

Philippe Louis-Dreyfus confirmed the lenders' aggressive push with a shipowner's terms (Larocco, 2012):

Banks put pressure on the shipowners to accept money almost for free, and sometimes offering 100 per cent financing with no equity at all. So, banks have played the very awkward, if not the perverse, role in proposing cheap money to shipowners who not only didn't deserve it, but didn't really even want it.

4.2 Business practices and moral hazard

The second major group of drivers behind the irrationality relies on the common practices of the shipping business, business ethics and potential for moral inconsistencies in exchange of short-term benefits (self-interest of various stakeholders). Among the following four drivers of the irrationality, commission bias is the most critical and the most powerful orthodoxy in the maritime industry. Through the development of shipping business, commission-based service has become a fundamental tradition in the industry. In contrast to operational regulations (e.g. SOLAS and Cabotage), commercial practices in the shipping business (e.g. shipbroking) have not been regulated for a long time (several centuries of modern and contemporary ages), and it is still one of the least regulated and liberal businesses. The business transaction between a shipowner and a service provider is always assumed an instant contract, and, therefore, service fees are paid as soon as possible. In most cases, it is quite difficult to get paid once a service (e.g. shipbroking) is already provided. Consequently, business ethics and reputation are much more critical in shipping compared to many other industries with various local judicial instruments and clarity of given services.

In addition to industry-specific practices, financial arithmetic and assessment toolbox have drawbacks which are ignored or underestimated in the banking industry.

4.2.1 Fixtures and asymmetric information. The theory of asymmetric information was first coined by [Stiglitz \(2002\)](#), and the theory has been popular since then. Asymmetric information theory is applied and investigated from many different perspectives such as adverse effects of increasing collateral requirements ([Stiglitz and Weiss, 1992](#)). The major principle behind the theory is that economic actors with competitive information may cause an imbalance of power in transactions and can also trigger adverse selection, moral hazard and monopoly gained from exclusive information. Therefore, information is sometimes called as power.

Shipping is broadly an off-shore and capital-intensive business, as well as information-sensitive business. The cyclic nature of the shipping markets and the excess volatility are well-known key facts about the business. The real talent in shipping business seems to be informed well and to invest in/sell out timely. As the rational actor

assumption is based on the information balance between parties, it is expected that asymmetric information should not be a common problem. However, it may be a minor issue in terms of the conventional approach, and there must be some reasons of being informed insufficient.

Fixtures are one of the most used and valuable information in the shipping business. One can be informed about the current transactions, their value, cargoes and their charterers (tonnage, seller and buyer in sale and purchase market) by using the fixture data. Many of the freight market indices are calculated based on these declared transactions. The volume of fixtures changes through the state of market. It is a common fact that the volume of fixtures declines at recessions. One may debate whether there are fewer transactions than peak market. According to the seaborne trade volume data (completed shipments), we do not expect such decline, as the volume is gradually increasing day by day. If it is not an actual decline, why are these fixtures not reported?

The absence of fixtures is a kind of marketing instrument to eliminate negative impacts on the market. Shipbrokers' fiscal incentive is the broking commission, which is calculated by using the freight rate (usually 1.25 per cent of lump sum per broker). Therefore, both shipowners and shipbrokers tend to overvalue transactions, and opposite direction is not required to be publicly declared much. This is a well-known nature of fixtures. Therefore, there is a positively biased trend behind prices and freight rates (i.e. positive and negative shocks of equal magnitude asymmetrically contribute to volatility). High volume of fixtures at the high market cause high-frequency stimulation (temptation) through information overload and overemphasise on prosperity, whereas lack of reported fixtures undervalues opportunities that lie behind the silence of the market (e.g. cheaper assets, low interest rate and lower costs).

4.2.2 Myopic investment behaviour and hyperbolic discounting. *Myopic investment behaviour* refers to underinvestment in long term and to focus on short-term gains based on a number of incentives (Bushee, 1998). In other words, it is overweighting short-term earnings potential and underweighting long-term earnings potential which causes mis-prediction of future utilities (*hyperbolic discounting*) (Bushee, 2001). According to the empirical evidences and theory, humans give less weight/attention/probability to a future event than the present (short-term) one (Dasgupta and Maskin, 2005). The term *temporal myopia* is also used interchangeably for the same meaning. Temporal myopia is a growing debate on corporate governance as a kind of cognitive bias, but it is also a primer of adverse selection and moral hazard in management science. The reason behind the temporal myopia lies on the *time assumption* (i.e. time period assumption in accounting) and diversity of individuals' time perceptions. Mosakowski and Earley (2000) investigated the time assumption in strategic decision-making and how temporal assumptions of decision makers may change the outcome. Scholars usually ignore the implicit presence of the time assumption, which refers to the identical perception of time for both short and long term. However, temporal assumptions of humans and the time assumption of rational actors collide in practice. The major debate on the time assumption arises from the *principal-agent problem*, i.e. the agency dilemma. The most popular example of the problem is the gap between motives of the managing director (the agent) and the owner (the principal). Asymmetric information of the agent plays a significant role in raising the agency problem. In addition to that, the traditional company owner focuses on the short-term developments (short-term profit/loss) more than the long-term success, as the short-term information has more exposure and

occupies much time of managing and assessment task. Therefore, there is strong potential for managerial moral hazard, which tends to overinvest in projects with short-term superiority rather than long-term one.

There is a frontier reason behind the myopic investment behaviour or temporal myopia, which is the *delusion of discounting*, i.e. discounting factor. Lavery (1996) investigates the impact of traditional discounted cash flow (DCF) method and indicates the spurious results based on the short-termism bias. The DCF method (i.e. *capitalisation of income method*) is the conventional method of project assessment, and the major principle behind the method is that the future cash flows should be discounted to the present time by using a discount factor (usually interest rate and inflation factor) to find the net present value (NPV) of project under the present levels of currency (time value of money). DCF is still a daily routine of any financial manager and investment analyst in the current financial world. Probably, the reason comes from its uniqueness and popularity in terms of the valuation practice among other methods.

Although the DCF is very useful and practical, one should be careful and aware of its weaknesses. Adler (2006), in his striking study titled “Why DCF capital budgeting is bad for business and why business schools should stop teaching it”, figures out the spurious side of the DCF as a habit of businessmen and also educators. For illustrating how DCF can mislead an investor, two projects, A and B, are compared with different discount factors (similar to Lavery (1996)’s example). Figure 2(a) shows both projects through the project life (i.e. assessment horizon), and this figure simply indicates that Project A has always positive net cash flow, whereas Project B begins with negative cash flows for initial years and improves in the middle of the period. On the right side [Figure 2(b)], the NPV results of both projects are illustrated based on the selection of a particular discount factor (0.00-0.08). It is obvious that a small discount factor (less than 0.03) points out the superiority of Project B, while a larger one supports Project A. However, Project B has a growing future prospect, as it is frequently seen at the new product markets. Although Project B needs a strong balance sheet and more liquidity for initial period, its superiority in the long term is obvious. From the practical side of the business, the conventional investment appraisal approach may offer the short-term winner, which is actually inferior in the long-term horizon.

The DCF method is a very common method for shipping business too. Bulut *et al.* (2013) in their recent work also figured out the impact of the NPV based on the ship investment timing problem. There is an irrational contracting epidemic at the time of market peaks,

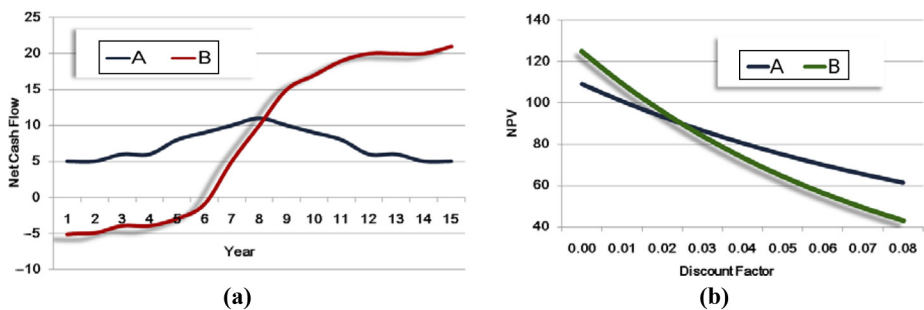


Figure 2.
The net cash flow
diagram of Projects
A and B (a) and the
NPV results of them
(b)

Source: Author

which causes a sharp decline after the market is mature. However, a deep market entry is significantly superior to investments at peak market's euphoria. Given two projects with different investment timings (similar to previous example of Projects *A* and *B*), the peak market assessments tend to be designed with relatively positive numbers (i.e. "this time is different" fallacy – Reinhart and Rogoff, 2009). On the other hand, a deep market assessment considers the current recession and the following recovery of the market (e.g. Project *B*). In addition to that, one should also take into account that the interest rates decline by the market collapse, which also improves it (for details, see Sub-section 4.6). Based on the drawbacks of the discounting routine, temporal myopia finds a methodological basis for rationalisation of the irrational valuation.

4.2.3 Intermediaries: commission incentive. *Intermediaries* refer to agents who play roles of a connector and facilitator in business. In shipping business, we have many of them: ship brokers, new building project brokers, port agents, ship finance facilitators and even investment advisors (i.e. shipping consultants). A potential investor asks shipping investment advisor whether it is the right time to invest and how to spend money in this industry (peak market and euphoria) and which report is more attractive and gripping:

It is almost late for investing in ships since the market already reached to a historical peak and shipping assets are overvalued. You should wait a while, 4-5 years, and then enter to the shipping business with the right prices. Now we cannot help you anymore.

It is absolutely right time to invest in ships and even you should act quickly for not missing the boat. Recent calculations significantly indicate huge profitability in shipping business which is never seen before.

Frankly speaking, an investor is already charged with dopamine and stressed without taking an action against that unavoidable mental state. Cash abundance (impatient capital) and irrationality programs are already begun the installation (Duru, 2011). He or she just needs a little verification (*confirmation bias*) and reinforcement. Now, we can easily say that "I would be skeptic for report *a*". That is what behavioural economists call *hindsight effect (all we knew)*. A shipping business advisor earns money from shipping investments (from beginning to latter period). Both advisors and investors agree on the rationalisation of a good time fallacy.

The *commission bias* is not only experienced in the shipping business but also is widespread in almost the entire stock market investments. It is well studied by Financial Services Authority-FSA (later Financial Conduct Authority) of UK, and the commission-based brokerage and consultancy services to investors are banned in 2012 (FSA Report, *Conflicts of interest between asset managers and their customers: Identifying and mitigating the risks*, November 2012). FSA began working on the debate by the 2008 financial crisis, and it took several years to figure out the counter measures against devastations from commission-based services.

The entire shipping business contracts are usually led by intermediaries (e.g. brokers), and commission-based pricing of these services is an old tradition of the industry. Under the commission system, a ship broker will prefer to fix a voyage charter as soon as possible at the high market state (higher commission). Similarly, a ship sale and purchase broker will prefer to fix a sale contract at the high market (high ship prices, high commission). Ironically, market averages (e.g. average freight rates) are higher with recent data of a high market period, which numerically supports sided arguments of intermediaries (partially rational from their perspective). If any investor considers to enter the shipowning business,

encouraging and supporting an immediate purchase would be “rational” for almost any service provider in the shipping business. However, rational preferences of service providers may be completely irrational for an investor. Considering the loss of asset values in a few months soon after the 2008 crisis, an investor can lose huge amount of capital just by impairments (write-offs), and that may trigger a domino effect through the lenders and deferred liabilities (outstanding accounts payable). Therefore, the commission bias also emphasises on the gap between rationality of intermediaries and investors or how rationality of intermediaries may lead to irrationality of investors.

4.2.4 Marine insurance as a motive of moral hazard. The term marine insurance usually refers to *hull and machinery insurance, protection and indemnity club insurance* (i.e. PI) and some other forms of insurance for maritime industry (e.g. *freight, demurrage and defence*). The emergence of these kinds of insurances is usually based on a series of huge fiscal losses that arise from maritime accidents, seafarers’ failure, etc. Shipowners have requested to transfer their risk to third-party institutions (insurance companies) as a hedging instrument. However, it was not enough to cover all risks, and then they have established P&I (protection and indemnity) clubs for extending insurance coverage (particularly including third-party liabilities).

The history of marine insurance and its purpose seem very natural and reasonable. However, the rationality of their function is a questionable issue, as it is also debated for other insurance types (Shavell, 1979; Rubinstein and Yaari, 1983; Cohen and Dehejia, 2004; Richaudeau, 1999, among others). Bennett (2001) indicated the role of *moral hazard* as a result of the *tragedy of commons* in marine insurance. He noticed that:

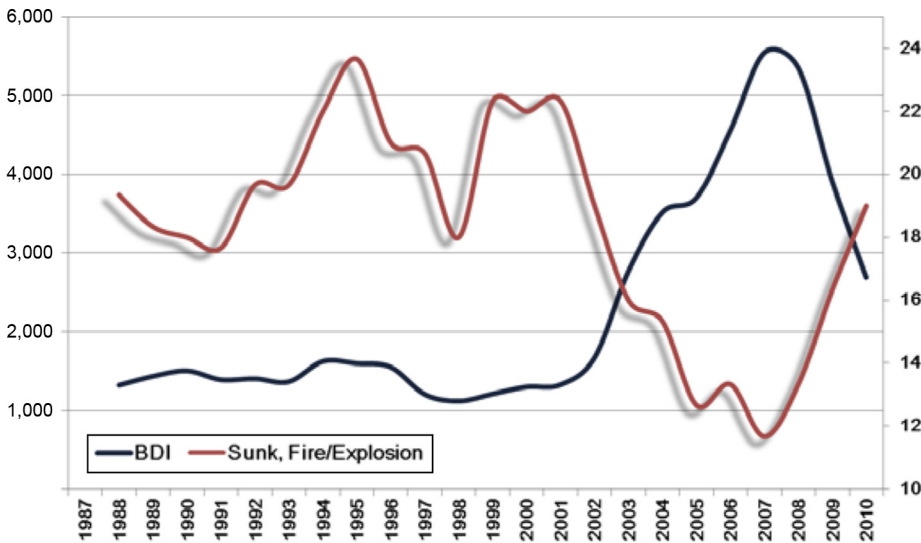
It is economically rational for an individual shipowner to take less care once insured because they know that the costs of any accident will be shared amongst all. But if all shipowners took this view the result would be extremely high premiums for everyone – an irrational outcome based on entirely rational decision-making.

Tiberg (2005) indicated the moral hazard with a remarkable tone:

Fraud is rampant in Maritime Law and Insurance. There are a number of reasons for that. Ships and cargoes are comparatively easily disposed of either into the anonymity of the international theatre or by being scuttled into the unfathomable vastness of the ocean depths.

Although Bennett (2001) and Tiberg (2005) addressed the possibility of moral hazard, there was no statistical evidence till Bulut and Yoshida (2012) first figured out the debate in numbers. Their work presented the freight rate series (Baltic Dry Index, annual average) against the marine accident data of total losses caused by sunk and fire/explosion, excluding, for example, collisions. The selection of the type of accident is based on the extraction of ship-to-ship or ship in coastal vicinity cases (non-anonymous). The theory behind the study questions the random marine accident assumption and proposes the existence of the man-made marine accident. Therefore, their study looks for accidents which can be intentionally enforced without witness of anyone. For clarifying the debated issue, similar statistical data are illustrated in Figure 3 below.

These two data sets are negatively correlated at 0.85 levels for 24 years of data, which means that marine accidents increase with the decline in freight markets, and vice versa. Nobody is able to identify it criminally, whereas statistics explicitly indicate the presence. A very optimistic defence can be based on the cost of being safe. When market collapses, the relative volume of operation costs (including seafarer wages and safety-related costs) may increase, and shipowners tend to reduce costs while taking



Sources: World Casualty Statistics; Lloyd's Register (several issues); Baltic Exchange

Figure 3. Baltic Dry Index (annual average, left scale) and total losses (number of ships over 3,000 dwt, sunk, fire/explosion) with three-year moving average (dry bulk carriers and general cargo ships)

risks. However, it is still very optimistic and insufficient to explain the reason of foundered ships in the middle of seas without a rational reason, except the economic stimulus led by debt service obligations (insolvency), impairment losses, illiquidity of sale and purchase markets (lack of potential buyers), among others.

5. Assumptions behind the ship investment

The previous section presented a number of reasons behind the irrationality in the shipping business. There should be many others, but this paper uncovered a few of them for questioning the debate. From these reasons, it is obvious that shipping investors are driven by some assumptions about their ship projects. These assumptions motivate them to be irrational and also ensure a basis for false reasoning and misconceptions. It would be very useful and practical to discuss these assumptions and clarify their impacts for further assessments.

5.1 Market permanence (optimism bias)

The initial assumption which leads to consider ship investment is the market permanence assumption. Particularly, new comers are driven by this assumption, and they think that the state of market (usually, peak market) is continuous. This assumption is a form of "this time is different" fallacy. Asset bubbles indicate its power of herding. The perception of default risk is extremely ignored, and lenders' asymmetric push also plays a motivating role.

5.2 Investor's competence (blindness to technical complexity and overconfidence)

Shipping investors assume that they are able to handle and execute a shipping asset with/without an expert consultation. Particularly, optimistic environment motivates

them to feel confident about the prospective investments. The problem is that the shipping business is highly technical, and it is quite difficult to deal with the technical sensitivity of the industry even by experienced shipowners. Overregulation and other complexities bring several unexpected problems into the agenda. Ignoring the technical context rationalises the competence of the investor.

5.3 Security of asset value (market exit scenario)

One of the critical assumptions of shipping investment is the security of asset value. Shipping assets (i.e. ships) are usually submitted as collateral in asset-backed loans (mortgage loan). Therefore, dramatic changes to asset values cannot be accepted as expected for these contracts. On the other hand, both new building prices and second-hand ship prices have volatilities in conjunction with the freight markets. An asset can lose its value by 30-50 per cent in a few months. Based on this, nobody can assume that a shipping asset secures its value (survival) for many years, which can ensure a possible market exit timely.

5.4 Time assumption

The erroneous impact of the DCF method is discussed in previous sections. Under the conventional approach, shipping investor implicitly assumes that if the ship project survives in the short term, it also survives in the long term. As the particular focus is taken into the short-term cash flow, assessment of the long-term superiority is postponed for later stages of the project. Short-term survival defines whether to invest in, while it is a bit of knowledge among, the broader picture of the industry.

5.5 Discount factor robustness assumption

An assessment of shipping project usually needs an estimation of discount factor for the traditional DCF analysis. If a discount factor is based on global interest rates and inflation and is calculated by the past 5-10 years of data, it will probably result in a high discount factor for the state of bull market. As both interests and inflation are extremely high in the peak market season, the average rate will be biased to a higher rate of interest. It is difficult to assume that these values are robust estimations of the long-term discount factor. As a result of the assumption, short-term gains will be scaled up against the long-term cash flow, and the delusion of discount factor will be more harmful. A robust estimation of discount factor needs minimum 15 years of historical data to include minimum a full cycle which eliminates the impact of outliers.

5.6 Perfection and planning assumption

A ship project begins with a business plan for defining schedule, inputs and outputs, etc. About the business plans, investors usually assume that it will work well. As massive efforts are performed to make it perfect, it is thought to be perfect enough for practising. However, it is a common fact that many business plans are based on optimistic estimations (even for pessimistic scenario). There is a little focus on to what extent it may go wrong. The planning fallacy is one side of the assumption. On the other side, there is a strong impact of survivorship bias. The lay press usually tells about winners rather than losers. Therefore, self-confidence is built about industrial superiority potential. Looking to survivors, investor tends to be optimistic about surviving. The business plans of shipping investors are somewhat adjusted by survivors and the planning optimism.

In this paper, six assumptions are presented to be revised and rethought before approaching to a shipping investment. However, there should be much more than these frames of our perception of shipping investment, and these assumptions will be discussed in the literature for contributing to the awareness of investors.

6. Conclusion

The collapse of neo-classical economic theory (i.e. *economic failure*) is a growing issue. In the past few decades, the conventional economic perspective is under a fundamental metamorphosis which dramatically changes the most essential propositions such as the rationality postulate and the efficient market hypothesis. After decades of popularity, these non-refutable doctrines of economics lose their basis, which is established by both a scientific consensus and a habit of economists. By the contribution of psychology and neuroscience, it is being clearer that the mainstream standpoint may have significant drawbacks and inconsistencies with the business practice, the practice of individuals.

One of the leading economists of our times, Paul Krugman, once concluded that:

What's more, you have to ask why; if markets are imperfect enough to generate the massive waste we've seen since 2008, we should believe that they get everything else right. I've always considered myself a free-market Keynesian – basically, a believer in Samuelson's synthesis. But I'm far less sure of that position than I used to be. (from an article titled "Synthesis lost", NY Times, August 12, 2013).

Although the great reform of economic theory is a contemporary topic, the economics of shipping business cannot be isolated from such a fundamental change. It is needed to revisit, revise and criticise conventional perspectives and the existing philosophy behind the shipping economics research. As the starting point of rethinking economic habits of the shipping industry, the cornerstone assumption, rationality, requires an extensive, in-depth, credible, transparent and objective criticism.

Robert J. Shiller (Nobel Prize in Economics, 2013) once stated that:

Good investing is a little bit like diagnosing a mental illness, because you have to understand the pricing of assets to find something that is underpriced for now and will improve later. So that means understanding the origins of people's thinking. It puts you even closer to a psychiatrist than you might like to think. (Credit Suisse, 18th Asian investment Conference, a lecture entitled "The Art of Investing").

It seems that a modern approach to the shipping investments should be established around sentiments, incentives and behavioural capacity of entrepreneurs. A good ship investment is probably performed not with bigger capital or the size of fleet but through managing investors', firms' and markets' mental orientation. Short-term rationalities may not be rational in the long run. Time scale plays a significant role in our perception of rationality or logical investment preferences.

This paper intends to illustrate the role of irrationality from existing research and practical inconsistencies, as well as moral hazard perspectives. The presented evidence may be a bit of the entire irrationality debate. Therefore, future research on the behavioural economics of shipping business is strongly encouraged, and the introduced problems are still waiting for a particular intellectual look and additional empirical verifications.

Based on the scope of this paper, six essential assumptions or illusory factors are indicated as a reference for further studies by outlining the existing (sample) inconsistencies. These assumptions are usually implicit elements behind the methodological framework.

Once these assumptions are somewhat rejected or weakened, subsequent models and analysis will need re-examinations. Although the initial perspective of this study is not to criticise or invalidate the existing methods, it is indirectly dealing with the problem.

+ Among other practical solutions, in-house behavioural economists and/or behavioural investment consultants would be functional and improving. For eliminating further disruptive incentives, new-generation consultants and managing directors must be insulated from mechanisms encouraging short-term orientation and high-frequency decision-making (severe action bias). Considering that a ship investment usually has around 15-20 years of life time (also shipping business cycles last more than a decade), the asset management framework must be justified for slow-down and cautiousness (in cumulative, that may also reduce acute volatility of markets). That part of the problem broadly falls into the field of management science, and managerial innovations and new paradigms may be required to sustain enterprises for several decades. Under this circumstance, the Asian shipping business approach may be investigated profoundly, as common shipping firms in the region survive much longer than any other competitor in the industry.

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