

## The Effects of the Economic Crisis on the Greek Shipping Industry

PATKIDOU SOULTANA\*, KARASAVVOGLOU ANASTASIOS\*\*  
THEODOSIOU THEODOSIOS\*\*, POLYCHRONIDOU PERSEFONI\*\* AND  
TSOURGIANNIS LAMBROS\*\*

### ABSTRACT

*Maritime shipping constitutes for Greece a sovereign source of income and growth of the Greek economy. The goal of our research is to analyze the results of the global economic crisis in the Greek shipping industry. The results of our research show that the economic crisis affects the shipping industry. There is a significant decrease up to 85% in the market of dry and liquid cargo. As it is expected, any economic instability has effects in different sectors and especially in the shipping industry, which depends on purchases of capital and benefit of services.*

*Keywords: Shipping Industry, Economic Crisis, Ratio Analysis, Correspondence Analysis, Greece  
Jel Classification codes: L91, C38*

### 1. INTRODUCTION

Maritime shipping is one of the most important sectors of global economy. It offers the possibility of transporting large quantities of goods and industrial products by sea, contributes to economical growth and geographical distribution of international trade while it pollutes the environment less than other modes of transport of goods. Furthermore, the growth of shipping, affects the level of employment in each country, generates income and also improves the balance of payments.

Global economy and shipping industry are inseparable. The growth of global economy depends on the shipping procedure and shipping, almost always, depends on capital markets and services. As a result, an economic turmoil is expected to lead shipping industry to halt.

The contribution of shipping in the world trade has also been recognized by economist Adam Smith, which characterized the shipping sector as the “catalyst” of world economy, due to its ability to transport large quantities of merchandizes with relatively low cost (Kavussanos and Marcoulis, 2005). The contribution of shipping in the world trade has become particularly perceptible in the last period of thirty year. In 1955 the maritime trade amounted in 0,55 billions tones, in 2007 amounted in 7,59 billions tones (Pachoulis, 2009).

\* Department of International Economic Relations and Development, Democritus University of Thrace, Greece

\*\* Department of Accountancy, Kavala Institute of Technology, Greece, (corresponding author E-mail: theodosios.theodosiou@gmail.com)

The main goal of this work is to study the repercussions of the economic crisis in the Greek shipping companies, using economic indicators and to compare the divergence that present the periods before and afterwards the crisis. The shipping sector was chosen because it is a sovereign source of income, for the Greek economy. Furthermore the maritime transports constitute an important factor of support of the Greek economy.

The analysis was conducted from 2006 until 2008, when shipping reached its peak and by the end of 2008 it was influenced significantly by the global economic crisis.

The companies with common characteristics for the given 3 years separately are grouped, with the use of the Correspondence Analysis, a ratio analysis for each company is performed.

We examine the indexes of liquidity, profitability and capital and the stock exchange ratios. These indicators express quantitative relations between elements of the companies. Generally, the indicators can show us how successful and effective the decisions are.

In the next section we describe some background theory concerning “the shipping cycles” and the peculiarities of the Greek shipping companies. In section 3 we describe in detail the data and the methodology in the analysis. The results of the Chic Analysis are shown in the section 4 and we conclude in the last section.

## **2. BACKGROUND THEORY**

The shipping sector has specific features, which differentiate it from other industries.

### **2.1. Shipping Cycles**

Fundamental in shipping is module of supply and demand of shipping services, called the “shipping cycles”. The “shipping cycles” lead to the necessity of finding big capitals and have high risk.

With regard to the mechanism of supply and demand that it is reported in (Georgantopoulos and Vlachos, 2003) the demand for marine transport is a derived demand. It absolutely depends on the demand of merchandise to transport. As long as the demand for transport is increased, the freights are also increased, because of the limited capacity of each category of vehicle. The limited capacity also causes limited transport sufficiency. As a result, the value of vehicles is increased. The reverse is also true. (Branch, 2007) The reduction of the demand has direct impact in the prices of the freights and their after- sale value (Giziakis *et al.*, 2006).

The offer of marine transports reacts slowly and with difficulty into the changes of demand. The shipbuilding of commercial boat requires from 1 to 3 years in order to be completed and thus is difficult to adapt to the offer in a potential increase of demand (Pallis, 2007). On the other hand, the lifespan of boats is extended from 15 to 30 years and consequently the correspondence of offer in a likely fall of demand is also a long-lasting process, mainly when a big surplus of boats exists that should be withdrawn.

Maritime is composed from individual economic markets, such as the market of freight and the market of vehicles that correspond in the laws of offer and demand (Pallis, 2007). However, the “back-bone” of shipping economy is the relation between offer and demand of capacity. These two opposite forces cause the phenomenon of circularity in the shipping, and are primarily responsible for the periods of rise and way down of freight and prices of vehicles.

The circles play an important role in the shipping industry because they appear to represent the danger that is inherent in the shipping investments (Harwood, 2006).

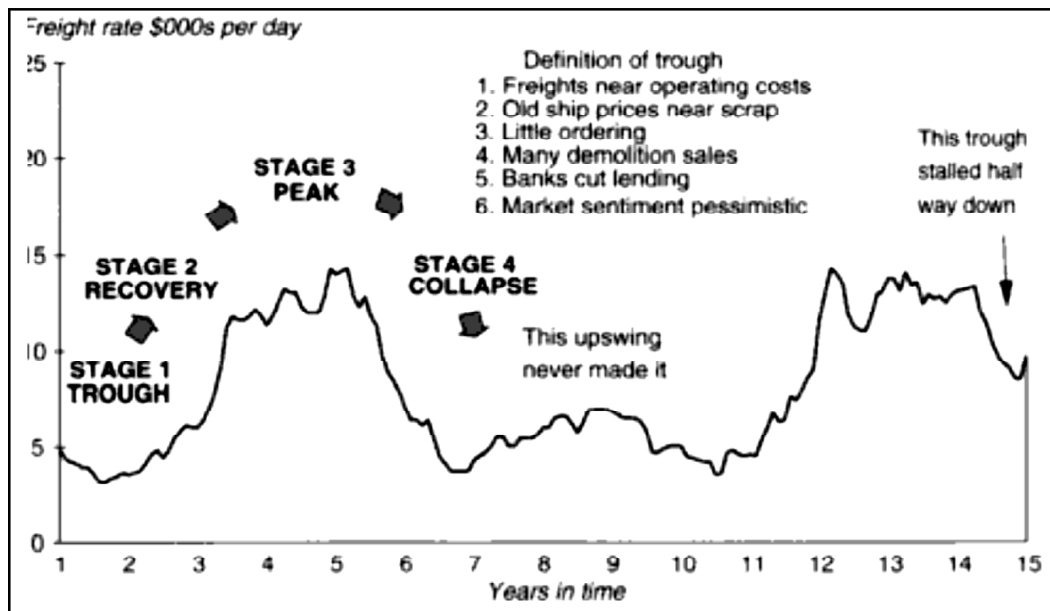
Among the factors that influence and disturb the shipping circle, are the international economic situation, the creation of reserves, meteorological causes and the prices of transported charges.

The effect of shipping circle in the decisions of management is important and constitutes a basic criterion of each enterprise in the adoption of acceptable limit of danger. Because of the high variability of income for each shipping company due to the fluctuations of the freight market the management differs case by case. The cyclicity of the market influences the profitability of enterprise but also the values and the prices of vehicles therefore the possibility of forecast does not only concern the freight market but also the policy of freighting.

The shipping circle (figure 1) follows the pattern: Recession, Recovery, Prosperity and Collapse (Samprakos, 2001). These patterns, as they are expected, are not an exclusive phenomenon of shipping, but also they are observed in the economy as total and often they depend in a corresponding business cycle<sup>2</sup>. The period of circle counterbalances with the distance between the point of beginning on the line of tendency and the return in this, after it is supplemented with a semicircle of rise and drop.

All the forementioned, influence the prices of vehicles and make the shipping industry a high-risk investment. Nevertheless, this risk is not accompanied by an adequate output. According to (Stopford, 2009), the average yield of shipping investments is about 10% (lower than other industries) but, at the same time, the risk is much higher, as determined by the standard deviation of return.

Figure 1: Shipping Circle



Source: Stopford, M. 2009 (page 43)

Shipping industry shows a complexity, because of the international status. It consists of different kinds of markets, but each one has its own rules of supply and demand and its own structure, because there is a modulation of transferred loads and sea routes that are followed.

The conditions that are presented in each market do not have the same effect in other sectors of shipping, while the boats differ considerably in size, type and in the services that they provide.

An important factor for the shipping industry which has a lot of particularities and peculiarities is the finance, which, actually, constitutes the “back bone” for the growth and the extension of enterprising activity of shipping companies.

This investment risk is what influences also the degree of facility or difficulty of financing of shipping company from banking or other investing organizations (Kavussanos and Visvikis, 2006).

The most usual sources for acquiring capital are (a) financing with proper funds (Equity), (b) intermediary financing (mezzanine finance), (c) financing hire (Leasing), and (d) banking commercial loans (senior dept).

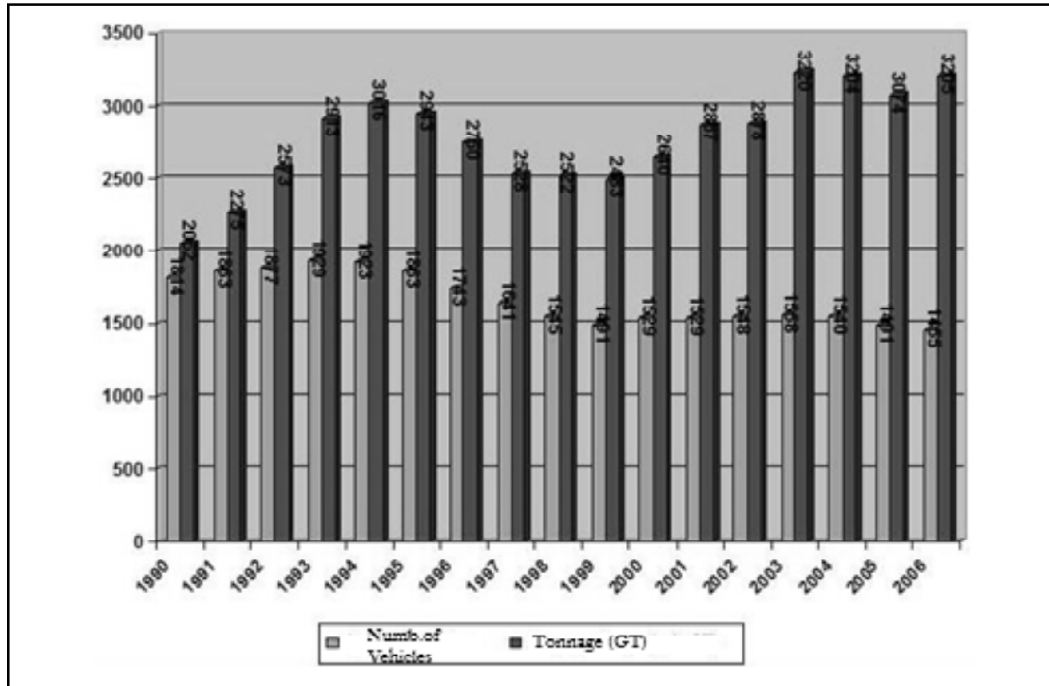
## **2.2. Peculiarities of Greek Shipping Companies**

The participation in a Stock Exchange market as a form of finance constitutes relatively a recent phenomenon for the Greek shipping companies. The reasons that lead the enterprises to this direction are the difficulty of guarantee of banking lending and the effort of extension of company interest-free without undertaking the banking danger. In other words Stock Exchange constitutes a source of capital, with small relative cost, giving the possibility of exploitation of capital market in order to raise capital (Kiochos and Papanikolaou, 2001). This form of finance is more acceptable from the shipping companies of abroad than the Greek shipping. The Greek shipping community is more hesitant, up to today, in this form of finance, mainly because of the particularity of Greek shipping companies that is characterized by the familial organization and “light” management. Some of the reasons that, negatively, affect the finance with proper funds are that this familiar composition of the Greek shipping companies tries to avoid the regular control and evaluations that are imposed by participating in the Stock Exchange Market. As a result the bigger and more powerful Greek shipping companies are listed in the foreign Exchange Markets.

It is worth mentioning, that the Greek shipping industry maintains the primacy in a lot of sectors. A characteristic example is that in the bulk carriers it possesses the 22,2%, in the tankers the 21% and in the chemical and products it possesses the 14,45% of world capacity. Globally, it represents roughly the 17,1% of world fleet from side of capacity in tons dwt and the 51% in tonnage the fleet that possess the 25 countries of European Union. The Greek shipping, in the 21st century, is largest in the world, with a fleet of 3800 vehicles and 160 million tons (Skordilis, 2009).

According to recent statistical elements (Lloyd’s register Fairplay, 2006) Greece occupies the seventh place in the world, with base his capacity under Greek flag of a number of 1455 vehicles and total capacity 32.048.052 gt.

In particular, one out of five oil-tankers belongs in Greek ship-owners. More than 120.000 individuals work in the shipping sector and Greece is the only member of E.U that allocates autonomous Merchant Marine Ministry.

**Figure 2: Force of Greek Commercial Shipping (boats > 100 gt)**

Source: Lloyd's, World Fleet Statistics

### 2.3. Economic Crisis and the Shipping Industry

This section briefly reports on the effects of the world economic crisis<sup>3</sup> to the shipping sector.

The progress in the world economy, elect the need for direct stabilization of world financing markets with the modern support of economies and the control of inflation.

Shipping is usually not reported in the mass briefing, even in the periods of agitations.

Nevertheless, the rise of world prosperity and the growth indicators are influenced to a great degree, by the shipping sector. The role of the shipping sector, not only, as a supporting operation of trade industry but also, as a social need, is important. Without it the exports and the imports of goods that are essential for the modern economies, would not be feasible.

The world economy and the shipping are tightly connected. The growth of world economy depends on the shipping and the shipping depends always on the purchases of capital and benefit of services. Consequently, by definition, it is expected each economic agitation to lead the shipping industry to stagnation.

Actually, the crisis gestates dangers not only for the survival of economic entities and financier markets, but also, for the real economies. The economic history<sup>4</sup> so far, has shown, in several circumstances, that the economic instability has repercussions in social, cultural and political level. Inevitably, such a crisis will have decisive importance repercussions also in the

shipping based on the relationship between the world economy and the shipping industry.

The repercussions for the shipping sector are marked in two levels: Firstly, in the important fall of indicators of dry charge, that creates pressures in the economic viability of shipping services. Secondly, in the reduction of fluid availability, because of the investments of profits of previous years in different sectors except shipping that has been affected also by the crisis.

During the period of crisis there are changes in the markets of capital, but also in the markets that influence the shipping from the perspective of demand. The markets of dry and liquid cargo are in low levels while the indicators were decreased up to 85%. Baltic Dry Index is found in the lower level than year 2002 (The Economist, 2008). If this is continued for a long time, then the consequences for shipping will be still more serious.

As far as the branch of shipbuilding is concerned, the orders of newly boats are in the lowest level. It is noteworthy that during the last nine months in 2008, the banking loans to the shipping companies, in world level, were decreased 30%, while 60% of new orders still have not been financed (General Secretariat of Communication and Information, 2008).

Already taking into consideration the progress, the shipping industry has preceded in cancellations of orders because of the lack of economic ensures. It is not easy to estimate in which level of recession the shipping industry will stop.

### 3. DATA AND METHODOLOGY

Three different analyses were conducted in order to estimate the effects the economic crisis has in shipping and in the companies under review. The first one is based on ratio analysis, the second one, on the application of the program Chic Analysis and the third one, on comparative diagrams of indicators and sizes with regard to the industry.

#### 3.1. The Dataset

The 19 companies that participate in the analysis are the following (table 1):

**Table 1**  
**The Greek Shipping Companies used in our Analysis**

<i>Company Name</i>	<i>Company Name</i>	<i>Company Name</i>	<i>Company Name</i>
Tsakos Energy Navigations (TEN)	Diana Shipping (DSX)	Euroseas LTD (ESEA)	Paragon Shipping (PRGN)
Dryships (INC)	Navios Maritime Transport LTD (NM)	Aegean Maritime Petrol Network (ANW)	Seanergy (SHIP)
Top Tankers (TOPS)	Aries Maritime Transport LTD (RAMS)	Stealthgas (GASS)	Navios Maritime Partners (NMM)
Excel Maritime Carriers (EXM)	Star Bulk Carriers Corp. (SBLK)	Freeseas INC (FREE)	General Maritime Corp. (GMR)
Danaos Corporation (DAC),	Omega Navigation Enterprises INC (ONAV)	Capital Product Partners (CPLP)	

According to their annual financial statements we use economic data, in order to calculate the indicators that we analyze below. Specifically, from the income statement of every year, the data of the Total Revenue, Gross Profit, Earnings before Interest and Taxes and Net Income are used. From the Balance Sheet, the data of Total Current Assets, Property Plant and Equipment, Total Current Liabilities, Long Term Debt, Total Liabilities, Total Stockholder Equity are used and from the Cash Flow statement, the data of the Investments and the Dividends Paid are used.

According to the above data, we estimate 14 variables, in order to apply them in the Chic Analysis. The general fluidity indicator, the indicator of structure of debt, the indicators of mixed profit, net margin of profit, total efficiency, efficiency of proper funds, consolidation indicator, circulatory speed of constant financial elements, (Niarchos, 2004). Also we examine the Stock Exchange indicators of divided ratio, dividend payout ratio, indicators of price to profits (P/E) and indicators of price to sales (P/S). Finally we have as a separate variable the total revenues and the net profits.

### 3.2. Ratio Analysis

The analysis is in its most part the establishment of important relations, the localization of important changes in tendencies, in the size of sizes and investigation of reasons that explain the changes. It should be noted that localization of critical point is possible to give a convenient warning for a important change in the future success or failure of a company (Kosmidou *et al.*, 2004).

The analysis of financial statements is a system of information that takes the data from the published financial statements and other sources, extracts information by studying, evaluating and interpreting relations and tendencies between the various financing data that become the quantitatively and qualitative means, and provide information in each interested individual or institution, such as the institutions of enterprise (householders, shareholders, administration), the creditors, the Financial Organizations, the likely investors and finally the tax ministry and other economic services (Glautier and Underwood, 2001).

Specifically, as for the indicator of General Fluidity, which shows the degree that the short-term obligations are covered by the financial elements of assets, the greater it is from 1 (>1) the greater the fluidity of the company.

This ratio is also confirmed by the values drawn from the indicators of structure of debt. It is calculated as the ratio of current liabilities to total liabilities. The less the current liabilities are, the greater liquidity the company has. Thus, the companies that have an increased liquidity ratio, they have a low indicator of structure of debt.

The next indicator is regarding to the effectiveness of the company which is indicated to preserve and enhance the equity of the company. The efficiency, as a criterion for measuring the successful operation of the company, is the relationship between the "profits" made in an accounting year and the used capital.

The indicator of the net profit margin is the result of good management and organization of the company. The higher ratio is, the higher the profit.

Another important indicator for companies belonging to the shipping industry that is predominantly borrowed is that of return on capital. This indicator shows what percentage of

equity used to generate profit from them. Of course, this ratio should take into account the nature of the business and the industry.

The shipping industry differs significantly from other companies in the industry because deals with high value assets. This is easily understood if we observe the rate of consolidation of companies.

Finally, another indicator associated with the assets and revenues of the company is the circulatory speed of constant financial elements. This ratio indicates how efficiently the company worked each fiscal year in relation to the net fixed assets.

If the ratio is greater or equal to 1 ( $\geq 1$ ) then the results are satisfactory. If the ratio is less than 1 ( $< 1$ ) then the company has been overinvestment in fixed assets in relation to the revenues.

According to Stock Exchange Indicators, the well-known stock index, the P / E (price to earnings), reflects the ratio of share price gains for the stock in a given period. The smaller the index is, the more profits the share has.

Another equally important indicator of great importance to investors is the ratio P / S (price to sales). The lower the ratio, the better the share is.

The last indicator we examine is the ratio of the dividend to the share price and shows the benefits the shareholders have from the dividends of their shares. The high indicators reflect how efficient the investment in this share is.

### 3.3. Chic Analysis

The second and more important analysis concerns the application of program Chic Analysis. This program belongs in the family of software of methods of Multidimensional Statistical Analysis (Multivariate Statistics) and was used to analyze the aforementioned ratios/indicators. The program facilitates the grouping of the reviewed companies for the 3 years separately based on their economic characteristics. The Chic Analysis program analyzes data from the shipping companies that are listed in the International Stock Exchange and depend on the financing and Stock Exchange elements, their revenues, their profits and their fleet.

Our variables for the analysis are the 14 that were presented above. The variables are coded in age groups. The limits for each age-group are defined according to the variable that we examine. As an example the financing indicators that their analysis has as base unit, underwent segregation in three age-groups with limits:  $K_1$ : [0,00- 0,99],  $K_2$ : [1,00- 1,99],  $K_3$ : [2,00-3,00]

While the variables like total revenue and the net profits were separated in age-groups with percentages:  $K_1$ : [30%],  $K_2$ : [40%],  $K_3$ : [50%]

Finally the number of boats of each company is separated in three age-groups with limits:  $K_1$ : [0- 20],  $K_2$ : [21- 40],  $K_3$ : [41- 70]

In order to become comprehensible, we consider that [group]\_1 is lowest while [group]\_3, highest.

The next stage of the analysis involves the creation of the Logical<sup>5</sup> matrix 0-1, with which the attributes that characterize the companies are elected. (Markos, 2006).

Specifically, for each of the 14 variables, new ones are created according to the age groups. For example the variable "General Fluidity" was separated in three age groups. Thus in



Reasonable table 0-1 this variable has taken the form [Gen.Fluid]. \_1 that corresponds to the 1st age group that includes the lower prices, [Gen.Fluid]. \_2 that corresponds to the 2nd age group and [Gen.Fluid]. \_3 which corresponds to the 3<sup>rd</sup> age group and includes higher prices.

In the Analysis of Equivalences we use  $COR^6 > 150$ .

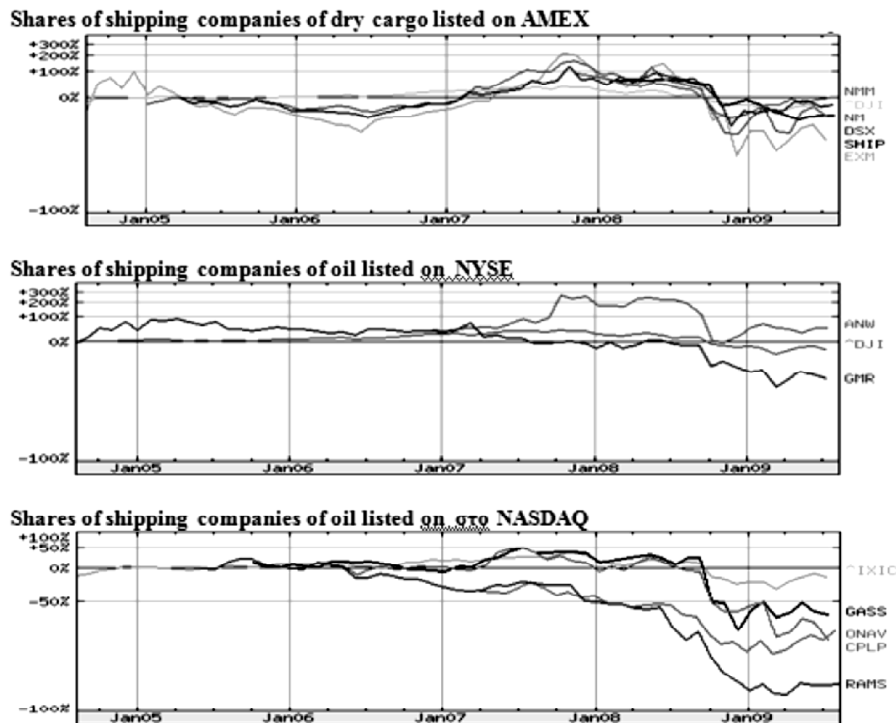
### 3.4. Stock Exchange Indicators

In the last stage of our analysis, we include certain recordings that have relation with the course of companies in the Stock Exchange where they are listed.

We will present recordings with freight rates, with General Indicators of each Stock Exchange, shipping companies of Greek interests have been imported and finally the course of price of oil for the 3 years that we examine. Then we compare the recordings with each other in order to observe if the courses they follow relate harmoniously with each other.

The centralized and comparative diagrams in figure 3 present the courses of action of companies of transport of dry cargo and oil, which are listed in Stock Exchange of NYSE, Nasdaq and AMEX and their courses from 2005. In the diagrams the General Indicator of each Stock Exchange is also included in order to show if and how much the course of action under review keeps also pace with the General Indicator of each Stock Exchange respectively.

Figure 3: Interactive Diagrams of the Companies under Investigation



Source: [www.yahoofinance.gr](http://www.yahoofinance.gr)

A relative homogeneity is observed in all the recordings with the action and the General Indicators they erase the same constant course up until the end of 2006, they present an important ascendant for 2008 and the fall appears evidently from August 2008, when the international crisis made also its appearance.

Such an obvious fall of prices of action and freight implies that the boats do not cover their daily expenses, not calculated the banking obligations from the loans of possession.

## **4. RESULTS**

### **4.1. Ratio Analysis**

Companies that have an increase indicator of General Liquidity, over the years are Danaos Corp., Capital Product and Euroseas that despite the crisis that was revealed in 2008, the indicator of general fluidity remains very high. Similar companies for years 2006 and 2007 are Excel Maritime, Star Bulk, General Maritime with indicators bigger than 1, that is desirable, and more concretely indicators 4.5, 6.5, 2.32 respectively. On the contrary the company Top Tankers, in 2006 and 2007 had indicator 0.67 and 1.79 respectively, in 2008 the indicator was roughly 25. This happened because the assets of the company were increased sharply and the short-term obligations were decreased respectively. However, there are also companies that they have an indicator smaller than 1. In such a case, these companies had increased the short-term obligations, which include interest, taxes and dividends. Such cases are the companies Dryships, Aries Maritime and Freeseas.

This ratio is also confirmed by the values drawn from the indicators of structure of debt. In 2008, the company Diana Ship, had a liquidity indicator nearly 3.3 and debt structure indicator 0.07, while the company Aries Maritime had liquidity indicator and debt structure indicator of 0.08 and 1.0, respectively. This indicates that the total liabilities of the company Aries Maritime, related liabilities. This indicates that the total liabilities of the company Aries Maritime, are referring to short-term liabilities.

The indicator of the net profit margin is the result of good management and organization of the company. The higher ratio is, the higher the profit. During the years 2006 and 2007, where shipping industry was in the peak, we observe a generally favorable and increased profit margin and some companies reach 80% and 90%, such as Dryships, but despite the high ratio it doesn't seem to be able to liquidate.

Companies like Danaos, StarBulk, Diana, Omega and Tsakos also have a high profit margin. In the contrary, there are companies that although the net profit ratio seems low, they have a good overall liquidity. This is because these companies may not have increased profit by total revenue, but at the same time they have relative less obligations. In this category the companies Aegean, Stealthgas, Paragon, Navios and General are included. There are companies that appear to have a disadvantage because the indicators over time are shown low, such as Excel Maritime and Top Tankers which, however, after two years of low profitability in 2008, recovering significantly.

Another important indicator for companies belonging to the shipping industry that is predominantly borrowed is that of return of capital. We realize from the analysis that in 2006 most of the companies were around 20% -30% in return on equity. Only Euroseas reach 62%,

but presents an unsatisfactory degree liquidity ratio 0.46 in 2007, while profit margins for almost all companies are increasing the return on equity are not proportional the same, with an exception of the company Navios that appears be balanced in all the indicators of the year. In 2008, some companies have a particularly strong indicator which reaches 95% and 74% for the companies Danaos Corp. and Aries Maritime and about 50% of the Capital and Navios.

All companies reach rates higher than 80% - 90%. Indicative percentage of fixed assets for the company Diana reaches 93% of Stealthgas and Seanergy to 91% and finally 90% for the company Navios. This ratio seems too high for all companies in 2008, 15 out of 19 companies, under investigation are higher than 80%. During 2007 and 2006 this ratio reached to 10 out of 19 companies.

All companies except Navios and Aegean have a ratio of circulatory speed of constant financial elements less than 1.

There are some companies with the indicator P/E (price to earnings) approximately 40 and 50, and some others that have indicators up to 100 and 200 as Paragon Shipping, Starbulk. This happens due to the high value of the share, particularly in 2006 and 2007. In 2008, the share prices are decreased significantly; the ratio P / E is also significantly decreased.

From the analysis we end up that the indicator P/S (price to sales) is quite high for the years 2006 and 2007, which have a decline in the year 2008, which has significantly reduced the trading price thus, also affects the index.

The last indicator we examine is the ratio of the dividend to the share price. Generally, we noticed that the companies we examine have not paid dividends, while those who had, they yielded a very small percentage.

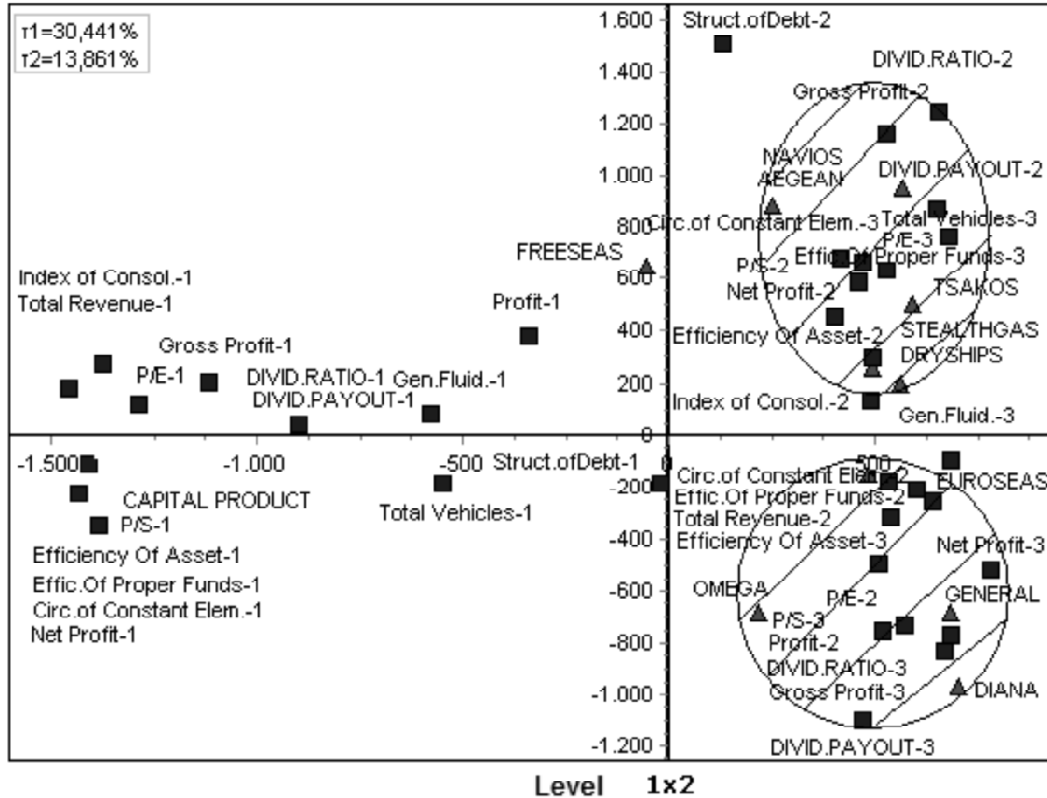
#### **4.2. Chic Analysis**

In 2006, the Chic Analysis produced two groups (figure 4). The first one includes the companies Navios, Aegean, Tsakos, Stealthgas, Dryships and the second one the companies Euroseas, Omega, General and Diana.

The first group is about companies with increased revenues and with the biggest profits for the year that is analyzed. The profits of companies that participate in the analysis oscillate from 2 million dollars to 200 million dollars. Furthermore, in the first group the companies present profits of intermediate order. This team is characterized by the attribute Fleet-3 that shows that they have the highest number of vehicles. The characteristics of this category and generally of companies that belong in this group, are that, even if it exists over investment in constant equipment ([Circ.of Constant Elem.-3), their net profits are satisfactory concerning their obligations. The companies Tsakos, Stealthgas and Dryships present percentage of constant installations 87%, 94% and 95% respectively. This percentage is particularly increased for most companies for years 2006 and 2007, because, while in 2008, before the appearance of the economic crisis, the companies had proceeded in a lot of orders of new vehicles, many of them were delivered before the difficulty of settlement.

Also the companies of the first group, attributed dividend concerning remainder for the year 2006. For the investors that did not trade the particular shares, the percentage of attribution of dividend can be a comparable size with the interest-rates of other forms of investments of

Figure 4: Chic Analysis Results for Year 2006



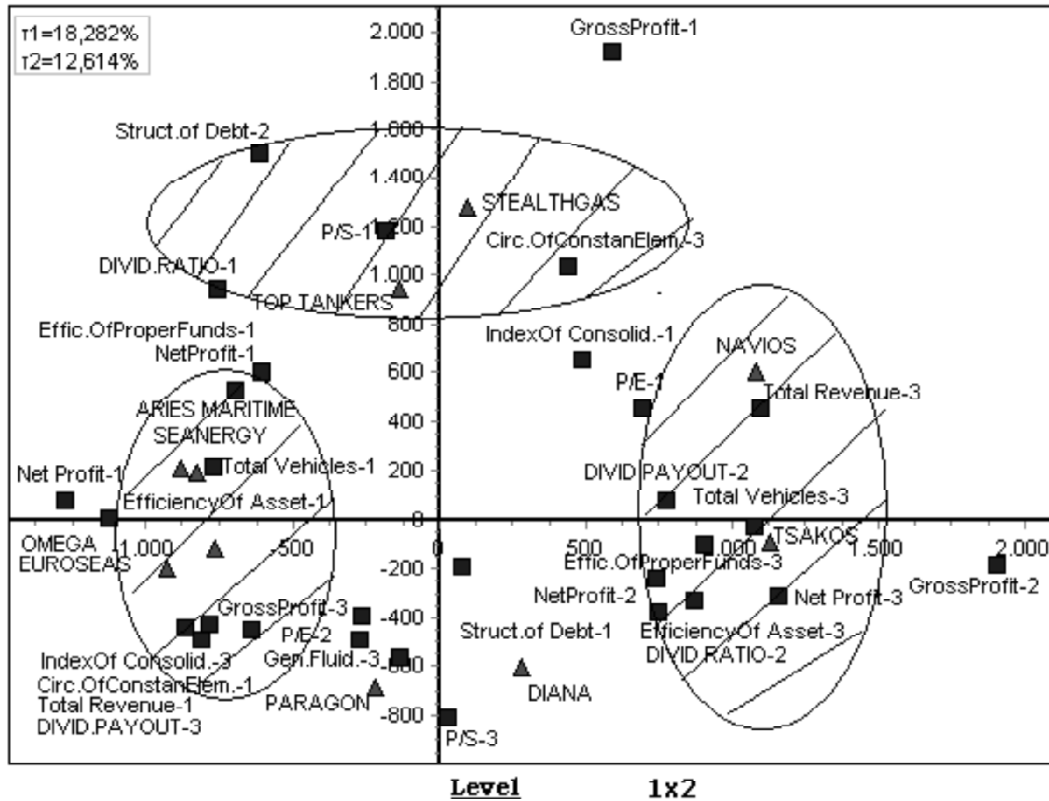
period (deposits, etc) so that the success of investment in the particular action is evaluated comparatively with the output of alternative forms of investment at the same period of time.

The second group is characterized by intermediate order age-groups as long as it concerns the clean margin of profit, the turnover, the investments in constant elements and the degree of utilization of proper funds for the realization of profits. Whereas the shipping industry is basically loaned the attribution of proper funds shows the degree that the proper funds are developed, in order to produce net profits by them. These companies therefore, do not develop their proper funds satisfactorily for the achievement of profits.

These companies moved more efficiently in Stock Exchange, while the shares are not in the preferences of investors, they attributed bigger dividend than those that belong to the previous category.

For 2007 three groupings are produced that include a small number of companies. The first group includes two companies with the biggest profits for 2007 and proportionally a big turnover. These two companies are Tsakos and Navios Holdings. It appears that the companies are characterized by the Third age-group that is also the largest. Both of the companies are activated in the transport of dry cargo and allocate roughly a fleet of 40 vehicles.

Figure 5: Chic Analysis Results for Year 2007



They have a big margin of net profit and the proper funds contribute for the achievement of profits. They also have increased the efficiency of asset for the realization of income and fluidity. The efficiency implies the maintenance and the increase of the clean place of the companies.

In the second group belong the smallest companies as Omega, Euroseas and Aries with smaller number of vehicles in their possession and smaller total revenue. These companies, however also have a smaller percentage of constant elements and smaller rate of margin of net profit. All the companies of this group are characterized by the first age-group which is the smallest. The characteristic the companies share is that they present increased short-term obligations that include dividends, interest and taxes.

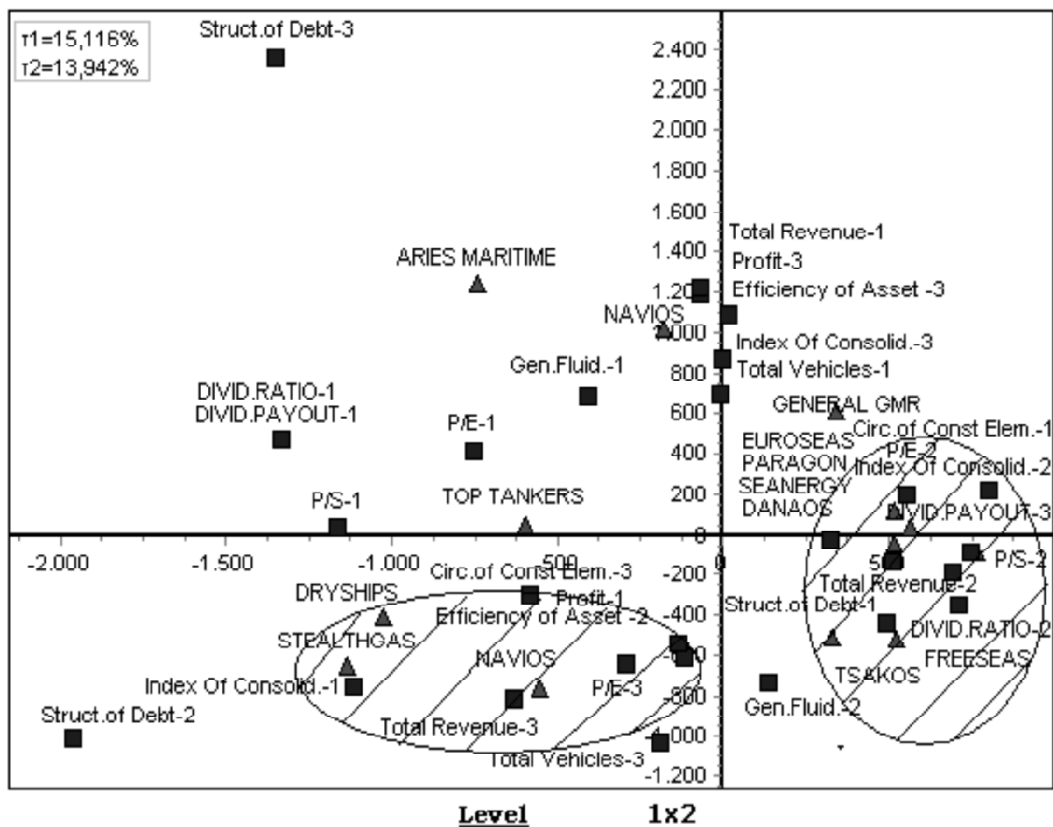
The third group contains the companies Stealthgas and Top Tankers. These two companies operate in a different sector of transports and they differ in the total revenue, the size of fleet that they allocate, the dividend output and in the general fluidity that they have. Nevertheless, their common point is the high indicator of consolidation and the high indicator of circulatory speed of constant elements. This proclaims that the two companies have overinvestment in constant equipment concerning the total revenue that they had for the year 2007.

The company Stealthgas, which deals in the transport of oil, allocates fluidity during the 2007, while the company Top Tankers that deals in the transport of cargo has limited faculty of

fluidity for this year. The fluidity is very important for each company because it shows the degree that the short-term obligations are covered by the financial elements of asset.

The analysis for 2008 leads to two groups. The first group includes the companies Dryships, Stealthgas and Navios that are characterized by a large fleet number, high total revenue and low indicator of consolidation. On the other hand, there are low profit and intermediate efficiency of asset. The second group includes much more companies with characteristics such as intermediate revenue, intermediate indicator of consolidation, satisfactory indicator of structure of debt and finally intermediate, but also low dividend.

Figure 6: Chic Analysis Results for Year 2008



For all the three years that we examined, if we combine the two most important economic elements of shipping sector, which are the constant elements and the income and we analyze how effectively the companies functioned in administration concerning their clearly constant financial elements we observe a homogeneity, despite the economic conditions that changed the balances. If we examine the degree of contribution of constant elements in the size of the investments we realize that all the companies under review except Navios and Aegean have invested in constant equipment, concerning their total revenue.

## 5. DISCUSSION AND CONCLUSIONS

The main characteristic of the Greek shipping sector is adaptability and versatility. Despite the particularities and the dangers that shipping industry has, the dynamics and the prospects that it presents in a country with a history in that particular sector, make it an important part of the economy of Greece. A lot of Greek ship owners are found between the leaders in leading the world, having experience and good knowledge of market, but also investing important capital so that they improve their fleet.

The release of world trade after the agreement of GATT<sup>7</sup> and the continuing negotiations in the frames of WTO (World Organization of Trade) gives new impulse in the occasions of enterprising investments of shipping companies. In fact, in a lot of countries of EU, has been invested capital from American and Japanese shipping enterprises, mainly in companies of shipping of “small distances” (“Short sea shipping”). The main problem however, is that there are restrictive measures that a lot of countries continue to have, as well as discreet treatment in harbors against national businessmen (“Flag discrimination”).

Realignments are already due in the structure of market and also in the structure of shipping enterprises that deals with the branch and concerns in fusions, repurchases and strategic alliances. It is considered, that this changes finally will lead to the gigantism of few companies, therefore will have a status of oligopolistic character of services offer. For these reasons, the policy that the other smaller shipping companies should follow are the renewal of their fleet with newer boats, the shipbuilding of boats of new technology, the rearrangement and the modernization of companies and the complete conformity of these in the requirements of international rules of safety and protection of environment, as well as in the application of International Safety Management (ISM). As it was already reported, the future will be dominated almost in all sectors of globalized economy from fusions, repurchases and finally the creation of economic giants.

The main reason for the expected fusions will be the reduction of functional cost and therefore the profitability of boat and his economic place concerning the competition will be improved.

The Greek maritime is considered not to have the tendencies of globalization for several reasons, mainly because the 95% of activation is in bulk carriers (and only at 5% in regular lines), the family-nature character and the identification of significance of ship owner with that of operator. The Greek shipping has innate weaknesses with regard to the fusion, in the repurchases and in tendencies of gigantism of other forms of shipping (Petrofin Banks Research, 2009).

However, the sector of Greek shipping constitutes perhaps one of the most dynamic sectors of Greek national economy. The Greek fleet possesses the first place in Europe and fourth in the world and a powerful Greece will also mean powerful Shipping (Fafoutis, 2008). Powerful Greek Shipping means powerful place of Greece in world level. It means intensification of Greek economy and tourism and as a result, it means economic and social growth.

The results of our analysis show that, despite the economic conditions that changed the balanced, there is an overall homogeneity, combining the two main economic elements of shipping industry which are the constant elements and the income. According to the contribution of constant elements in the size of investment we realize that almost all the companies, apart from Navios and Aegean have invested in constant equipment, concerning their total revenue.

The companies Top Tankers, Danaos Corp., Capital Product and Euroseas have a high indicator of general fluidity, albeit the crisis. During 2006 and 2007 there is a generally favorable and increased profit margin and companies like Dryships reach 80% and 90%. In the same category there are the companies Danaos, Starbulk, Diana, Omega and Tsakos. This indicator shows how organized and well managed the company is. Only the company Navios in 2007 appears to be balanced in all the indicators. Not surprisingly, all the companies have a high ratio of consolidation that reaches for example 93% for the company Diana. One of the most remarkable results of the analysis is the P/E ratio. It reaches up to 100 and 200 for Paragon and Starbulk companies, but generally all companies have a very high ratio.

This is caused because of the high value of the shares particularly in 2006 and 2007. During 2008 the share prices are decreased significantly. According to the figure 3 we can easily realize the movement of the share prices from August of 2008.

It would be very interesting to look back on the same indicators at the end of the economic crisis, to see the new results obtained.

### *Notes*

1. As business cycle we consider the economy-wide fluctuations in production or economic activity over several months or years. These fluctuations occur around a long-term growth trend, and typically involve shifts over time between periods of relatively rapid economic growth. These fluctuations are often measured using the growth rate of real gross domestic product.
2. As Shipping Crisis is characterized the time period where it is observed an intense fall of freight due either to exogenous to the Shipping factors or in endogenous, internal factors.
3. The Gulf War in 1990-91 led to the closure of the pipeline "Dortyol" and as a result led to an increase for stockpiling oil. These two events have increased the demand for tankers.  
The terrorist attack on the twin towers of New York on 11th September 2001, the subsequent U.S. invasion of Iraq and the war between these two countries brought about structural changes in the shipping industry, and as a result of these events was adopted international safety standards "ISPS" (International Ship and Port facility Security), leading to significantly increase of the management cost of all commercial vessels.  
The threat of spreading the deadly virus "SARS" from Far Eastern countries in the world in 2003 led to short-term negative impact on maritime trade both to and from these countries.  
Hurricane "Katrina" and the devastating damage caused in New Orleans in autumn of 2005, had a negative impact in the shipping trade in the region.
4. The logical matrix 0-1 emerges the characteristics of each object, in contrary to the initial table, where the objects are described from the variables. However, with the logical table, is manifested the "absolute" and "dividing" codification. It is "absolute", because each object is characterized from a single group (characteristic), of every variable and "dividing" because the different characteristics of the same variable are cancelled each other (Markos, 2006).
5. The COR represents the ratio of partial inertia of one specific point of the row or the column that is raised in an axis compared with the total inertia of the section. The COR measures the quality of the representation of the given point on the axis (Markos, 2006).
6. GATT (General Agreement on Tariffs and Trade) General agreement on duties and commerce Agreement that was signed by 123 countries that represent the 90% of world trade. Objective is the



suppression of commercial obstacles. Successor the GATT he is the World Organism of Trade (WTO), which began his work 1 January 1995 and will be from now on responsible for the all subjects that concern the trade.

### *References*

- Branch, A. (2007), *Elements of Shipping*. 8<sup>th</sup> Edition, Taylor & Francis Publishers, Abingdon, U. K.
- Fafoutis, KS. (2008), Greek Shipping is the Heavy Industry of the Greek Economy. [http://www.apodimos.com/arthra/05/Feb/H\\_ELLHNIKH\\_NAYTILIA\\_APOTELEI\\_THN\\_BARIA\\_BIOMHXANIA\\_THS\\_ELLADOS/index.htm](http://www.apodimos.com/arthra/05/Feb/H_ELLHNIKH_NAYTILIA_APOTELEI_THN_BARIA_BIOMHXANIA_THS_ELLADOS/index.htm), (accessed 05/02/(2008) (in greek)
- General Secretariat of Communication and Information, (2008), Greek Shipping Summit (2008. [www.minpress.gr/minpress/scriptpage-bultn.html?id=169831194](http://www.minpress.gr/minpress/scriptpage-bultn.html?id=169831194), (accessed 20/11/(2008).
- Georgantopoulos, El., Vlachos, G. (2003), *Shipping Economics*. T&T Hellas Publishers, Peiraius, Greece (in greek).
- Giziakis, K., Papadopoulos, Ant., Plomaritou E., (2006), *Charters*. 2<sup>nd</sup> Edition, Stamoulis Publisher, Athens, Greece (in greek).
- Glautier, M., Underwood, B., (2001), *Accounting Theory and Practice*. 6<sup>th</sup> Edition, Pitman Publiser, London, U.K.
- Harwood, St., (2006), *Shipping Finance*. 3<sup>rd</sup> Edition, Euromoney Books Publisher, London, U.K.
- Kavussanos M., Marcoulis St., (2005), Cross- Industry Comparisons of the Behaviour of Stock Returns in Shipping Transportation and other Industries. Cullinane K., *Shipping Economics*, Elsevier Ltd, London, UK, pp. 107-143.
- Kavussanos, M., Visvikis, Il., (2006), *Derivatives and Risk Management in Shipping*. Witherby Publisher, London, U.K.
- Kiochos, P., Papanikolaou, G., (2001), *Stock Exchange and Derivatives*. Foreign Exchange. Stamoulis Publisher, Athens, Greece (in greek).
- Kosmidou, K., Zopounidis, K., Doumpos, M. (2004), *Decisions with Multiple Criteria*. *New Technology* Publisher, Athens, Greece (in greek).
- Lloyd's Register Fairplay, (2006), *World Fleet Statistics*. Nautical Institute Publisher, London, U. K.
- Markos, A., (2006), *Help in Interpreting the Results of the Correspondence Analysis, Construction of Algorithms and Analysis of Specific Input Data Tables. The Case of Software Chic Analysis*. PhD Thesis, University of Makedonia, Greece.
- Niarchos, N., (2004), *Financial Analysis of Accounting Statements*. 6<sup>th</sup> Edition, Stamoulis Publisher, Athens, Greece (in greek)
- Pachoulis, J., (2009), Shipping Crisis or a Finance Crash. *Shipping Times*, 116, 1, pp. 22-23 (in greek).
- Pallis Ath., (2007), *Maritime Transport, the Greek Paradigm*. Elsevier Publisher, Oxford, U. K.
- Petrofin Bank Research, (2009), *Key Developments and Growth in Greek Shipping Finance*. [www.petrofin.gr/upload/petrofinbankresearch-end/2009.pdf](http://www.petrofin.gr/upload/petrofinbankresearch-end/2009.pdf), (accessed 05/04/(2009).
- Samprakos, E., (2001), *Introduction to Economics of Transportation*. Stamoulis Publisher, Athens, Greece (in greek).

Skordilis, G., (2009), The Rise and Fall of Greek Ship-owners in Wall- Street. To *Vima*”, 20/04/(2009 (in greek).

Stopford, M., (2009), Maritime Economics. 3<sup>rd</sup> Edition, (2009, Taylor & Francis Publishers, Abingdon, U. K.

The Economist, (2008), Hunting the Rear Economy.