Fall 11-2020

VARIATION IN COFFEE PRICES: INFLUENCE OF THE GREEN COFFEE ASSOCIATION'S STOCK REPORT

Ramiro Paladini
ramiro.paladini@siu.edu

VARIATION IN COFFEE PRICES: INFLUENCE OF THE GREEN COFFEE ASSOCIATION'S STOCK REPORT

By

Ramiro Paladini

A Research Paper

Submitted in Partial Fulfillment of the Requirements for the

Master of Science

Department of Agribusiness Economics

in the Graduate School

Southern Illinois University Carbondale

December, 2020

RESEARCH PAPER APPROVAL

VARIATION IN COFFEE PRICES: INFLUENCE OF THE GREEN COFFEE ASSOCIATION'S STOCK REPORT

By

Ramiro Paladini

A Research Paper Submitted in Partial

Fulfillment of the Requirements

For the Degree of

Master of Science

in the field of Agribusiness Economics

Approved by:

Dr. Dwight R. Sanders

Graduate School

Southern Illinois University Carbondale

November 12, 2020

AN ABSTRACT OF THE RESEARCH PAPER OF

RAMIRO PALADINI, for the Master of Science degree in AGRIBUSINESS ECONOMICS, presented on November 12, 2020 at Southern Illinois University Carbondale.

TITLE: VARIATION IN COFFEE PRICES: INFLUENCE OF THE GREEN COFFEE ASSOCIATION'S STOCK REPORT

MAJOR PROFESSOR: Dr. Dwight R. Sanders

This paper analyzes the possible impact on the coffee prices in the USA of the Green Coffee Association's Stock Report. So, the main goal is to figure if the stock report has an influence on the US's coffee prices, and if it does, on which day the influence is more significant: on the day that the report is released, 1 or 2 days after, or 1 or 2 days before. In order to do that, daily coffee price data, and monthly amount data of US stocks and Imports were used.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

This research is aimed to find a possible influence on US's coffee prices when the Green Coffee Association's Stock Report is released to the public. This report always becomes public on the 15th day of each month, on the exceptions of weekends and holidays, which in that case the report is release the next business day. So, one the main objectives is to find if the Coffee Association's Stock Report produces a significant change in the coffee prices released. The other objectives are to find out if this report is given to the Green Coffee Association members before the release date, which could cause an early movement in the prices because of the pre-known intel.

The Green Coffee Association is a trade association that provides resources and other benefits for individuals and companies dealing with the export, transport, storage, insuring, financing, importing, trading and/or roasting of green coffee. 1923 marked the formal incorporation of the Green Coffee Association of New York City. There had been meetings and discussions for several years prior to the incorporation, and the Association elected its first Officers in 1922. There were approximately a hundred members, and the names of their firms were almost all those of the partners, whether they were Importers, Brokers or Agents.

The regression model used for this research uses the variation in coffee prices as a dependent variable and "Surprise" as an independent variable. The dependent variable is studied in 5 different time moments, "t", "t-1", "t-2", "t+1", "t+2". Where "t" is the day when the report is release, "t-1 and t-2" are one and two business days before the report is released, and "t+1 and t+2" are one and two business days after the report is released.

As mentioned before, “Surprise” is the independent variable, which will come from a prediction regression model, which will use variation in US Stocks of coffee as a dependent variable for each month, and six independent variables: variation in US stocks of coffee for the same month one year before, two years before, and three years before; and variation in US Imports of coffee for the same month one year before, two years before, and three years before.

This second regression model was formulated with the goal of obtaining a prediction model of the US stocks of coffee before the Green Coffee Association report is released. So, from this predicted model the ET (error term or residuals) is used as the independent variable for the first regression model, this is the “surprise”.

It is called “surprise” because of the difference from what was expected to be the amount of US coffee stock and what was the real amount. So, that difference is what can explain the movements in the coffee prices when the report is released.

This research paper could be a good starting point for someone that is looking forward to learning the basic functionality of the coffee market and the possible influence of monthly stock reports. Also, this could be used for coffee retailers that are interested in making better timing decisions in their business.

CHAPTER 2

RELATED LITERATURE

Coffee production is regionally concentrated while coffee demand is extended worldwide. In the largest consuming markets, the U.S., Germany, France, and Japan, which together consume half of world exports, coffee is barely produced. Brazil, Vietnam, and Colombia are the world's largest producers and exporters.

The caffeinated agricultural commodity is one of the most valuable primary products traded in world markets. Sometimes it has been second only to oil exports as a source of foreign exchange for developing countries. Its cultivation, processing, trading, transportation, and marketing provide employment for millions of people worldwide. Coffee is crucial to the economies and politics of many developing countries; for many of the world's Least Developed Countries, exports of coffee account for a substantial part of their foreign exchange earnings, in some cases over 80%. Coffee is a traded commodity on major futures and commodity exchanges, most importantly in London and New York. The coffee price crisis associated with world supply increases and declining per capita consumption severely affected the economy of producer countries.

The last century saw four separate attempts to control international coffee prices. This is hardly surprising given the impact of coffee prices on producing nations' in terms of trade and welfare; the sensitivity of coffee supply to droughts and frosts; the medium-term price inelasticity of supply; the inelasticity of coffee demand; and the consequent volatility of prices. Each of these agreements was successful for a time, but eventually ended amidst disagreements between signatory nations. The International Coffee Agreement (ICA) was the last of these attempts, in effect intermittently from 1962 until 1989. Prices have been low since the collapse of the ICA, although two frosts in Brazil muddle this impression. While green coffee prices do dip periodically, the disastrous welfare consequences of this price trough have prompted renewed interest in international price intervention. The International Coffee Organization (ICO) started calling for quality controls. Meanwhile, many involved with the 'fair trade' movement advocate for market-wide price guarantees. Amongst the structural attempts to capture coffee price determination, Akiyama and Varangis (1990) develop a model of world markets which models coffee production and stocks explicitly. Their results suggest that the ICO reduced price volatility by encouraging the build-up of stocks during quota years. When subsequent supply shocks caused prices to rise and the quotas to be suspended, the release of these stocks reduced the magnitude of the price spike. Thus, the ICO appears, in these studies, to stabilize prices in the short and medium run.

Regarding other studies about coffee prices, three papers were found that present interesting results and approaches, but none of them present the same one as this research paper. The first one has a focus on the US demand of coffee. They divided the demand into 3 distinct groups: regular coffee, unclassified, and differentiated coffee. Their estimated elasticities had the expected signs and magnitude. Differentiated coffees are complements for regular and unclassified while regular and unclassified coffees are substitutes for one and other. Conclusions show that these results could be useful in designing marketing strategies by coffee suppliers. In order to do this study, they used scanned data to estimate US coffee demand, applying the almost ideal demand system (Full AIDS). This model was developed by Deaton and Muelbauer (1980). The data source used for that research was a weekly coffee sale scanned data at the retail level in the US from 2001 to 2006. It was provided by Information Resources Inc. (IRI) Research and Developing Academic Data Set. The data source contains information for US metropolitan areas in a time period of 313 weeks. They conclude that the results suggest that household members might have different preferences and, thus might purchase coffees that belong to the different groups. The variety in the differentiated group appeals preferences of a wide group of consumers, which may explain its complementary interaction with the regular and the unclassified coffees.

The second related paper had the approach to show that the biases of investor behavior are predictable and may affect the coffee futures market prices. The research work used auto-regressive conditional heteroskedasticity (ARCH) models to analyze results that cause deviations in the coffee futures market prices. The negative asymmetry coefficient of EGARCH model and the positive asymmetry coefficient of TGARCH model showed the presence of the leverage effect where negative shocks have a greater impact in the volatility of returns in coffee than positive shocks. The presence of the leverage effect corroborates the Prospect Theory. The model results also showed that the reactions of investors to negative information were statistically significant in the coffee futures market and suggest that Behavioral Finance might contribute to the understanding of the formation of coffee futures market prices. The data used in that research work correspond to coffee futures prices obtained from a secondary source, with daily frequencies quoted in the months of March, May, July, September and December, in U.S. dollars per pound, using daily closing prices relative to second position in the New York Board of Trade (NYBOT). The period from March 1992 to March 2012 was covered, which represents 5,220 observations.

The third related paper developed a semi-structural price vector autoregression to capture coffee price dynamics over various time horizons, short, mid, and long term. Through the presence of the International Coffee Agreement, supply responses to price signals through yield and planting effects were altered. In order to do this, price data in nominal terms was used and measure a monthly average price in dollars per pound of different places like Brazil and US retailers. Those were obtained from New York Board of Trade, U.S. Bureau of Labor Statistics, and ICO. They concluded that the impact of the ICA on average prices is not consistent in sign across sectors and is statistically insignificant; only retail prices display a statistically significant upward trend, and they ascertained that that the ICA did create a coffee price cycle.

CHAPTER 3

MODEL & DATA

The data used for this study goes from January 1991 to September 2018. For the coffee price variation (Δ%P) daily coffee price was used, but only the relevant days for this research, which those are:

- "t": the day when the report becomes public.
- "t-1": one business day before the report becomes public.
- "t-2": two business days before the report becomes public.
- "t+1": one business day after the report becomes public.
- "t+2": two days business days after the report becomes public.

Once those days were identified for each month, the next step was to calculate the variation in % in the price that that day had with the day before (Table 1).

The other group of data used was the amount of US imports and stock for each month of the same period as coffee prices (January 1991 to September 2018). But in this case, the variation was obtain by measuring the difference in % between the value of each month and the value of the same month on the year before (Δ%S & Δ%I; Table 2).

All the data was provided for Dr. Sanders from the ABE department of the SIU College of Agriculture.

As mentioned before in this paper the regression model used for this research is describes as follows:

$$\text{"}\Delta\%Pt = c + \beta 1 \text{ (Surprise)} + ET\text{"}$$

Where $\Delta\%P_t$ is Variation of coffee price on time "t", which is the day when the report is released (dependent variable), the same regression model was run for the other four times (t-1; t-2; t+1; t+2).

"Surprise" is the independent variable, which will come from the prediction regression model described as follows:

$$\text{“}\Delta\%S_t = \beta_0 + \beta_1 \Delta\%S_{t-1} + \beta_2 \Delta\%S_{t-2} + \beta_3 \Delta\%S_{t-3} + \beta_4 \Delta I_{t-1} + \beta_5 \Delta I_{t-2} + \beta_6 \Delta I_{t-3} + ET\text{”}$$

Where $\Delta\%S_t$ is the variation of US stocks of coffee in month "t", and $\Delta\%S_{t-1}$ is the variation of US stocks of coffee in the same month "t" but from the year before, "t-2" is from 2 years before, and "t-3" is from 3 years before. The same goes for ΔI_t, but in this case is the data of US imports of coffee for that month was used.

This second regression model was formulated with the goal of obtaining a prediction model of the US stocks of coffee before the Green Coffee Association report is released. So, from this predicted model the ET (error term or residuals) is used as the independent variable for the first regression model, this is the "surprise".

It is called "surprise" because it is the difference from what was expected to be the amount of US coffee stock and what was the real amount. So, that difference is what can explain the movements in the coffee prices when the report is released.

For all these regression models, the e-Views program was used, applying the Ordinary least squares (OLS) regression technique, which is a statistical method of analysis that estimates the relationship between one or more independent variables and a dependent variable; the method estimates the relationship by minimizing the sum of the squares in the difference between the observed and predicted values of the dependent variable configured as a straight line.

Regarding expectations, in the first model it is difficult to predict the sign of the coefficient $\beta1$, because the effect of the “Surprise” could go either way. The market price of the coffee is a variable that goes up and down, it doesn’t have a predictable behavior, but it is expected that the “Surprise” will have a considerable effect or a meaningful influence on the price variation on the “t” day and “t-1”. The reason for this is because on “t” day it is expected to be the day that the markets presents more transactions since the report becomes public that day. Regarding “t-1”, it is also expected to be a day of fluctuation because it is suspected that the report could be available for the members of the Green Coffee Association the day before the release to the public.

What is expected about the prediction model, is that $\beta1$ and $\beta4$ will be the coefficients with more influence on the model because it is more accurate to see the stocks and imports of the same month of the last year to predict or estimate the value of the desired month. Also, in this model it will be difficult to estimate the sign of the coefficient because this variable behaves in the same way as coffee price.

CHAPTER 4

MODEL & RESULTS

As discussed before, the first step to get the results was obtaining the "Surprise" from the prediction model:

"$\Delta\%S_t = \beta_0 + \beta_1 \Delta\%S_{t-1} + \beta_2 \Delta\%S_{t-2} + \beta_3 \Delta\%S_{t-3} + \beta_4 \Delta I_{t-1} + \beta_5 \Delta I_{t-2} + \beta_6 \Delta I_{t-3} + ET$"

Where ET is the surprise.

As mentioned before, for all the calculations the e-Views program was used, and after running this first model the results are shown in table 3.

By looking at these preliminary results, without doing any more calculations, it is valid to conclude that the predictions made before on these results were accurate. Both β1 and β4 coefficients show to be greater than the t-Statistic critical (-1.97 and 1.97) (df=329; α=0.05), which means that those variables have meaningful statistical significance on "Δ%St", they reject the H_0) β=0 hypothesis. Also, the R-squared value is high, 0.968, which means that the 96.8% of the variation in the dependent variable is explained by the six coefficients (S1; S2; S3; I1; I2; I3).

Once these results were obtained, the next step was to get the residuals (ET=Surprise) from the e-Views program and use them as an independent variable for the following models:

- "$\Delta\%P_t = c + \beta_1 (Surprise) + ET$"
- "$\Delta\%P_{t-1} = c + \beta_1 (Surprise) + ET$"
- "$\Delta\%P_{t-2} = c + \beta_1 (Surprise) + ET$"
- "$\Delta\%P_{t+1} = c + \beta_1 (Surprise) + ET$"
- "$\Delta\%P_{t+2} = c + \beta_1 (Surprise) + ET$"

After running the variables in the e-Views program for the first model the results are shown in table 4.

Unfortunately for this model the results end up being inconclusive. The t-Statistic critical value for all these five models is -1.97 and 1.97 (df=329; α=0.05), which mean that this variable doesn't have statistical significance, it fails to reject H_0) β=0 hypothesis. Also, the R-squared value is very small (R^2=0.0357%), meaning that the surprise on the release day does not explain the "Δ%Pt" variation.

Regarding to the second model the obtained results are shown in table 5.

Also, for this model the results were inconclusive, with the same characteristics as the ones in the first model. But, it is valid to mention that in this case, the Surprise has more significance than the previous model, which means that the prediction made about the report being given to the members the day before could be valid, however it will need a more intense study to finally conclude that. Regarding the third model the results are shown in table 6.

This model also shows inconclusive results, with the same characteristics as the ones described above. But, in this case the Surprise has even more significance than the second model, which leaves the idea that the report could also be given to the members two days before the release day, however this will also need a more intense study. The last two model's results are shown in table 7.

These two show the same inconclusive results with no distinctions, meaning that the report has no influence during the two days after it is released.

CHAPTER 5

SUMMARY & CONCLUSIONS

The OLS method was used to analyze all the regression models described above. The data used for this research was the variation in % of daily coffee prices for the days of interest, and the monthly variation in % of US stocks and Imports. Both groups of data go from January 1991 to September 2018, making a total of 330 observations for each other. It was provided for Dr. Sanders, a professor of the SIU College of Agriculture, ABE Department. Based on the raw data provided, a unique data set was developed after the calculations and arrangements were made. The coffee price data was arranged in a way that shows the five days of interest (t; t-1; t-2; t+1; t+2) in columns, and the respective month and year for each day is displayed in rows.

The results on the five regression models revealed that in none of the days the report has a meaningful influence on the coffee prices. However, both days "t-1" and "t-2" were the ones that showed more significant results, concluding that the assumption made that the report could be given to the members one or two days before the release may be true. Nevertheless, it will need a more intense study to finally verify that. Also, a possible scenario could be that indeed the report is given to members before it is released, but the influence that these members could have on the market is insufficient to cause a significant change on the price.

It is also valid to mention that the results obtained in the prediction regression model showed a statistically significant proof that the US Stocks for month "t" could be predicted by using $\Delta\%S_{t-1}$ and ΔI_{t-1} as independent variables. This model could be used in any future study that involved US Stocks and Imports of coffee.

BIBLIOGRAPHY

COFFEE CONSUMPTION AND PRICES IN THE UNITED STATES, By Rex F. Daly, A Journal of Economic and Statistical Research in the United States Department of Agriculture and Cooperating Agencies, July 1958.

ANALYSIS OF TRENDS AND FORECASTS IN COFFEE PRICES AND CONSUMER CONSUMPTION IN THE NORTHEAST AND UNITED STATES, by D. Bonnell, University of Delaware Department of Food and Resource Economics Newarh DE, February 1990.

COFFEE DIFFERENTIATION: DEMAND ANALYSIS AT RETAIL LEVEL IN THE US MARKET, by Carmen Alamo and Jaime Malaga, Texas Tech University Department of Agriculture and Applied Economics, Lubbock, Texas, February 2012.

THE INFLUENCE OF BEHAVIOR FACTORS IN SETTING THE AGRICULTURAL FUTURES MARKET PRICES, by Amílcar Serrão, Evora University, July 2014.

RESPONDING TO THE COFFEE CRISIS: WHAT CAN WE LEARN FROM PRICE DYNAMICS, by Aashish Mehta and Jean-Paul Chavas, University of Wisconsin-Madison Department of Agricultural & Applied Economics, March 2004.

GREEN COFFEE ASSOCIATION WEBSITE, http://www.greencoffeeassociation.org/.

Table 1

Data - Variation in % in the price 1

2	Date	T-2	T-1	T	T+1	T+2
3	January, 1991	-2.39%	-1.42%	-0.52%	0.99%	1.21%
4	February, 1991	4.35%	0.37%	-1.17%	0.27%	1.66%
5	March, 1991	2.14%	-0.22%	0.00%	1.78%	-2.86%
6	April, 1991	0.16%	-0.53%	0.37%	0.37%	-0.90%
7	May, 1991	-0.95%	0.73%	0.28%	-0.78%	1.18%
8	June, 1991	0.70%	-0.06%	-0.12%	0.40%	-1.27%
9	July, 1991	-0.65%	1.49%	-2.29%	-0.18%	1.26%
10	August, 1991	-0.84%	2.05%	-1.24%	-0.90%	-0.12%
11	September, 1991	1.47%	-1.77%	-2.08%	-2.23%	0.69%
12	October, 1991	0.62%	0.06%	-2.02%	3.25%	0.36%
13	November, 1991	0.48%	0.06%	-0.60%	0.36%	2.77%
14	December. 1991	0.70%	0.32%	-0.63%	0.57%	-1.14%
15	January, 1992	-1.01%	-0.83%	0.06%	1.22%	-1.52%
16	February, 1992	-2.38%	0.70%	-3.73%	0.93%	2.28%
17	March, 1992	0.69%	1.23%	-0.68%	-0.75%	1.17%
18	April, 1992	-4.77%	0.29%	-2.42%	-1.35%	0.76%
19	May, 1992	1.27%	-1.25%	3.26%	-0.92%	1.86%
20	June, 1992	-0.72%	1.37%	1.67%	1.25%	-1.70%
21	July, 1992	-3.33%	0.90%	-0.16%	1.63%	-1.44%

Table 2

Variation in % US imports and stock 1

2	Date	Variation in Stock %	Variation in Imports %
3	January, 1991	31.29%	8.03%
4	February, 1991	39.91%	-2.15%
5	March, 1991	29.66%	-32.58%
6	April, 1991	23.93%	-2.00%
7	May, 1991	19.35%	-6.14%
8	June, 1991	6.60%	-36.40%
9	July, 1991	3.48%	-27.23%
10	August, 1991	5.24%	5.90%
11	September, 1991	-2.28%	15.88%
12	October, 1991	-3.89%	-15.09%
13	November, 1991	1.09%	41.76%
14	December. 1991	2.81%	33.38%
15	January, 1992	18.13%	5.16%
16	February, 1992	12.21%	0.09%
17	March, 1992	9.06%	34.78%
18	April, 1992	18.61%	-3.71%
19	May, 1992	24.38%	-1.89%
20	June, 1992	32.02%	86.18%
21	July, 1992	35.02%	67.46%

Table 3

Results – Variation in % of US stocks 1

Dependent Variable: VARIATION_IN_STOCK__
Method: Least Squares
Date: 03/27/20 Time: 13:01
Sample (adjusted): 1991M04 2018M09
Included observations: 330 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.003695	0.003068	-1.204187	0.2294
S1	1.091596	0.056415	19.34941	0.0000
S2	-0.053146	0.082668	-0.642889	0.5208
S3	-0.073476	0.054464	-1.349083	0.1783
I1	0.114453	0.022333	5.124748	0.0000
I2	0.064602	0.024897	2.594725	0.0099
I3	0.029057	0.023286	1.247850	0.2130

R-squared	0.968728	Mean dependent var	0.043361
Adjusted R-squared	0.968147	S.D. dependent var	0.300762
S.E. of regression	0.053678	Akaike info criterion	-2.990635
Sum squared resid	0.930677	Schwarz criterion	-2.910048
Log likelihood	500.4547	Hannan-Quinn criter.	-2.958490
F-statistic	1667.613	Durbin-Watson stat	2.025068
Prob(F-statistic)	0.000000		

Table 4

Results – First model results 1

Dependent Variable: T
Method: Least Squares
Date: 03/27/20 Time: 13:07
Sample (adjusted): 1991M04 2018M09
Included observations: 330 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000124	0.001584	-0.078463	0.9375
RESIDUALS_ST_	-0.010216	0.029830	-0.342475	0.7322

R-squared	0.000357	Mean dependent var	-0.000124
Adjusted R-squared	-0.002690	S.D. dependent var	0.028739
S.E. of regression	0.028778	Akaike info criterion	-4.252396
Sum squared resid	0.271633	Schwarz criterion	-4.229372
Log likelihood	703.6454	Hannan-Quinn criter.	-4.243212
F-statistic	0.117289	Durbin-Watson stat	1.879356
Prob(F-statistic)	0.732213		

Table 5

Results – Second model results 1

Dependent Variable: T_1
Method: Least Squares
Date: 03/27/20 Time: 13:07
Sample (adjusted): 1991M04 2018M09
Included observations: 330 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002182	0.001210	-1.803738	0.0722
RESIDUALS_ST_	-0.031372	0.022784	-1.376966	0.1695

R-squared	0.005747	Mean dependent var	-0.002182
Adjusted R-squared	0.002716	S.D. dependent var	0.022010
S.E. of regression	0.021980	Akaike info criterion	-4.791360
Sum squared resid	0.158458	Schwarz criterion	-4.768336
Log likelihood	792.5745	Hannan-Quinn criter.	-4.782176
F-statistic	1.896036	Durbin-Watson stat	1.941177
Prob(F-statistic)	0.169462		

Table 6

Results – Third model results 1

Dependent Variable: T_2
Method: Least Squares
Date: 03/27/20 Time: 13:09
Sample (adjusted): 1991M04 2018M09
Included observations: 330 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000856	0.001361	0.628951	0.5298
RESIDUALS_ST_	0.044278	0.025619	1.728313	0.0849

R-squared	0.009025	Mean dependent var	0.000856
Adjusted R-squared	0.006003	S.D. dependent var	0.024790
S.E. of regression	0.024715	Akaike info criterion	-4.556767
Sum squared resid	0.200353	Schwarz criterion	-4.533742
Log likelihood	753.8666	Hannan-Quinn criter.	-4.547583
F-statistic	2.987065	Durbin-Watson stat	2.035271
Prob(F-statistic)	0.084873		

Table 7

Results – Fourth and Fifth model results 1

Dependent Variable: T_201
Method: Least Squares
Date: 03/27/20 Time: 13:10
Sample (adjusted): 1991M04 2018M08
Included observations: 329 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000992	0.001239	0.800792	0.4238
RESIDUALS_ST_	0.009440	0.023298	0.405171	0.6856

R-squared	0.000502	Mean dependent var	0.000992
Adjusted R-squared	-0.002555	S.D. dependent var	0.022444
S.E. of regression	0.022472	Akaike info criterion	-4.747005
Sum squared resid	0.165137	Schwarz criterion	-4.723929
Log likelihood	782.8823	Hannan-Quinn criter.	-4.737799
F-statistic	0.164163	Durbin-Watson stat	2.066145
Prob(F-statistic)	0.685617		

Dependent Variable: T_101
Method: Least Squares
Date: 03/27/20 Time: 13:08
Sample (adjusted): 1991M04 2018M09
Included observations: 330 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001474	0.001389	-1.061646	0.2892
RESIDUALS_ST_	-0.023239	0.026146	-0.888811	0.3748

R-squared	0.002403	Mean dependent var	-0.001474
Adjusted R-squared	-0.000639	S.D. dependent var	0.025216
S.E. of regression	0.025224	Akaike info criterion	-4.516013
Sum squared resid	0.208687	Schwarz criterion	-4.492989
Log likelihood	747.1422	Hannan-Quinn criter.	-4.506829
F-statistic	0.789985	Durbin-Watson stat	1.924616
Prob(F-statistic)	0.374756		

VITA

Graduate School
Southern Illinois University

Ramiro Paladini

ramiropaladini2@gmail.com

National University of Rosario – Faculty of Agronomy Science

Bachelor of Agricultural Engineering, November 2016

Research Paper Title: Variation in Coffee Prices: Influence of The Green Coffee Association's Stock Report

Major Professor: Dr. Dwight R. Sanders