PRICE & VOLATILITY TRANSMISSION - SOYBEAN OIL AND CRUDE PALM OIL AND PRICE FORECASTING OF SOYBEAN OIL

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ABSTRACT

Growing global population, increase in per capita income and increasing expenditures over food service industries such as full time restaurants, fast food outlets, caterers and hotels are expected to bolster the demand for edible oils. Global vegetable edible oil industry is expected to expand at a CAGR of 5.3% from 2016 to 2024. Edible oil has wide application, in addition to its use in food sector, it is also used in production of biofuel , the usage for production of biodiesel is higher during the period of time when the price of Crude oil is in upward trend and the favorable policy of the government towards slowing the climate change. Soy oil and Palm oil are the top two vegetable edible oil consumed in the world with market share of 28% and 34% respectively, prices of these oil is determined by the supply of demand of respective oil and are most of the time complementary to each other. the prices of these 2 oil tend to move closely to each other, Soybean oil is palm oil's most important competitor and vice versa, Price differentials play a significant role among these two vegetable oils in world markets. A slight differential in price among these two oils is sufficient to switch manufacturers' preferences in many international markets.

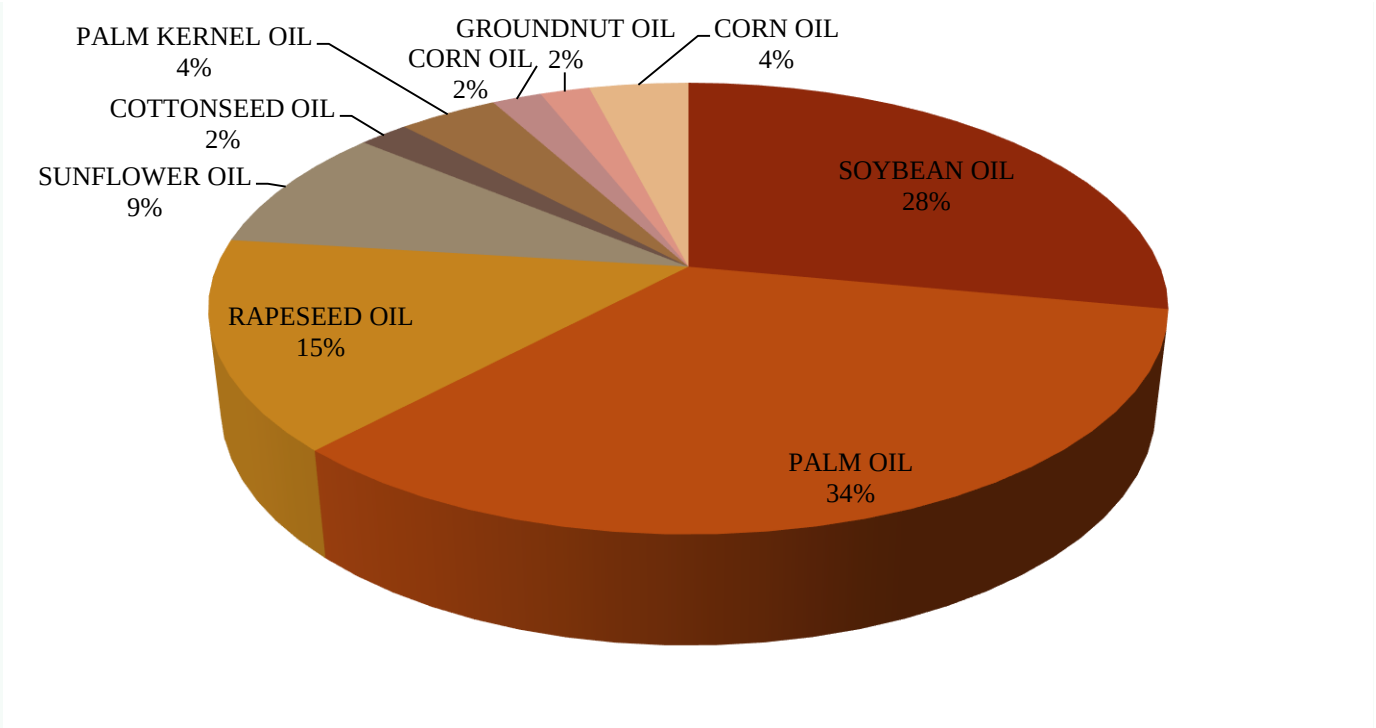
This Study, analyses the dynamic interactions between changes in the price of Soy oil and changes in the Price of Palm oil & determines if Palm oil has information on the price of Soy oil and arrives at the forecasting model.

KEYWORDS : SOYBEAN OIL , PALM OIL , COINTEGRATION , SUBSTITUTE PRODUCT, ECONOMETRIC MODEL, PRICE FORECAST OF SOYBEAN OIL

1. INTRODUCITON

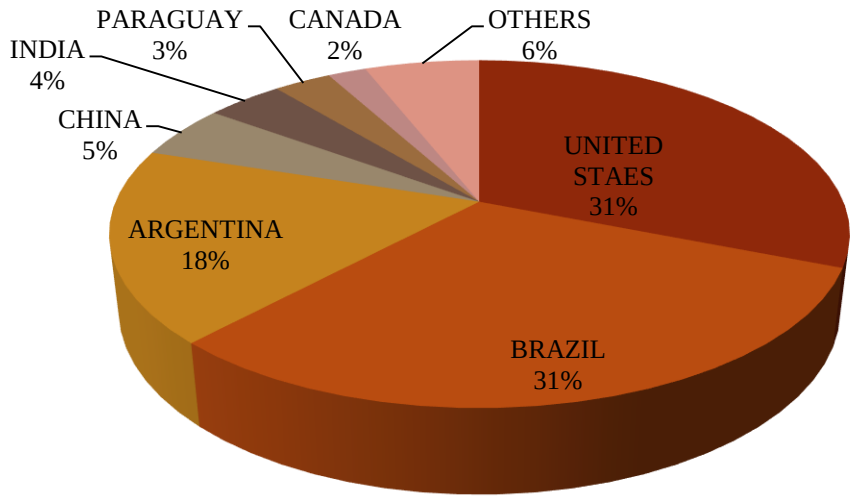
Global Vegetable edible oils industry accounted for USD 84.6 Billion in 2016 and the market is expected to reach USD 128.4 Billion by the end of 2024. Further the market is anticipated to expand at a compounded annual growth rate of 5.3% over the forecast period i.e 2016 -2024 (Source : Gold Stein Research) , Soy oil and Palm oil are the top two vegetable edible oil consumed in the world with market share of 28% and 34% respectively

FIGURE - 1- GLOBAL CONSUMPTION PATTERN OF EDIBLE VEGETABLE OIL



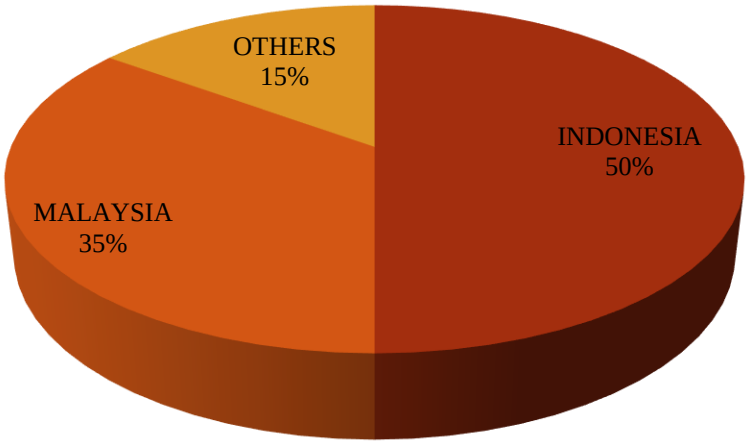
SOURCE: FAO, UNITED NATION 2016

FIGURE - .1.2 – MAJOR SOYBEAN PRODUCING COUNTRIES



SOURCE: USDA 2016

FIGURE – 1.3 – MAJOR PALM OIL PRODUCING COUNTRIES



Source: Oil World Annual 2019

The table below indicates the key difference between these two vegetable edible oil .

TABLE - 1

	SOY OIL	PALM OIL
PER HECTARE PRODUCTION	0.30 TONES	4 TONES
FERTILIZER	315 KG PER TONE	47 KG PER TONE
PESTICIDE	29 KG PER TONE	2 KG PER TONE
ENERGY	2.9 Gigajoules Energy Input	0.5 Gigajoules Energy Input
TYPE	It is a type of refined vegetable oils	Red palm oil, Refiend , Bleached, deodorized Palm oil
OIL EXTRATED FROM	Soybean seeds	Pulp of palm oil plants
CALORIE & FAT	1 tbsp. contains 120 calories and 13.6 g of fat	1 tbsp. contains 120 calories and 13.6 g of fat
FATTY ACID	1 tbsp contains 2 g of saturated fatty acids, 3 g of MUFAs and 8 g of PUFAs, thus considered Heart healthy option compared to Palm oil	1 tbsp contains 7 g of saturated fatty acids, 5 g of MUFAs and 1 g of PUFAs thus considered less heart healthy option compared to Soy oil

	Monounsaturated fatty acids(MUFAs) and polyunsaturated fatty acids (PUFAs) are considered helpful fats. MUFAs and PUFAs can lower blood cholesterol levels and reduce risk of heart disease	Saturated and trans fats are considered harmful fats and should be avoided, according to the MayoClinic.com. Saturated and trans fats can raise blood cholesterol, which may increase risk of cardiovascular disease.
VITAMIN E	1 mg of alpha-tocopherol & 3 mg of delta-tocopherol	One tbsp contains 2 mg alpha-tocopherol
VITAMIN K	1 tbps. contains 25 mcg of vitamin K	1 tbsp. has around 1 mcg

Source: US Department of Agriculture: Dietary Guidelines for Americans 2010
US Department of Agriculture: Nutrient Data Laboratory
Linus Pauling Institute Oregon State University: Vitamins
MPOB (Malaysian Palm Oil Board)

Clearly these two oil has different biochemical composition and thus has market of its own and well segmented in terms of use and health benefits it offers , despite this the prices of these 2 oil tend to move closely to each other, Soybean oil is palm oil's most important competitor and vice versa. Soybean oil enjoys perceived better health image over Palm oil (Jamal et el 1993), Palm oil often sell at a discount to soybean oil. Price differentials play a significant role among these two vegetable oils in world markets. A slight differential in price among these two oils is sufficient to switch manufacturers' preferences in many international markets.

2. LITERATURE REVIEW

2.1 SUBSTITUTION USAGE BETWEEN SOYOIL AND PALM OIL

Both price and price volatility transmission are concepts used to analyze the relationships between prices, e.g. prices for the same commodity at different locations, or the prices of different commodities. However, price transmission implies transmission from the conditional mean (first moment of a time series), while price volatility transmission implies transmission from the conditional variance (second moment of a time series) (Assefa et al. 2016). According to Assefa et al. (2016), this implies that “Price transmission deals more generally with the relationship between the predictable portions of prices, whereas price volatility transmission deals with the relationship between the unpredictable portions of prices”. Price volatility transmission can also be defined as the degree to which price uncertainty in one market affects price

uncertainty in the others (Apergis and Rezitis 2003). The price transmission and Volatility transmission generally occurs in commodities capable of being substituted with one another..

Yin Qiu (2014), Jamal et el 1993, The prices of soybean oil and palm oil turn out to be quite close over time and switch positions from time to time.. When one type of oil becomes more expensive for some exogenous reason, it is likely that the other oils with similar prices and features will come to replace its market share to some extent. The empharical results of the Study indicates strong substitution effect between soybean oil and palm oil, Holding the prices of other vegetable oils constant, one percent increase in the soybean oil price is associated with 3.22 percent increase in the palm oil imports, .The positive correlation of palm oil imports and soybean oil price shows a positive elasticity across the two goods, so they are substitute goods. In other words, the increase in soybean oil price will result in more palm oil imports to the US market. Williams (1981) Price differential have been important competitive factor for Palm Oil, depending upon relative prices, palm oil can substitute for Soybean oil and other fats and oils. A greater difference favours palm oil over substitute fats and oils. When the average price differential between soyoil and palm oil went from 4.2% in 1973/1974to 9.3%in 1974/1975, U S .Palm oil imports and consumption increased. Palm oil Imports reached about 10 percent and 8 percent o US domestic disappearance of Soyoil and total vegetable oils, respectively in 1974/75, in 1960 US Palm oil consumption was less than one percent, the momentum kept shifting towards palm oil consumption until an informational product differential strategy through promotional campaign which focused on negative attributes of tropical oils changed the competitive relationships between U.S Soybean Oil and Palm oil edible demand. The combined share of US Vegetable Oil consumption held by palm oil oil declined from 11.9% in 1985 to 7.1% in 1991. M A Al-Owafeir(1996) Possibility of substituting soybean oil with palm oil as a fish feed was examined .Weight gain, feed conversion ratio, protein efficiency ratio and the chemical composition of the fish bodies did not vary significantly ($P > 0.05$), These results indicated that palm oil could replace soybean oil in feeds for 0. *niloticus* fingerlings (Category of Fish) without any negative effect on the fish growth or body composition. The price of palm oil is about 30% lower than the price of soybean oil on the Saudi Arabian market. Therefore, a 2-3% reduction in tilapia feed production cost is evident when palm oil is substituted for soybean oil. Similar results were obtained from studies with carp.*Cyprinus carpio* L.. (Boggio *etal* 1985; Takeuchi et *al.* 1987) and channel catfish, *Ictahirus punctatus*(Rafinesque), (Gatlin & Stickney 1982) as test fish using several dietary lipid sources (saturated and unsaturated). C Sundarmurthy (2013), There exists market integration in major oil seeds and edible oils within domestic market and between international markets. The linkage between different markets seems to transmit volatility from one market to another and one edible oil to another.

2.2.ECONOMETRIC MODELS TO EVALUATE INTEGRATION BETWEEN 2 DIFFERENT COMMODITIES AND PRICE FORECASTING

The most recent trend to test integration across two different market / Commodities is the use of volatility based models, which measure the level of integration by estimating the spillover of volatility between two markets/two variables (Engle and Susmel, 1993). Proponents of volatility based models assert that if two markets / commodities are integrated, then volatility in one market/Commodity is affected by volatility in other market/Commodity . In other words, the transformation in one market/Commodity is transmitted into other market / Commodity . Thus, in order to gauge the level of integration between the markets / commodities, one can empirically measure the magnitude of volatility transfer from one market / commodity to other market/ commodity.

A study of empirical literature such as Bernard and Durlauf (1996) and St. Aubyn (1999) suggests that one of the way to assess the convergence (or divergence) in prices of interdependent markets is by performing pair wise stationary tests on the price differences of the two series. The difference of the price series of markets should not contain any unit root (i.e. stationary) to meet the convergence criteria. The Augmented Dickey Fuller (ADF) test (Dickey and Fuller, 1979) and the Kwiatkowski Phillips Schmidt and Shin (KPSS) test (Kwiatkowski et al., 1992) are generally used to test for convergence (or divergence) between the prices series of the two markets.

Most common method for forecasting in time series analysis is the regression model, however it can only be used when all the dependent and independent variables in the time series are stationary at the level, stationary data series generally have means that never changes with time, any other statistics (like variance) can change, When all (dependent and independent) time series are non-stationary, the regression results are simply misleading (Eduard and Stefan, 2009). Generally, spurious regression occurs when the variables being regressed are integrated variables of order one i.e., I(1), in which case they are not stationary, but stationary if differenced once (Wen-Jen Tsay 1999). Almost all economic variables and commodity prices are integrated of the order one, I(1), hence expected to lead to spurious regression. Some of the examples of the spurious regression results are explained in (Darlauf and Phillips, 1988, Granger and Newbold, 1974 and Ogaki and Choi, 2001). Spurious results lead us towards wrong, illogical and unacceptable conclusion.

Engle and Granger, (1987) introduced the co-integration technique as a solution of spurious regression due to non-stationary time series. According to Granger the non-stationary time series are cointegrated, if their linear combination is a stationary process. To estimate the long run equilibrium relationship parameters for this Engle and Granger presented an Error Correction Mechanism (ECM). ECMs are a theoretically-driven

approach useful for estimating both short-term and long-term effects of one time series on another. The term error-correction relates to the fact that last-period's deviation from a long-run equilibrium, the *error*, influences its short-run dynamics. Thus ECMs directly estimate the speed at which a dependent variable returns to equilibrium after a change in other variable. The residuals of equilibrium regression can be used for error correction model when there is only one variable and single equation is to be arrived and for VECM (Vector Error Correction Model) when there are more than 2 Variables and multiple equation is to be arrived in matrix form based on restricted VAR .

However the assumption that all the dependent and independent variable in the time series which is stationary at the level one is also cointegrated, may not be true, Johansen's (1988, 1991) maximum eigenvalue and trace tests for cointegration under the empirically relevant situation of near-integrated variables, helps us determine if the series is cointegrated or not , if the series is not cointegrated than using Monte Carlo techniques, un resistricted Var Module is used as a remedy for spurious regression (Erik 2007) if the time series is not co-integrated use of ECM or VECM model can result in the erroneous conclusion.

In order to maintain the robustness of the model and remedy spurious regression, cointegration model can only be used for the time series that are stationary at 1^{st} difference, if the time series has data stationary in combination at level and 1^{st} difference, ARDL (the autoregressive distributed lag) approach is used, process of ARDL involves conducting bound test for in the unrestricted model and adopt ARDL approach to the estimation of level of relationship (Pearson et al., 2001). Auto regressive Distributed lag model is a model for time series data in which a regression equation is used to predict current values of a dependent variable based on both the current values of an explanatory variable and the lagged (past period) values of this explanatory variable.

When all variables are integrated of different order and at least one variable is integrated of order 2 then Autoregressive models is employed. Autoregressive models are models that simply include the lag of dependent variable as independent variable (Chaudhry 2012). The autoregressive model specifies that the output variable depends linearly on its own previous values and on a stochastic term (an imperfectly predictable term); thus the model is in the form of a stochastic difference equation. In machine learning, an autoregressive model learns from a series of timed steps and takes measurements from previous actions as inputs for a regression model, in order to predict the value of the next time step.

3. NEED FOR STUDY

There are several scholastic studies that establish relationship between price of Soybean Oil Future and a macro factor , and these studies are limited to identifying the short term and long term effect of agri commodity on the Soy Oil Future and are more into explaining the phenomena that has already taken place. However there is dearth of scholastic research that analyses the effect of 2 most consumed vegetable oil, Crude Palm oil and Soybean Oil on one another and arrive at the forecast model that derives the price of Soybean Oil from the price of Crude Palm Oil.

Some of the forecasting model that has been developed through Scholastic studies are on time series analysis of historical behavior of the Soy oil price or on the micro economic factors, these forecast are short term in nature and thus difficult to predict the possible price of the Soy oil future in long run at different levels of price of Crude Palm Oil and hence is of very limited application.

Market Participants in Soy Oil Future consists of investors in the form of famers, processors; intermediaries dealing with Physical Soy bean and Soy Oil, and Speculator who without having the physical Soy bean or Soy Oil, deal with it in CBOT Market for Short term gain. These market participants look for direction of price moment of Soybean oil with reference to the price of Crude Palm Oil that influences the price.

The importance of the research stems from the fact that the Price Forecast model with the price of Crude Palm Oil as the determinants enables effective price risk management of Soybean oil for the market participants enables government to make policy decisions and enables Traders / Investors to estimate demand / supply and increase / decrease in price of Soy Oil

3.1 RESEARCH OBJECTIVES

The objectives of the study are :-

1) To analyze the impact of PRICE OF CRUDE PALM OIL on Soybean Oil price in CME (Chicago Mercantile Exchange) and to determine if there is any cause and effect relationship in long run and short run.

2) To determine CRUDE PALM OIL's ability to predict Soybean Oil price in CME with use of econometric model.

3.2 RESEARCH METHODOLOGY

The Study shall be based on Empharical analysis to determine cause and effect relationship between 'Price of US PALM OIL and US Soybean oil futures in CME using monthly secondary data for a period of

Eighteen years from FY 2000 to FY 2018. The Study also aims at developing appropriate model to forecast the price of US Soybean Oil Future in CME based on different level of CRUDE PALM OIL PRICE in CME.

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3.2.1 Secondary Data

Following shall be the source of secondary data for the period of over 28 years from FY 1990 to FY 2018:-

1. Soybean Oil data shall be collected from CME (Chicago Mercantile Exchange) and

2. Crude Palm oil price shall be collected from CME (Chicago Mercantile Exchange)

3.2.2 Research Techniques & Statistical tools applied

Following are the research techniques and Statistical tools that shall be applied in the study :-

1. Unit root test, Granger Causality test and other statistical tools.

2. Co integration test and Econometric model in the form of Error Correction Model

3.2.3 Research Hypothesis

Following shall be the research hypothesis used in the study:-

HYPOTHESIS 1

H0: PRICE OF CME Crude Palm Oil and CME Soybean Oil are not cointegrated
Ha: PRICE OF CME Crude Palm Oil and CME Soybean Oil are cointegrated

HYPOTHESIS-2

H0: No Long run equilibrium relationship exists between CME Crude Palm Oil and CME Soybean Oil
Ha: Long run equilibrium relationship exists between CME Crude Palm Oil and CME Soybean Oil.

HYPOTHESIS 3

H0: CME Crude Palm oil does not have the information / ability to predict Price of CME Soybean oil price through econometric model.

Ha: CME Crude Palm oil have the information / ability to predict Price of CME Soybean oil price through econometric model.

3.4 RESEARCH TECHNIQUES USED IN THE PAPER

3.4.1 DATA STATIONARITY

Most forecasting methods assume that a distribution has stationarity. For example, auto covariance and autocorrelations rely on the assumption of stationarity. An absence of stationarity can cause unexpected or bizarre behaviors, like t-ratios not following a t-distribution or high r-squared values assigned to variables that aren't correlated at all.

Stationary series generally have means that never changes with time. Any other statistics (like variance) can change.

Trend-stationary models fluctuate around a deterministic trend (the series mean). These deterministic trends can be linear or quadratic, but the amplitude (height of one oscillation) of the fluctuations neither increases nor decreases across the series.

It can be difficult to tell if a model is stationary or not. If we aren't sure about the stationary of a model, a hypothesis test can help, one of the most widely used test for testing data stationary is Unit root tests / Augmented Dickey-Fuller (ADF) test.

3.4.2 COINTEGRATION

The two series are said to be cointegrated if they move together over time, and the distance between them is stable. Co-integration reflects the presence of a long-run equilibrium towards which the economic system converges over time, Variables are found to be co-integrated, if there exists a linear, stable and long-run relationship among variables, such that the disequilibrium errors would tend to fluctuate around zero mean.

3.4.3 ERROR CORRECTION MODEL (ECM)

If all the variables are stationary at 1^{st} difference, there is only one endogenous variable, and if a set of variables are found to be cointegrated then a suitable estimation technique is a ECM
(Error Correction Model) which adjusts to both short run changes in variables and deviations from equilibrium in long run.

An error correction model belongs to a category of multiple time series models most commonly used for data where the underlying variables have a long-run stochastic trend, also known as co integration. ECMs are a theoretically-driven approach useful for estimating both short-term and long-term effects of one time series on another. The term error-correction relates to the fact that last-period's deviation from a long-run

equilibrium, the *error*, influences its short-run dynamics. Thus ECMs directly estimate the speed at which a dependent variable returns to equilibrium after a change in other variables.

4. DATA COLLECTION, ANALYSIS AND RESULTS

4.1 TEST OF DATA STATIONARITY - SOYBEAN OIL

TABLE – 2

Null Hypothesis: D(SOY_OIL) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-9.505306	0.0000
Test critical values:	1% level	-3.459231	
	5% level	-2.874143	
	10% level	-2.573563	

*MacKinnon (1996) one-sided p-values.

4.2 TEST OF DATA STATIONARITY – Crude Palm Oil

TABLE – 3

Null Hypothesis: D(CPO) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-10.02633	0.0000
Test critical values:	1% level	-3.459231	
	5% level	-2.874143	
	10% level	-2.573563	

*MacKinnon (1996) one-sided p-values.

Since Enger Granger Critical value at 5% and 10% level is -3.34 and -3.04 and the test statistics for both CME US SOYBEAN OIL AND CRUDE PALM OIL is at – 9.50 and 10.026 higher than the critical value and the both are significant, we can reject Null Hypothesis and accept alternate Hypothesis that the variables are stationary at 1st difference and hence are integrated of order one I (I).

4.3 **REGRESSION EQUATION**

TABLE – 4

Dependent Variable: SOY_OIL
Method: Least Squares
Date: 04/20/19 Time: 16:36
Sample: 2000M01 2018M12
Included observations: 228

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	48.73539	13.54847	3.597115	0.0004
CPO	1.119876	0.018920	59.18926	0.0000

R-squared	0.939400	Mean dependent var	797.6011
Adjusted R-squared	0.939132	S.D. dependent var	296.6069
S.E. of regression	73.17733	Akaike info criterion	11.43238
Sum squared resid	1210212.	Schwarz criterion	11.46246
Log likelihood	-1301.292	Hannan-Quinn criter.	11.44452
F-statistic	3503.368	Durbin-Watson stat	0.197822
Prob(F-statistic)	0.000000		

Since R- squared is higher than Durbin – Watson Stat , We can reject the null hypothesis and accept the alternate hypothesis , hence the regression equation is spurious.

4.3 HYPOTHESIS – 1

TABLE – 5 - Unit Root Test of Residual – Test for Cointegration

Null Hypothesis: U has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.488169	0.0003
Test critical values:	1% level	-3.459231	
	5% level	-2.874143	
	10% level	-2.573563	

*MacKinnon (1996) one-sided p-values.

Enger Granger Critical value at 10% level is -3.04, since test statistic is higher than the critical value , We can reject the null hypothesis and accept the alternate hypothesis that the residue is stationary.

If residue of the model is stationary, the estimated model is not spurious, it also means that the variables are cointegrated and these 2 variables have long run equilibrium relationship and the whole model is long run model and the 1.11 in the regression equation in Table 3 is long run co-efficient of Crude Palm Oil and it is significant. Since the variables are co integrated we can run Error Correction Model

4.4. HYPOTHESIS – 2

TABLE -6 - ECM Equation

Dependent Variable: DSOY_OIL
Method: Least Squares
Date: 04/20/19 Time: 16:44
Sample (adjusted): 2000M02 2018M12
Included observations: 227 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.931793	1.715453	0.543176	0.5875
DCPO	0.718826	0.037105	19.37264	0.0000
U(-1)	-0.136620	0.023814	-5.736974	0.0000

R-squared	0.668071	Mean dependent var	1.572159
Adjusted R-squared	0.665108	S.D. dependent var	44.65505
S.E. of regression	25.84183	Akaike info criterion	9.354993
Sum squared resid	149587.2	Schwarz criterion	9.400257
Log likelihood	-1058.792	Hannan-Quinn criter.	9.373258
F-statistic	225.4218	Durbin-Watson stat	1.424089
Prob(F-statistic)	0.000000		

Crude Palm Oil is long run co-efficient as P Value is significant

U(-1), one period lag of the residual from the previous regression model (Table 4) is the error correction term , the value of U(-1) at 13.6 % implies that the error correction term corrects the disequilibrium of the system at a speed of 13.6.% on a monthly basis, speed of adjustment is , adjusting with previous period disequilibrium at the rate 13.6%, since the error correction term is negative and significant , we can reject null hypothesis and accept the alternate hypothesis that the there is long run equilibrium relationship between the two variables.

4.5. HYPOTHESIS -3

In Table 6, since R squared value is lower than Durbin Watson stat, the model is not spurious model or a non sense model and hence we can accept the model. we can reject the null hypothesis and accept the alternate hypothesis that CRUDE PALM OIL does has the information / ability to predict Price of CME US Soybean oil price through econometric model.

Estimation Model Equation is :-

DSOY_OIL = C(1) + C(2)*DCPO + C(3)*U(-1)

By Substituting Coefficients the final Error Correction Model Equation is :-

DSOY_OIL = 0.93179338925 + 0.718826092322*DCPO - 0.136620115584*U (-1)

5. CONCLUSION

In this study, we reviewed the existing theoretical and empirical literature on the dependence of CME Soybean oil with CME Crude Palm oil, mainly focusing on the transmission mechanism of price and volatility from Crude Palm Oil to CME US SOY OIL FUTURE. Various econometric models used in studying linkage across two different market / Commodity were also analyzed briefly. In line with the steps identified in the literature review for application of appropriate econometric model, both dependent and independent variables were found to be stationary at 1st difference, variables were also found to be cointegrated and having long run equilibrium relationship. Appropriate econometric model, error correction model was applied and model for forecasting the price of CME Soybean Oil future was developed, the Durbin Watson test confirmed the validity of the model and the model equation results to be not spurious.

6. BENEFITS OF THE RESEARCH

Research work helps traders in developing investment strategy. enables market participants in formulating hedging strategy as a part of risk management process., the research also facilitates government in making appropriate policy decision to mitigate the risk of price rise of Soy Oil and enables importers and exporters to mitigate the risk by analyzing the effects of price of CME Crude Palm oil on the prices of CME Soybean Oil. For academicians, the research finding would pave the way to explore predictability of CME Soy bean Oil Future with other substitute products like Rape seed oil, corn oil, canola and etc

7. LIMITATION OF THE STUDY

Research has considered only the official value as published by CME on a monthly basis. Hence any intervening change other than change in monthly price of CME Soy Oil e & CME Crude Palm Oil cannot be measured and Only selected econometric models is applied based on their merits and feasibility in forecasting Soy Oil Future Price. In Future research, much more effective econometric model can be used to predict the price of Soy oil future, much more effectively.

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