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Peanut Prices and Stocks-to-Use: Not Your Typical Economic Relationship

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PEANUT SECTOR

- Peanut sector was regulated by the quota system up until 2002. This system essentially was a cap on peanut acreage thus ensuring higher prices for farmers
- According to Dohlman et al (2004) higher prices were guaranteed to quota holders for the quota amount at \$610/ton and \$132-\$175/ton for 'additional' (i.e. peanuts cultivated outside the allowable quota limit for a farm)



Post 2002

- The 2002 Farm Bill ended the quota system in the peanut sector
- According to Dohlman et al (2004) peanuts were put under the same support provided to other field crops
- This development post-2002 eliminated the higher price assured to quota holders relative to 'additional'. Thus putting into place a market driven system

Post 2002

- However the adverse effects of the quota system did not end in 2002
- Gaibler (2004) reckon that government determination of peanut prices over the past has restricted the development of the sector with relatively few producers, limited sales options, lack of price information and futures market
- Available price-risk mitigation in the face of limited marketing options according to Dohlman et al. (2004) is to enter into private marketing contracts with peanut buyers dominated by shellers

Peanut Price and SUR

- The average peanut price from 1990/91 to 2001/02 marketing years was 28.55 cents per pound and SUR of 0.252
- Post 2002 average peanut price for the periods 2002/03 to 2007/08 marketing years was 18.65 cents with SUR of 0.374
- Prices after the 2008 Farm Bill recorded some significant increases
- The average price from 2008/09 to 2013/14 marketing year was 25.66 cents with significantly high prices in the 2011/12 and 2012/13 marketing years of approximately 32 cents and 30 cents per pound, respectively

Objectives

- Literature on the factors influencing supply and demand of peanuts in the US is limited
- This study seeks to explore the relationship between prices and end of marketing year stocks-to-use ratio (SUR) as a means of predicting prices and explaining the demand and supply of peanut
- This approach has been adopted for other crops in earlier studies
 - Corn and Soybean (Irwin and Good, 2015/16)
 - Wheat (Westcott and Hoffman, 1999)
 - Long-grain rice (Flanders, 2017)
 - USDA for projecting market outlooks for these commodities.
- The results will be a preliminary step in understanding the determinants of peanut prices

Model Specification

- Following previous literature, equilibrium price movements for peanuts are summarized by SUR
- Westcott and Hoffman (1999) revealed the importance of SUR as an indicator of price movement by its usefulness in summarizing the effects of market forces (i.e. demand and supply)
- Adverse weather is also captured by the SUR; low yields are reflected in low SUR (supply) during periods of bad weather (Baffes and Haniotis, 2016)
- SUR partly accounts for the diversion of food commodities to biofuels (Baffes and Haniotis, 2016)

Model Specification

- At equilibrium, price P_t for marketing year, t , equilibrium quantity is established by the equation: $S_t = D_t + K_t$ (1) where S_t , is the total supply, D_t is demand, and K_t is the end of marketing year stocks

- Prices are inversely related to ending stocks and expressed mathematically as: $P_t = f(1/K_t)$

- The empirical model was broadly specified as:

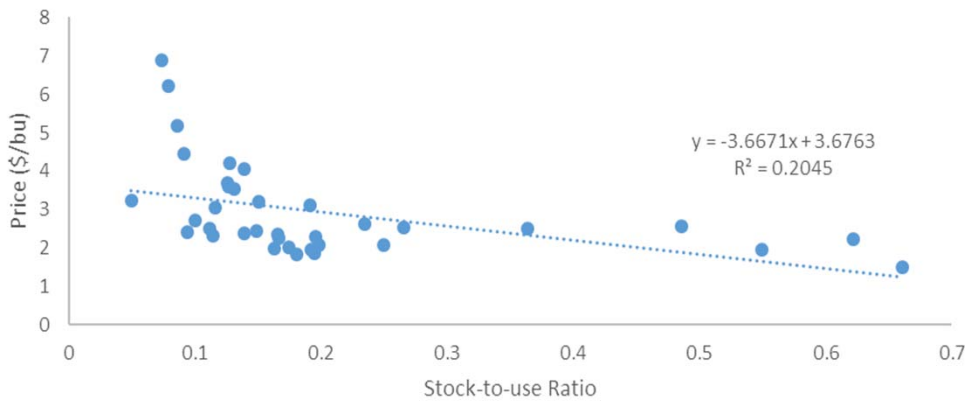
$$\log P_t = \beta_0 + \beta_1 \log SUR_t + \beta_2 T_t + \mu_t$$

Where, T_t is the trend variable and μ_t the stochastic error-term

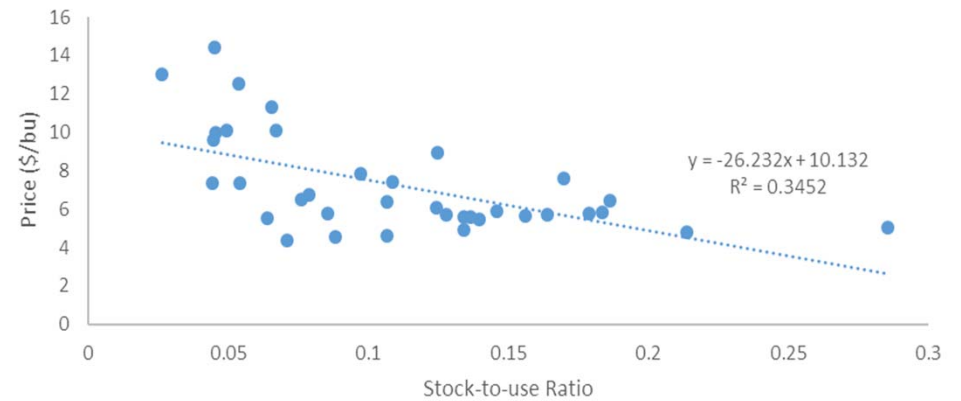
- Using data from 1980/81 to 2015/16 marketing years

Graphical Results

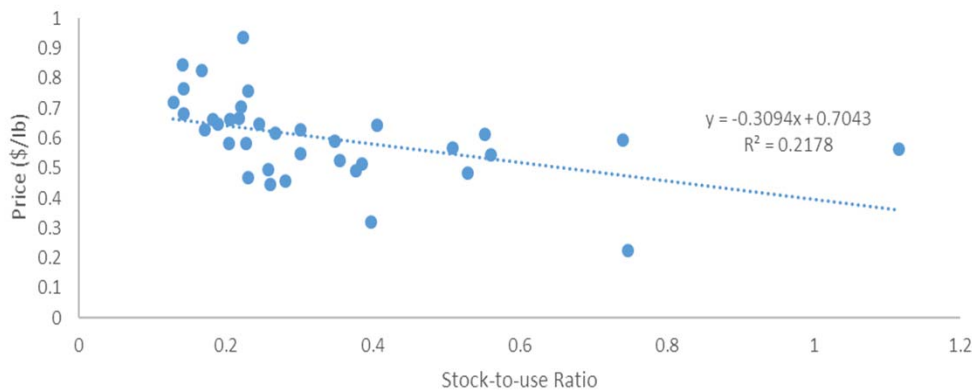
Scatter Plot of Corn Price and SUR (1980-2015)



Scatter Plot of Price and SUR for Soybean (1980-2016)



Scatter Plot of Cotton Price and SUR (1980-2016)



Scatter Plot of Price and SUR for Wheat (1980-2016)

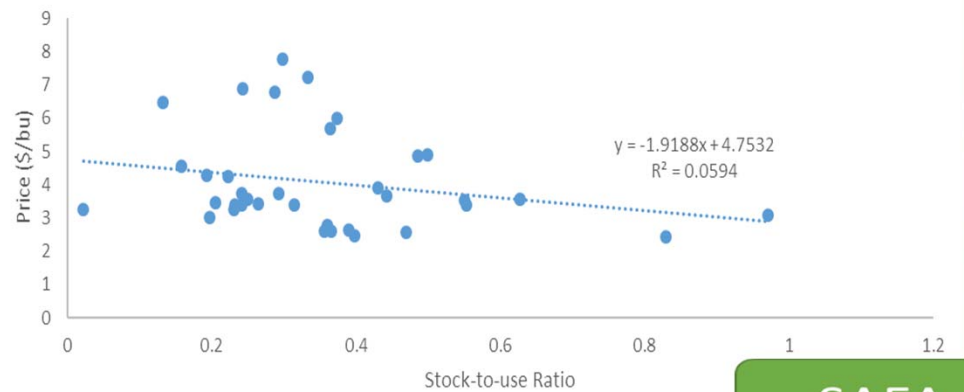


Table 1.0: Relationship Between Price and SUR for 5 Field Crops

<i>Variables</i>	(1) Peanut	<i>Variables</i>	(2) Corn	(3) Soybean	(4) Cotton	(5) Wheat
<i>Trend</i>	-0.0235*** (0.005)	<i>Trend</i>	-0.0196*** (0.006)	-0.0216*** (0.006)	-0.0258*** (0.004)	-0.00883* (0.005)
<i>SUR-Peanut</i>	-0.104 (0.119)	<i>SUR-Corn</i>	-0.252** (0.114)			
<i>2002-dummy</i>	-0.173 (0.209)	<i>SUR-Soybean</i>		-0.295** (0.112)		
<i>2002-dummy*SUR-Peanut</i>	0.106 (0.170)	<i>SUR-Cotton</i>			-0.225*** (0.079)	
		<i>SUR-Wheat</i>				0.0182 (0.077)
<i>Constant</i>	-0.552*** (0.201)		1.341*** (0.164)	2.055*** (0.207)	0.0775 (0.105)	1.952*** (0.121)
<i>Num. of observations</i>	35		35	35	35	36
<i>Adjusted-R-sq.</i>	0.886		0.174	0.252	0.544	0.0562
<i>Durbin-Watson stat.</i>	0.889		0.268	0.322	1.038	0.456

Note: standard errors in parentheses; *p<0.1, **p<0.05, ***p<0.01

Table 2.0: Relationship Between Price and SUR for 5 Field Crops

<i>Variables</i>	(1)	<i>Variables</i>	(2)	(3)	(4)	(5)
	Peanut		Corn	Soybean	Cotton	Wheat
Trend	-0.0299*** (0.007)	Trend	-0.0299*** (0.007)	-0.0263** (0.012)	-0.0245** (0.010)	-0.0231*** (0.006)
SUR-Peanut	0.0894 (0.074)	SUR-Corn	-0.296*** (0.055)			
2002-dummy	-0.409** (0.176)	SUR-Soybean		-0.269*** (0.060)		
2002-dummy*SUR-Peanut	-0.144 (0.109)	SUR-Cotton			-0.197** (0.079)	
		SUR-Wheat				-0.103** (0.048)
Constant	-0.196 (0.166)		1.465*** (0.292)	2.263*** (0.260)	0.0548 (0.132)	2.016*** (0.252)
Num. of observations	35		35	35	35	36
Adjusted-R-sq.	0.561		0.624	0.722	0.343	0.538
Durbin-Watson stat.	1.808		1.973	1.976	1.943	1.581

Note: standard errors in parentheses; *p<0.1, **p<0.05, ***p<0.01

Conclusion and Recommendation

- Although we observe a negative relationship between peanut prices and SUR, this relationship is not statistically significant
- On the other hand, wheat, cotton, corn and soybean all showed statically significant and negative relationship with SUR

WHY?

- Commodities Futures Market
- Competitive Markets
- Large crops relative to Peanuts
- Peanuts Market structure

Future Research

- Understanding the Peanut Market in relation to its structure, conduct and performance
- Some literature point to a Thinly Traded Market or a Modern Agricultural Market
- Currently focusing on a model to test Oligopsony in the Peanuts Market
- Using information from the above to forecast/ predict peanut prices which is the one of the challenges facing peanut farmers and policy makers

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