THE RELATIONSHIP BETWEEN FREIGHT RATES AND DEMOLITION PRICES
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Abstract

Maritime market has a derived demand structure, so a pickup in the world's economy will bring vitality to the market. Demolition prices in buoyant market are mainly affected by two factors: first, the demand for steel increases; second, the number of ships sent for demolition decreases because even old and obsolete ships can be profitably operated in good market conditions. So these two factors causes demolition prices to increase in parallel with freight rates. In this context aim of this study is to contribute existing limited literature by examining the relationship between shipping earnings and demolition prices at the macro level. Shipping earnings are represented by the Baltic Dry Index (BDI), and scrap prices are represented by India Demolition Prices. Correlation and regression analyzes are used as methods to determine the statistical relationships between the variables in the study. The result of both analyzes confirms the positive significant relationship between the variables.

Keywords: *Maritime Economics, Freight Earnings, Demolition Prices, Regression Analysis*
JEL Classifications: *C5, F44, R41, Q53.*

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1. INTRODUCTION

Shipbreaking industry are carried out by a few countries in the world. These countries are India, Bangladesh, Pakistan, China and Turkey respectively based on their shares in 2016 (UNCTAD, 2016). As in these countries, shipbreaking activities had been carried out in other countries in previous years. But these activities have shifted to other regions through time. According to Stopford (2009), the main reasons for the regional shift through time were searches for cheap labor and regional high steel demand. So demolition actives are carried out in the countries that meet these requested conditions. Along with all these, ship demolition market is seen as an important field of employment and income source for hosts. The study of Sarraf et al. (2010) shows that the ship demolition activities contribute significantly to the domestic growth of host economies. Also Mikelis (2013) indicates that the sector is vital for economic growth of 5 nations besides domestic steel production. But there is more than that situation, demolition market acts as the balancing lever for shipping market when oversupply occurs (Jugovic et al., 2015).

Freight rates are determined by interaction between supply and demand. The most important single influence on ship demand is the world economy (Stopford, 2009:140). Fluctuations of freight rates causes a shortage or oversupply in transport capacity. This situation will return to cause rise or fall in freight rates. If demand exceeds supply, freight rates rise and market responses by investing new ships. If supply exceeds demand, freight rates fall and ship investors start to send their uneconomical or obsolete ships to the demolition market (Grammenos 2010:249). Randers and Göluke (2007) defined this situation like that when the pace of sending ships to the demolition market is faster than receiving ships from newbuilding market, oversupply is reduced. This will cause a new market balance at higher freight rates.

The reasons for sending ships to the demolition depend on some factors such as age, technical obsolescence, scrap prices, current earnings and market expectations (Stopford, 2009:158). Also activity levels in demolition markets fluctuates as in the freight market and there is no fixed age for ships that are sent to the demolition market. The economic life of the vessel depends on the current freight levels and expected future earnings (Grammenos, 2010). If the current levels of freight rates and expected future earnings are not satisfactory for shipowners, they evaluate the secondhand and demolition markets. But when the freight rates are low, demand for steel will be also low and consequently scrap prices in the demolition market will be reduced as a result of depression in the global economic activities. This is a big dilemma for shipowners since they expect high demolition prices when demand for steel and scrap prices are low (Karlis et al., 2016).

Although it is not known that the freight rates consist of interaction between supply and demand sides and that the ship's demolition prices are affected mainly by demand for steel, the studies that examine the relationship between freight rates and ship demolition prices are limited.

Mikelis (2007) analyzed some statistical data and found that there were a positive correlation between freight market and demolition prices. Furthermore he argued that demolition prices were also affected by supply of the vessel, internal demand for steel and differences in environmental and labor costs of demolition markets.

Another study that verified the study of Mikelis (2007) was investigated by Merikas et al. (2015). He argued that ship demolition market is one of the main supplier of steel industry, hence the market is affected by fluctuations in steel demand. High demand for steel triggers the offered demolition prices for ships to attract them into the recycling industry. Also he supported to view that, high demolition prices are offered when freight market conditions are favorable.

Knapp et al. (2008) examined the relationship between freight levels and decision to send a ship to the demolition market. He found that higher freight earnings have negative affect on the decision to send a ship to the demolition market.

In the parallel with this information, this study aims to contribute existing limited literature by examining the relationship between shipping earnings and demolition prices at the macro level.

2. METHODOLOGY

Pearson's correlation analysis and logarithmic linear regression model are used for analysis of this study. Pearson's correlation coefficient R, a measure of the strength and direction of the linear relationship between two variables, is defined as the (sample) covariance of the variables divided by the product of their (sample) standard deviations. The absolute value of Pearson correlation coefficients is no larger than 1. Correlations equal to 1 or -1 correspond to data points lying exactly on a straight line (Chang, 2014:78). Formula of the Pearson correlation is presented below.

$$r = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[n(\sum X^2) - (\sum X)^2][n(\sum Y^2) - (\sum Y)^2]}} \tag{1}$$

After the Pearson's correlation coefficient is obtained by (1), t statistics of coefficient should be calculated to determine whether coefficient significant or not. Calculated t value by (2) is compared with table values of t-distribution. If it is bigger than critical value, this means the coefficient is significant.

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} \tag{2}$$

The value obtained after the correlation coefficient is calculated by (1) is classified according to the absolute value of 1 if it is significant according to (2). It is considered to be very low in the range of 0.00-0.20, low in the range of 0.20-0.40, moderate in the range of 0.40-0.70, high in the range of 0.70-0.90 and very high in the range of 0.90-1.00 (Soh, 2016: 40).

Another analysis of the study, regression analysis is concerned with the study of the dependence of one variable on one or more other variables. The dependent variable are tried to be explained by the explanatory variables. The results that gained after analysis are used for estimating and/or predicting the mean or average value of the former in terms of the known or fixed values of the latter (Gujarati, 2004:18). Simple model of the regression equation is presented at (3). Y_i is the dependent variable of the equation, $\hat{\beta}_1$ is the predicted constant of the equation, $\hat{\beta}_2$ is the predicted coefficient of the X_i which is the independent variable in the model. At lastly $\hat{u}_i$ is the residuals that cannot be explained by existing model. (4) presents the calculation of the coefficient of independent variable and (5) presents calculations of constant coefficient. And significances of the coefficients are calculated by (6).

$$Y_i = \hat{\beta}_1 + \hat{\beta}_2 X_i + \hat{u}_i \quad (3)$$

$$\hat{\beta}_2 = \frac{n\sum X_i Y_i - \sum X_i \sum Y_i}{n\sum X_i^2 - (\sum X_i)^2} \quad (4)$$

$$\hat{\beta}_1 = \bar{Y} - \hat{\beta}_2 \bar{X} \quad (5)$$

$$tstat(\hat{\beta}_1) = \hat{\beta}_1 / se(\hat{\beta}_1)$$
$$tstat(\hat{\beta}_2) = \hat{\beta}_2 / se(\hat{\beta}_2) \quad (6)$$

$$lnY_i = ln\beta_1 + \beta_2 lnX_i + u_i \quad (7)$$

Log-log regression model (7) is used for our study. One attractive feature of the log-log model, which has made it popular in applied work, is that the slope coefficient $\hat{\beta}_2$ measures the elasticity of Y with respect to X, that is, the percentage change in Y for a given (small) percentage change in X (Gujarati, 2004:176). Also using logarithmic values in data makes them continuous series.

After the estimation of regression equation, some stability and residual diagnostics tests are implemented to the model in order to check robustness condition of the model. Implemented stability tests in this study are cusum test, leverage plot test and influence statistics test. The tests that are related to residuals are Breusch-Godfrey serial correlation LM test, autocorrelation test, White heteroscedasticity test and Jarque-Bera normality test.

The CUSUM test is based on the cumulative sum of the recursive residuals. Cumulative sum is plotted together with 5% critical lines. If the cumulative sum goes outside the area between two critical lines, it means there is a parameter instability (Brown, Durbin, and Evans, 1975).

Influence statistics are a method that are used for discovering influential observations or outliers. The difference that a single observation makes to the regression results is measured by these statistics. Also they help to determine how different an observation is from the other observations in an equation's sample (Guide, 231). Influence statistics are important, because they allow the analyst to understand the impact of individual observations on the estimated regression model (Banerjee and Frees, 1997).

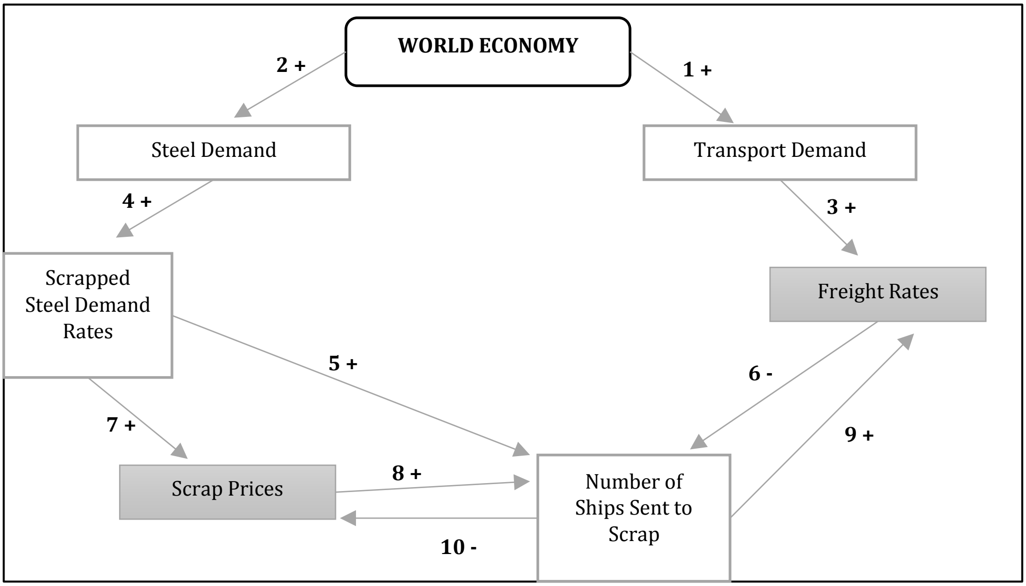
As influential statistics, leverage plots can be used for identifying influential observations or outliers. Leverage plots are the multivariate equivalent of a simple residual plot in a univariate regression (Guide, 232). The leverage plot is the inside picture of a fit that portrays the visual story for a linear model (Sall, 1990).

Theoretical model of the study is tried to be explained in the next section.

2.1. Research Model

Our model in our study consists of two variables. These are the Baltic Dry Index, which represents freight revenue, and India Demolition Prices, which represent scrap prices. The BDI is an index covering dry bulk shipping rates. The BDI provides an assessment of the price of moving the major raw materials by sea. The index takes account 26 shipping routes measured in time charter and voyage basis (Geman, 2008:181). The selection of other variable, India Demolition prices, stems from its strong position in the world in terms of the ship demolition sector in 2016 (UNCTAD, 2016). So it has the potential to represent general prices. Also, lack of data availability affected the sample size and range. Although the relationship between units in the market cannot be explained precisely in Figure 1, it represents an exemplary cycle. Numbers at arrows represent the phases, plus and minus signs refer to type of effect which may be positive or negative.

Figure 1. Research Model Concept of Study



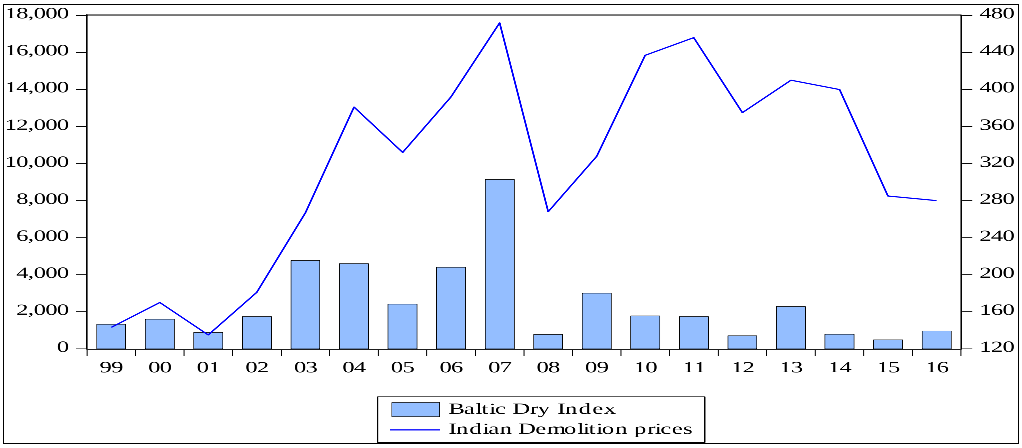
According to my model, firstly the recovery in the economy will increase the demand for transport (1). At the same time, the economic buoyant will lead to an increase in demand for steel (2). Rapid demand increases in the economy will lead to an increase in freight rates, since in the short run, the ship's carrying capacity cannot be increased rapidly due to the construction period (3). On the other hand, the demand for scraped steel will increase due to the revival in the steel sector (4). The increase in scrapped steel demand will generate an increase in the amount of ships sent to the demolition market (5). However, the increase in freight rates will also cause a decrease in the number of ships sent to the scrapping by generating pressure on the opposite side (6). As a result, scrap demanders will begin to offer higher scrap prices (7). This price increase will lead to a further increase in the number of ships going to the scrapping (8). The increase in the number of ships sent to the demolition market will cause an increase in freight rates by lowering the carrying capacity in the world (9) and will lead to a rise in supply in the scrap market and to a drop in scrap prices (10).

As can be understood from the research model, the reasons for the revival in the economy require both scrap prices and ship revenues to move in the same direction. Also it is clear that there is a statistically causal relationship between these two variables. The next sections continue with the definition of data and analysis of them.

2.2. Data

The dataset of the study consists of year end values Baltic Dry Index and Indian demolition prices. Period of the data covers the years between 1999 and 2016. Figure 2 shows the raw form of the series. The right axis belongs to scrap prices and the left axis belongs to BDI values. Scrap prices in the first year covered by the analysis were $ 143 in 1999, followed by an increasing trend and reached $ 472 in year 2007. Prices affected by the global crisis saw a sharp decline of $ 268 in year 2008. Prices were around $ 280 at below the average in 2016, the last year of the research. BDI, which was 1319 points in year 1999, the first year of our research, reached 9143 points in year 2007, when the economic explosion occurred. In year 2008, it fell to a level of 774 points with a sharp decline and closed at 961 points as of the end of year 2016.

Figure 2. Graphical Display of the Variables



Source: Athenian, Bloomberg.

Descriptive statistics showing the mean, minimum, maximum and distribution values of the data are shown in the Table 1. In addition, the data are presented in logarithmic and first difference taken form to be used in future analyzes. First difference taken form of BDI is not presented, because unit root tests in next sections confirms that logarithmic BDI is a stationary series.

Table 1. Descriptive Statistics of the Variables

	DEMO	BDI	Ln DEMO	Ln BDI	ΔLn DEMO
Observations	18	18	18	18	17
Mean	317.3333	2407.167	5.693005	7.476435	0.039526
Median	330.0000	1738.000	5.799074	7.460490	0.089231
Maximum	472.0000	9143.000	6.156979	9.120744	0.388752
Minimum	135.0000	478.0000	4.905275	6.169611	-0.565992
Std. Dev.	107.7885	2163.645	0.398184	0.795132	0.263200
Skewness	-0.343876	1.835987	-0.790792	0.304671	-0.697401
Kurtosis	1.931965	6.187224	2.379730	2.313728	2.751142
Jarque-Bera	1.210276	17.73135	2.164609	0.631701	1.421911
Probability	0.545999	0.000141	0.338814	0.729168	0.491175

Source: Athenian, Bloomberg.

3. RESULTS

The variables that construct our econometric model have to be stationary to avoid spurious regression problems. So our analyzes start with the analysis of stationarity. The Augmented Dickey-Fuller test is one of the most widely used and accepted test, therefore it is used in our analyzes to determine whether the series are stationary or not. The null hypothesis involves this analysis implies that the unit root of the series. According to the results, the logarithmic BDI variable is stationary at 10% significance level whereas the logarithmic DEMO variable becomes stationary at 1% significance level when the first difference is taken as seen at Table 2.

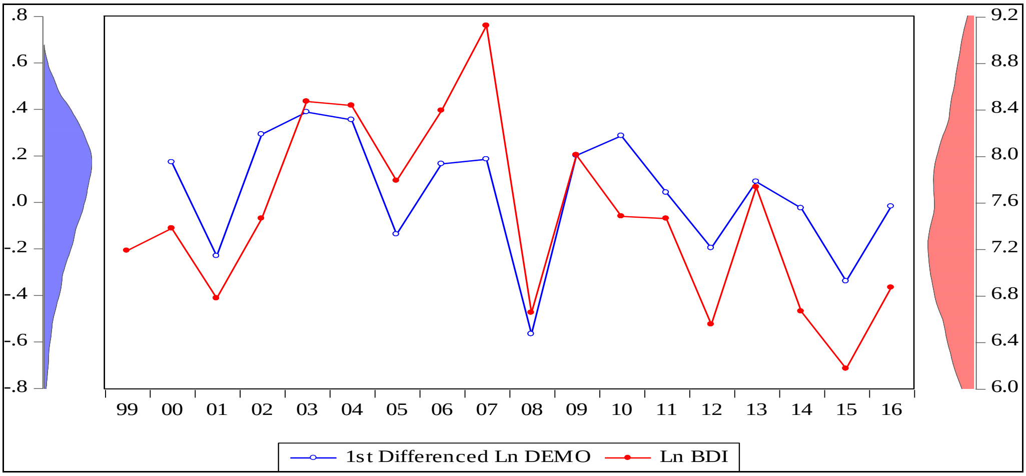
Table 2. ADF Unit Test Results

		Intercept	**Trend and Intercept**
Level			
Ln BDI		-2.904848*	-3.356110*
Ln DEMO		-2.137598	-1.497449
First Differences			
ΔLn BDI		-1.373487	-4.479694**
ΔLn DEMO		-4.053951***	-5.048197***
Critical Values	1%	-3.886751	-4.616209
	5%	-3.052169	-3.710482
	10%	-2.666593	-3.297799

Significance levels = * 10%, ** 5%, *** 1%

It is useful to look at the graphical display of our variables before going to the correlation analysis. As can be seen in Figure 3, the series usually move in the same direction as each other. This is a sign that there is a strong relationship between them in the positive direction.

Figure 3. Graphical Display of Converted Variables



Correlation analysis was applied to stationary data to determine the direction and power of the relationship between variables. As shown in Table 1, the Jorque-Bera probabilities of the data are less than 0.05, indicating that these data have normal distribution characteristics. For this reason, Pearson's correlation analysis was applied to these data. According to the results shown in Table 3, there is a significant positive correlation between the variables at a strong level. This positive strong correlation indicates that ship scrapping prices are also rising as maritime incomes rise. Correlation analysis gives information about the direction of movement of variables, but does not provide causality. For this reason, in order to be able to discover causality, the next step is regression analysis.

Table 3. Correlation Analysis Results

	Ln BDI	ΔLn DEMO
Ln BDI	1.000000	
ΔLn DEMO	0.733534 4.180026 0.0008***	1.000000

Significance levels = * 10%, ** 5%, *** 1%

As mentioned in the section on methodology, regression analysis consists of dependent and independent variables. It determines whether the dependent variable is explained by independent variables and, if so, it shows to what extent it is explained. As shown in the following mathematical expression, our dependent variable in model is Indian Demolition Prices and our independent variable is Baltic Dry Index.

$$Ln\Delta DEMO_i = Ln\beta_1 + \beta_2 LnBDI_i + u_i \quad (8)$$

The regression model was estimated by an econometric software according to the above equation and the results were presented in the Table 4. When the overall significance of the model is considered, the model is significant according to the F test. The significances of coefficients are determined from the probability values at the end of the line. The coefficients are statistically significant because the probabilities are smaller than 0.05 as seen from the regression table below. The model's explanatory power is 53%, in other words, the changes in the BDI explain 53% of the changes in the DEMO. At this point, it is necessary to analyze the structure of the model and to test the assumptions of regression models before interpreting the model. First, actual, fitted, residual graph, cusum test, influence statistics and leverage plot analysis were used to test the structure of the model.

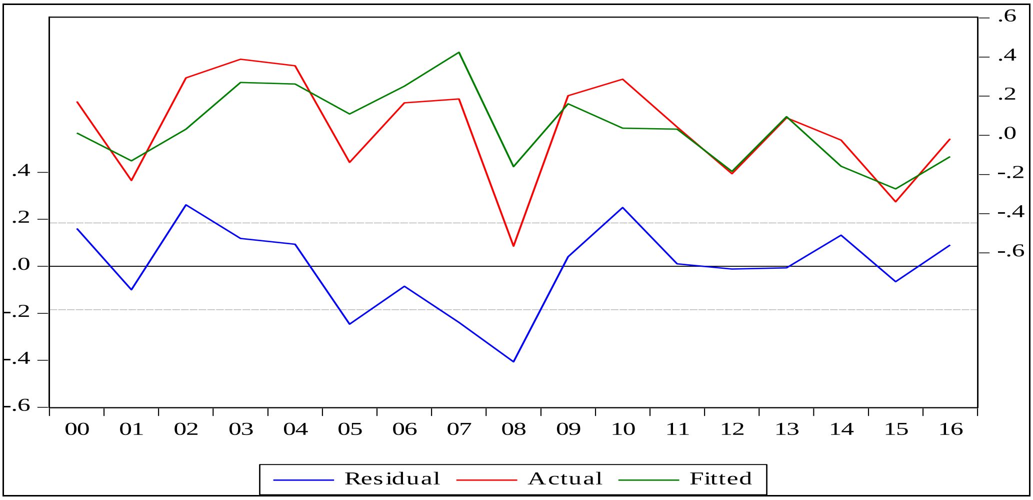
Table 4. Regression Model Equation Results

Dependent Variable: ΔLn DEMO				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-1.733122	0.426437	-4.06419	0.0010***
Ln BDI	0.236555	0.056592	4.18002	0.0008***
R-squared	0.5380	**F-statistic**		17.47261
Adjusted R-squared	0.5072	**Prob (F-statistic)**		0.0008***

Significance levels = * 10%, ** 5%, *** 1%

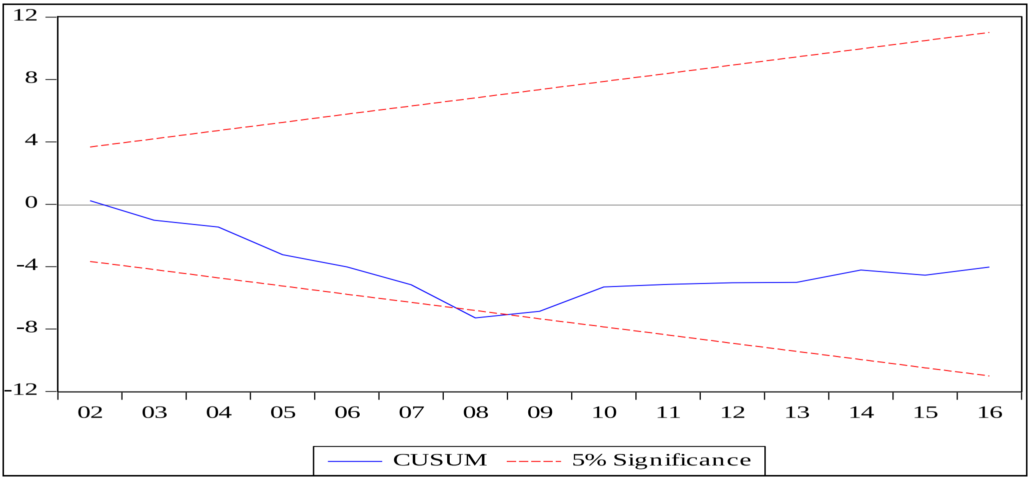
Actual, fitted and residual graph is simple but effective method that can be used to examine the performance of the model we build. Figure 4 shows an unusual decrease in the actual value of the model in 2008. Our model predicted a decline, but the difference from the actual value was relatively high. This difference can also be observed in the residual line.

Figure 4. Residual, Actual and Fitted Values of the Regression Equation Model



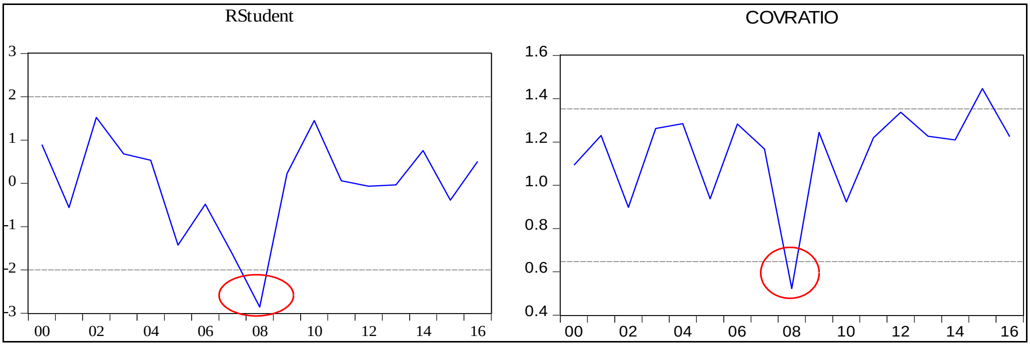
As explained methodology section, Cusum test is used for determination of parameter instability. As seen Figure 5 below, cumulative sum of residuals exceeds the critical lines in 2008 which indicate a parameter instability. Influence statistics and leverage plot analysis are implemented for good measure.

Figure 5. Cusum Test Results of the Model



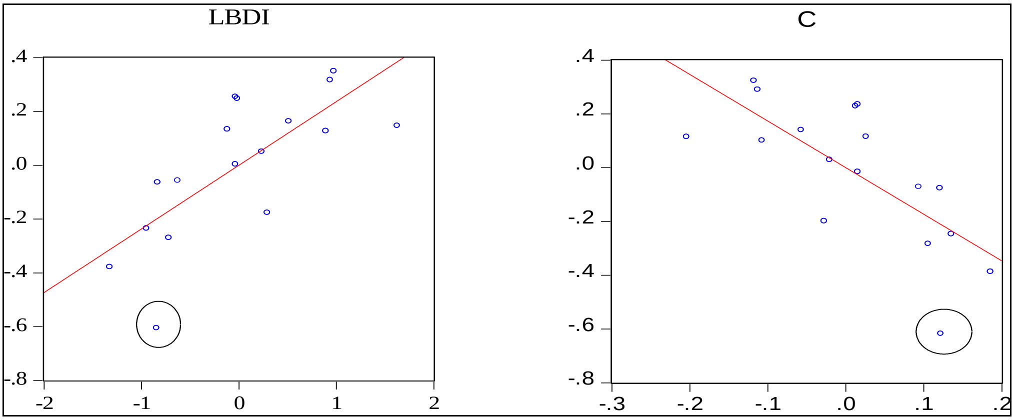
Influence statistics verify the results gained from previous test. As seen at the Figure 6 below, there is a big collapse in 2008 which indicates negative impact of this single parameter to complete model.

Figure 6. Influence Statistics of the Model



According to the leverage plot analysis, distribution of residuals are spread because of relatively low explanatory power of the model as seen at Figure 7 below. The 2008 parameter is circled to show and it is said to be apart from the other parameter plots.

Figure 7. Leverage Plot Analysis of the Model



As shown by the Cusum test, leverage plot test and influential statistics tests, it can be said that the model had a parameter instability in 2008. Therefore, a dummy variable is put in 2008 to try to increase both the stability of the model and the analysis of the effect of the big crisis in 2008.

Table 5. Regression Model Equation Results

Dependent Variable: ΔLn DEMO				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-1.430756	0.366313	-3.90583	0.0016***
Ln BDI	0.199852	0.048281	4.13936	0.0010***
Dummy	-0.464565	0.162470	-2.859386	0.0126**
R-squared	0.708380	**F-statistic**		17.00385
Adjusted R-squared	0.666720	**Prob (F-statistic)**		0.0001***

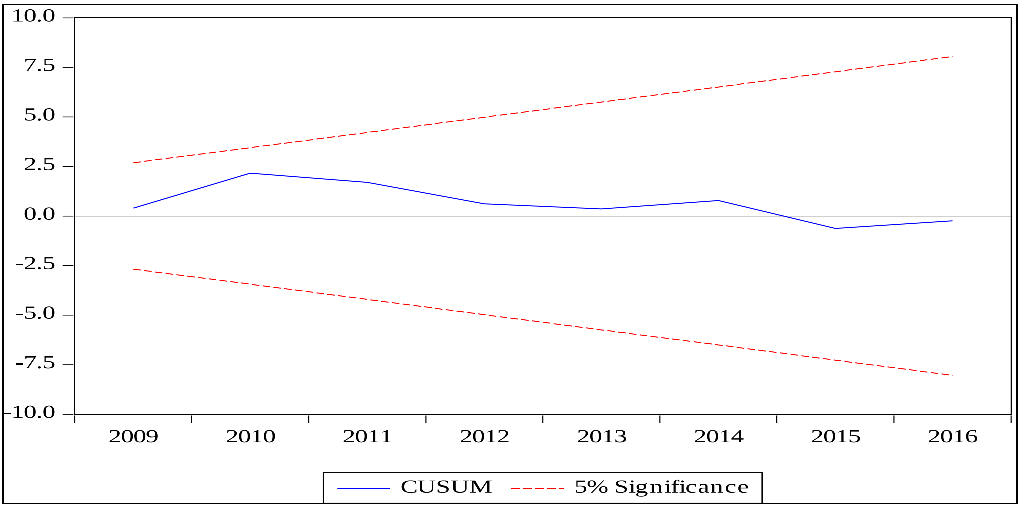
Significance levels = * 10%, ** 5%, *** 1%

The estimation results of the regression equation are shown in Table 5. The dummy variable added to the model is also meaningful and has greatly increased the explanatory power of the model. The R-squared value reached a relatively high value of 0.70. According to F test, our model is significant as a whole. When the significance of the model variables is examined, it can be seen that all the variables in the model are significant. It is useful to check whether the model meets the some assumptions of regression equation before the interpretation of the coefficients. These assumptions relate to the residuals of the equation, and are listed as no autocorrelation, no partial correlation, no varying variance, and a normal distribution. It is necessary to see whether the structure of our model is improved with the help of the dummy variable before going through these analyzes. Actual, fitted, residual graph, Cusum test and leverage plot test are used for analyzing new structure of model.

Figure 8. Residual, Actual and Fitted Values of the New Regression Equation Model

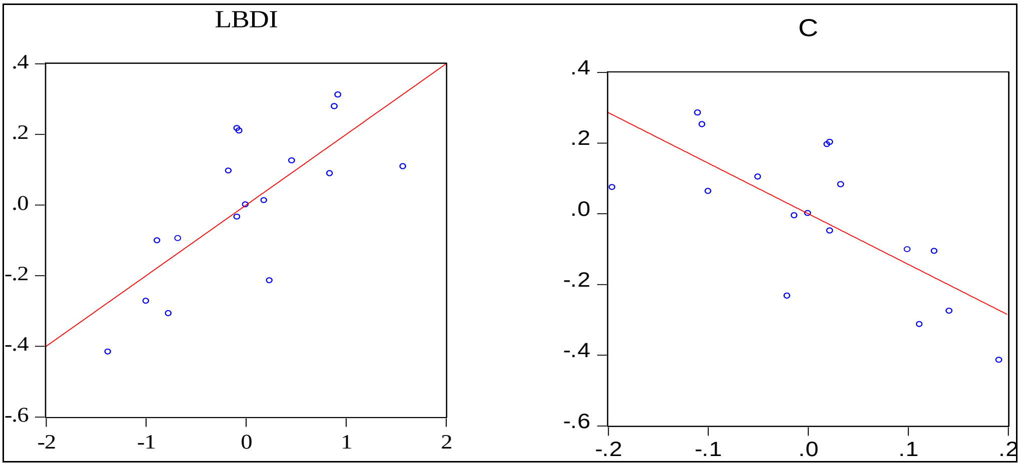
As can be seen in Figure 8, the dummy variable added in 2008 contributed to a profound disparity in that year and a significant reduction in the portion that the model could not estimate. Thus the residual line in the graph has become more stable.

Figure 9. Cusum Test Results of the New Model



The instability seen in the previous graph of the same test is not visible in this graph. In other words, the breakdown in 2008 is corrected and the cumulative sum of residuals has become more stable as seen on Figure 9. In addition, the following leverage plot test confirms this improvement, because the split posture of the 2008 in previous test has been removed in this test as seen on Figure 10. The scattered position of the observations is due to the fact that the model's power of explanation is relatively low. The selection of 2008 for dummies is based on the common interpretation of actual, fitted, residual test, influence statistics and leverage plot test.

Figure 10. Leverage Plot Analysis of the New Model



After an improvement in the structure of the model is achieved, it comes to test the assumptions of the regression equations for its residuals. Some of these requirements are no autocorrelation, no serial correlation, no changing variance, and their normal distribution. The Q-statistic correlogram test is one of the most common testimonies used to determine autocorrelation. The null hypothesis of this test reflects that there is no autocorrelation. 12 lags were selected for the correlogram and null hypothesis could not be rejected at the end of the test. Another commonly used test to detect serial correlation is the Breusch-Godfrey test, whose null hypothesis indicates that there is no serial correlation. 2 lags were selected and the null hypothesis could not be rejected in the test result according to the F test that is shown at Table 6. Since our sample is small, F test is considered when the results of such tests are interpreted.

Table 6. Breusch-Godfrey Serial Correlation LM Test Results

F-statistic	0.051979	Prob. F(2,11)	0.9496
Obs*R-squared	0.146010	Prob. Chi-Square(2)	0.9296

The changing variance can generate problems in the consistency of the estimators. Therefore, it is expected that the model established will not have this problem. One of the most common tests used to detect this problem is the White heteroskedasticity test. The null hypothesis of this test also assumes that the variance does not change. It can be concluded that there is no changing variance when the F test results are based on.

Table 7. White Heteroskedasticity Test Results

F-statistic	0.371499	Prob. F(2,12)	0.7749
Obs*R-squared	1.342339	Prob. Chi-Square(2)	0.7191
Scaled explained SS	0.560105	Prob. Chi-Square(2)	0.9055

The Jarque-Bera test, which we used to examine the normal distribution of variables before our correlation analysis, was used to test the normal distribution of residuals. The null hypothesis of this test is that the residuals are normally distributed. The non-rejection of the null hypothesis according to the probability of the test indicates that the residuals show normal distribution properties.

Table 8. Histogram Normality Test Results

Skewness	-0.110135
Kurtosis	2.230493
Jarque-Bera	0.453801
Probability	0.797000

As the assumptions of the regression equation are satisfied, we can pass to the interpretation of the coefficients stage. According to the regression equation coefficients, value of BDI is 0.199852 which indicates that 1% increase on BDI causes about 0.20% increase on demolition prices. The other independent variable of the model is dummy variable which represents the year 2008. Its coefficient is -0.464565 which shows that there was 46% decline in demolition prices in 2008 with the possible impact of the great economic crisis. Also according to our model changes in BDI explains 70% of changes in INDIA demolition prices.

4. CONCLUSION AND DISCUSSION

According to the research model obtained from the theoretical background of our work, freight rates are high when economic activities are buoyant. Therefore, even the old and inefficient vessels are able to make profit on the market by meeting their high operational expenses. Consequently, the number of ships sent to demolition decreases and the demand for steel increases due to the economic revival. As a consequence of these activities, the prices offered for demolition of the vessels reach high levels. Although the theoretical infrastructure of this important issue is strong in terms of maritime market, the empirical attention is not enough.

In this context, the aim of this study is to examine the relationship of the demolition prices with the freight earnings, which has a very important role in balancing the maritime market and to contribute existing limited literature by an empirical study.

As a result of our study, a positive relationship is found between demolition prices and freight revenues in the both of the analyzes made. Firstly, logarithmic data are checked for stationarity and are converted to stationary series if they have unit roots. According to the unit root test results, it is detected that BDI is stationary, while DEMO contains unit root and when the first difference is taken, unit root disappears. Secondly, Pearson's correlation analysis is performed because our series are normally distributed. As a result of the analysis, it is determined that there is a positive significant correlation between the variables at a strong level of 0.73.

Thirdly, a logarithmic regression model is established whose dependent variable is demolition prices and independent variable is freight revenues. Taking the logarithms of variables makes the analysis healthier because it makes the variables continuous. After the stability tests made after the initial setup of the model, an instability is detected in

2008 and a dummy variable is added to that year. Addition of this dummy is expected to increases both the model's explanatory power and to demonstrate the impact of the global economic crisis on the scrap sector. According to the results of the regression analysis, a 1% increase in freight revenue (BDI) leads to an increase about 0.2% in demolition prices (DEMO). Under the impact of the global economic crisis in 2008, scrap prices suddenly dropped by almost 46% according to the dummy variable. Explanatory power of the model is 0.70 which means changes in BDI explains 70% of changes in INDIA demolition prices.

According to the correlation analysis, moving variables together seems to generate a dilemma for shipping investors. Because scrap prices are high when the market is buoyant, but shipping investors expect high scrap prices when the market is depressed as Karlis et al. (2016) argued.

If the regression results are interpreted differently, a 1% decrease in freight revenue leads to a 0.2% drop in scrap prices. This can also be regarded as a demonstration of the short-run supply inelasticity of the maritime market. As scrap prices are a reflection of economic activity around the world, the greater the response of the maritime market confirms that it is very sensitive to global economic activities. Also that regression interpretation suggests the opportunity to capture opportunities for investors unlike the situation in the correlation analysis. Because the decline in scrap prices is even smaller despite the large declines in freight rates. This means that relatively inefficient and elderly shipowners may have enough time and profits to get out of the market when they feel bad signals on the market. For instance, a 50% drop in freight rates leads to a 10% decline in scrap prices. So that shipping investors have an alternative to protect their capital when bad signals from the market are started to be received.

The results obtained are consistent with the theoretical background of the maritime market and previous studies about this subject. Mikelis (2007) found a positive correlation between freight earnings and demolition prices. Also he argued that demolition prices are also affected by number of ships sent to the demolition and steel demand Merikas et al. (2015) supported to view that fluctuations in steel industry affect the ship demolition prices because demolition market is one of the main supplier of the steel industry. He also found that high demolition prices are offered when freight earnings are high as well. According to the Kanpp et al. (2008), high freight earnings have negative effects on sending ship to the demolition. This situation leads to an increase in scrap prices, because the number of ships sent to the demolition market decreases and economic activities are buoyant.

The biggest limitation of the study is that the data are limited. As is known, data sharing in the maritime sector is carried out by high paying platforms. This situation negatively affects limited budget research institutions in developing countries. However, it is thought that a small contribution has been made to the existing theory with limited possibilities. Further studies may make this relationship even more apparent with wider and more frequent data sets and different econometric methods.

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