Geographic and Seasonal Differences in the Feeder Cattle Hedging Risk

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Abstract

Optimal hedge ratios on feeder steers for four different locations are estimated. Simulate hedging outcomes are evaluated to determine differences in hedging risk across locations. Results indicate that location explains little of the differences in risk, though hedging risk in Georgia is greater on March and November contracts than in other locations considered.

JEL Codes: Q110, Q130

Introduction

Feeder cattle production is an important industry in the Southeastern US. For both cow/calf and stocker grazing operations, variability in feeder cattle prices is an important source of risk. Chicago Mercantile Exchange (CME) feeder cattle futures and options contracts provide one means of mitigating that risk. Of course, a hedge using futures or options does not provide complete protection against price risk. Rather, hedging allows the decision maker to establish an expected price, subject to some variation resulting from discrepancies between futures and cash market price changes between the time the hedge is placed and the time it is lifted.

Feeder cattle in the Southeast have a reputation for being less uniform in quality than cattle from other regions. A large majority of producers hedging in this region would technically be cross hedging because they are using a futures contract to hedge a commodity that does not exactly match the contract specifications. For feeder cattle producers in the Southeast, it would be very useful to understand how effective feeder cattle futures and options might be as a price risk management tool, particularly at those times of the year when these producers tend to be most active in the market (i.e., in the fall after summer grazing and in the spring after winter annual grazing).

A number of studies have examined cross hedging calves that do not strictly conform to contract specifications – for example, lighter weight calves or heifers (Buhr; Elam and Davis; Schroeder and Mintert). The process of cross hedging is not as simple as a traditional hedge since the difference in the futures commodity and commodity being cross hedged often result in differing price movements and volatilities. To account for these differences, a ratio hedge can be used. In the case of feeder cattle this involves obtaining a futures market position of either more or less pounds than the amount actually being hedged depending on the volatility of the commodity being hedged relative to the commodity specified by the futures contract. The hedge ratio will determine a hedger's ability to forecast the actual net cash price *(NCP*) realized. A hedger's ability to make this prediction determines the amount of hedging risk associated with the hedge or cross hedge. Economically it is in the hedger's best interest to choose a hedge ratio with as little hedging risk as possible, which would, in turn, effectively manage his feeder cattle price risk. These studies all define hedging risk as the standard deviation of the difference between the net cash price (*NCP*) and the expected price (*EP*). NCP is the price actually realized by the producer and includes the cash price received along with returns (gains or losses) from the hedge. EP is the price anticipated at the time the hedge is placed.

Numerous studies have estimated hedge ratios have estimated hedge ratios for both steers and heifers of various weight categories. These studies also analyzed the hedging risk associated with using these ratios to execute cross hedges with CME feeder cattle contracts (Elam, Elam and Davis, Schroeder and Mintert). It has been established across these studies that different hedge ratios are appropriate for different sexes and weight categories and that the CME feeder cattle contract is indeed an effective risk management tool in cross hedging scenarios. However, these studies have, in general, been location specific and have not brought to light any spatial effects on hedge ratios or on the hedging risk resulting from using these ratios. In the second paragraph I referred the reputation southeastern feeder cattle have gained in lack of uniformity, it is therefore reasonable to expect that these differences could affect a producers ability to cross hedge (or hedge as the case may be) the sale or purchase of feeder cattle from one region of the country to another. Specifically, two major differences could be expected. First different hedge ratios for a given weight category of feeder cattle will likely be appropriate for different locations. Second, and perhaps more importantly, producers in different locations might face different levels of hedging risk and therefore differing degrees of hedging effectiveness. If these differences do exist identifying and quantifying them could enhance the producers' abilities to effectively manage the price risk of their operations.

The objective of this paper is to quantify the level of hedging risk facing feeder cattle producers in the Southeastern US. In order to provide context for the issue, this risk will be compared to hedging risk in other major feeder cattle markets. The four markets used for this research are Montana, St Joseph, MO, Oklahoma City, OK, and Georgia. Average bases and hedge ratios will be estimated across a range of weight categories for every CME feeder cattle contract, in our four locations. These hedge ratios and bases will be used to simulate hedges from 1993 to 2004. The results of these hedges will then be used to determine the hedging risk present for each weight category at each location using each available futures contract. The effects of location, contract month, and weight on hedging risk will be estimated using linear regression analysis. The effects between location and the other variable factors on hedging risk will be evaluated. Results of this estimation will be of value and interest not only to buyers and sellers of feeder cattle but also those individuals interested in the effectiveness of the CME feeder cattle contract as both a risk management tool and a price discovery mechanism.

Specific objectives are threefold: first, to econometrically estimate minimum variance hedge ratios by feeder cattle contract month for a number of locations around the country; second, to determine hedging risk based on these estimated hedge ratios; and finally, to develop an econometric model that attempts to explain hedging risk with variables related to seasonality, location, and expected finishing costs and returns. This research will build on earlier work in Coffey, Anderson, and Parcell; however, this study will include Southeastern markets in the analysis, will use a slightly different procedure for estimating hedge ratios, and will use a much different model to explain hedging risk.

Related Research

Numerous cross hedging studies have been conducted on a wide variety of commodity/futures contract combinations. While these studies vary in the commodities analyzed, they all focus on the ability or lack of ability to manage the price risk of a good for which no exact futures contract is available. The theoretical foundation for cross hedging was established by Anderson and Danthine. They state that when no obvious futures contract exist for a good, a cross hedge may be placed by taking a position in a related futures market contract. Anderson and Danthine note that a correlation coefficient between cash price of a good and the futures contract price that is statistically different from zero is an indication that a cross hedge may be appropriate. Once an appropriate contract has been identified, the volatility of the cash price relative to the futures price must be considered. This relative movement in prices determines the hedge ratio or how much of a cash position can be hedged using a futures contract. The estimation of these ratios has been an area of considerable disagreement between cross hedging studies.

Witt, Shcroeder, and Hayenga summarized three common approaches to the estimation of optimal hedge ratios: (1) price level models, (2) price change models, and

(3) percentage change price models. They argue that the objectives of the hedger, the nature of the relationship between cash and futures prices, and the type of hedge being placed (storage or anticipatory) ultimately determine which estimation procedure is appropriate. They conclude that for anticipatory hedges, the price level model is appropriate except in cases where: (1) the cash and futures market price relationship is nonlinear in the levels, (2) the price level equations exhibit strong positive autocorrelation, or (3) first order autocorrelation occurs.

The price level model involves using linear regression analysis to determine the relationship between cash and futures market prices. This approach to optimal hedge ratio estimations has also been widely used to estimate hedge ratios for cross hedging feeder heifers and steers that do not exactly meet the specifications of available cash-settled feeder cattle futures contracts. Elam and Davis use a price level model to compare the hedging risk of traditional hedges versus ratio hedges, which is a hedge in which the commodity can not be hedged on a one to one basis with existing futures market contract. Buhr employs a very similar methodology to evaluate the hedging of finished Holstein steers using live cattle futures contracts. Buhr suggest that for non storage commodities, such as live cattle, the hedge is anticipatory. In the case of an anticipatory hedge, the current cash price is unattainable and therefore of little interest to a hedger (Witt, Shcroeder, and Hayenga). Buhr goes on to state that a producer hedging in this situation is primarily concerned with ending basis risk. Feeder cattle of any classification are nonstorable commodities. Thus, a hedger buying or selling feeder cattle would be primarily concerned with the basis relative to the nearby futures contract at the time the hedge is to be lifted, making the hedging of feeder cattle anticipatory. This suggests that the price level model is an appropriate method to estimate optimal hedge ratios in this study.

All of the aforementioned studies have used the estimated optimal hedge ratios to simulate ratios hedges and analyze the results to quantify the hedging risk associated with cross hedging. According to Elam, the standard error of the net cash price received about the expected net cash price can be interpreted as hedging risk. This is also the method used by Buhr; Elam and Davis; and Schroeder and Mintert. The resulting standard error can be expressed in units that are appropriate to the situation and commodity (Blake and Catlett). For example, in the case of feeder cattle, the measure of hedging risk would be in dollars per cwt. Reporting hedging risk in this manner makes interpretation very straightforward and intuitive.

This well-pronounced presence of livestock cross hedging studies in the agricultural economic literature has established the potential for managing feeder cattle price risk via cross hedging. Furthermore, the hedging risk present in these cross hedges has been quantified for many specific cases. These include: hedging cattle that differ from the contract by both sex and weight with cash settled and delivery futures contracts in various cash markets (Shcroeder and Mintert), hedging off weight cattle in Amarillo, Texas market (Elam and Davis), and hedging off weight cattle in Arkansas cash market (Elam). Collectively, these studies an their respective results indicate that cross hedging feeder cattle can indeed be an effective risk management strategy but that depending upon how cattle conform to the CME feeder contract and the cash market in question, hedgers may face different levels of hedging risk.

The presence of these differences in hedging risk makes it worthwhile to go beyond a location specific framework and attempt to identify the factors that ultimately determine the hedging risk that a producer might face. By replicating the hedge ratio estimation and hedge simulation process for multiple weights and locations to arrive at the hedging risk present in each case, the information necessary to identify these factors can be generated. The data and methodology necessary to accomplished this are presented in the following section.

Data and Methods

This paper will calculate the differences in feeder cattle hedging ratios and hedging risk using feeder cattle price data reported by USDA Agricultural Marketing Service from four cattle markets from January 1993 to December 2004. Cash feeder cattle prices from the four different locations will also cover two different weight categories. Cattle weighing less than 800 lbs will be classified as light, while cattle weighing 800 and above will be classified as heavy. This will allow the estimation of different minimum variance hedge ratios for both weight groups, thus also permitting analysis of hedging risk on feeder cattle that do not conform to contract specifications regarding weight. The four locations that will be examined here are Montana, St. Joseph, MO, Oklahoma City, OK, and Georgia. Weekly averages settle prices on the CME feeder cattle contracts were collected for the same period. A price series was constructed for the entire time period. The nearby contract was defined as the nearest available contract up to the last day of the month prior to contract expiration. For example in January 1993 the nearby contract would be the March 1993 contract and this would remain so until February 29, 1993 at which the April 1993 contract would become the nearby contract.

The relationship between a feeder cattle cash prices series and a futures contract is best estimated using the nearby futures price since cash prices tend to be more correlated with the nearby futures contract price than with any other futures contract. Because of this correlation, hedgers generally use the nearby contract since hedging risk is lower. (Elam and Davis). Specifically, this relationship will allow for an estimation of an optimal hedge ratio.

(1) $$C_{t,m,w} = \beta_o + \beta_1 F_t + \varepsilon_t .$$

In this formation $C_{t,m,w}$ represents the cash market price in time period t (in weeks), at market location m for feeder cattle of weight w, while F_t is the nearby futures price, as defined earlier in this section, in time t. β_o is the intercept term and represents the average basis at the time hedges are lifted. β_1 represents the hedge ratio and can be interpreted as the expected change in the nearby futures price. ε_t is an error term in time t.

By estimating equation 1 for every combination of contract month (c), m, and w hedge ratios can be obtained for each combination. This estimated hedge ratio b_1 represents how volatile a cash price series is relative to futures prices. For cash prices that exhibit change in response to market signals greater than those of futures prices b_1 will be greater than 1. These estimated parameters will be used to determine the expected or target price (EP) of a hedge and the net cash price realized (NCP) for the same hedge as follows:

(2) $EP = b_o + b_1 F_{t=s}$

(3) $NCP = C_{t=1} + b_1(F_{t=s} - F_{t=1})$.

b_o and b_1 are the estimates from equation 1 of $\beta_o + \beta_1$, respectively. At the time the hedge is set t = s and in the week the hedge is lifted, t = 1. Comparing the NCP with the predicted EP allows the effectiveness of a hedge to be judged.

The effectiveness of a hedge depends directly upon the ability to predict NCP. This is because the objective of a hedger is not to enhance income but rather to "lock-in" an EP subject to hedging risk. So as the disparity between NCP and EP increases a hedge is considered less effective. For a perfect hedge EP = NCP. In the real world perfect hedges rarely occur and then only by chance. A hedger operates with the understanding that he cannot literally lock-in an NCP and therefore will face some hedging risk. This hedging risk can be defined as the standard deviation of NCP-EP (Elam). Buhr; Elam and Davis; and; Schroeder and Mintert have also used this definition of hedging risk in livestock cross hedging studies. This measure of hedging risk is defined in this paper and all aforementioned studies by Schroder and Mintert as:

(4) $Std(NCP - EP) = \sigma_e[1 + \frac{1}{n} + \frac{(F_1 - \overline{F})^2 + \sigma_v^2}{\Sigma(F_2 - \overline{F})^2}]^{1/2}$

Where NCP is the net price received from the hedge, EP is the expected calculated using the estimates from equation 1, σ_e is the root-mean-squared error from the estimation of equation 1, *n* is the number of observations used in estimating equation 1, F_1 is the futures price at the time when the hedge is placed, F_2 is the futures price at the time the hedge lifted, $\overline{F}$ is the mean of F_2, and σ_v is the standard error of the change in futures prices over the duration of the hedge.

This equation reveals the ability of the cross hedge to predict the NCP over time. Specifically, a hedger's NCP should be within one standard deviation of (EP-NCP) of EP about two-thirds of the time (Elam and Donnell). This measure of hedging risk can be calculated for every w, m, and (c) across all years (1993-2004).

Previous studies have measured this hedging risk for specific locations and in some cases, a selection of locations. The purpose of this study is to carry this analysis further and examine and quantify the differences in NCP-EP by contract month, location, weight catergories, corn futures prices, and live cattle futures prices. This will allow hedgers to better understand the sources of the risk they actually face. By simulating hedges based on the aforementioned data via the equations 2 and 3, a different (NCP-EP) value was obtained for each contract month. By regressing the other aforementioned independent variables on the (NCP-EP) the effects of certain factors on hedging risk can be quantified. Specifically, this study proposes the following model:

(5) $$(NCP - EP)_{ij} = f(Loc_k, W_l, Lc, C)$$

Where *(NCP-EP)* is the difference between the expected and net cash price from a three month uniform hedge in year i for contract delivery month j. This difference, indicating the effectiveness of the hedge in any given year, and is estimated as a function of location (*Loc*, represented with binary variables for k locations), weight *(W,* represented by binary variables for l different weight categories), live cattle futures prices *(Lc),* and corn futures prices *(C)*.

The model represented by equation 5 is estimated for each Feeder Cattle Futures contract month. The specific variable included in the estimation includes binary variables for GA, MT, and MO locations, a binary variable to represent weights below

700 pounds, a binary variable to represent weights above 800 pounds, interaction terms between location and weight groups. The base for this model estimation is defined as Oklahoma City prices on 700 to 800 pound steers. Additional variables in the model include the change in the nearby Live Cattle futures price over the period of the hedge (3 months) and the change in the nearby Corn futures prices over the period of the hedge.

Estimation Procedure and Results

Optimal hedge ratios for each contract month, location, and weight group are estimated using General Least Squares. Following Vinswaneth, the equation estimating the minimum variance hedge ratio will included a lagged basis term as an explanatory variable. Minimum variance hedge ratios are estimated for each location, weight category, and contract month. Minimum variance hedge ratios for each location and contract month in both the 600-650 pound and the 750-800 pound weight category are reported in Table 1. Hedge ratios for other weight categories are available from the authors upon request.

Three month uniform hedges are simulated using these estimated minimum variance hedge ratios along with cash and futures prices covering the 1993 through 2004 time period from each of the four locations being investigated. For each simulated hedge, the difference between the *NCP* and *EP* are calculated. Following equation 4, the risk associated with each hedge (by location, weight group, and contract month) is calculated. Hedging risk for hedges in both the 600-650 and 750-800 pound weight categories in each location and for each contract month are reported in Table 2.

In general, results in Table 2 indicate that hedging risk is greater the further the weight category associated with the cash price series is from the 700-800 pound range. This is not too surprising. While Chicago Mercantile Exchange cash settlement procedures are based on a Feeder Cattle Index incorporating prices from 650 to 849 pounds (CME Rulebook), it is reasonable to expect that larger numbers of cattle fall into the 700-800 pound category, meaning that prices in that weight range will have a larger impact on the feeder cattle index value.

With respect to locations, for the 750-800 pound weight category, hedging risk in Oklahoma City does tend to be generally lower than for the Georgia market, though the November and April contracts are exceptions. Hedging risk in the Montana market on the 750-800 pound weight category is consistently high relative to the other locations. Hedging risk in the St. Joseph, Missouri market is more volatile than in the other locations. In that market, the standard deviation of the difference between the expected cash price and the net cash price ranges from a low of 0.919 on the April contract to a high of 4.385 on the May contract.

In order to more thoroughly investigate the effectiveness of Feeder Cattle futures contracts as a price risk management tool in different regions of the country, an econometric model based on equation 5 was estimated for each Feeder Cattle futures contract delivery month. These models were estimated as random effects models, with the absolute value of ($NCP - EP$) as the dependent variable. Independent variables are as previously described. Results of this estimation are presented in Table 3.

The results of this study reaffirm that corn and live cattle futures contracts tend to have a significant impact on the outcome of feeder cattle hedges in several contract months. This result is consistent with previous research, which has demonstrated very strong linkages between feeder cattle, fed cattle, and corn prices (e.g., Anderson and Trapp).

In general, some geographic differences in hedging effectiveness do appear to exist, though these are not as prevalent as expected. For two contract months, namely March and November, the significant and positive coefficient on the Georgia location variable indicates that differences between the expected price and net cash price are generally greater than is the case in the Oklahoma market, indicating somewhat less effective price risk management from hedging. The fact that March and November contracts may be less effective feeder cattle hedging instruments could be problematic for many producers since spring and fall are very active periods in the feeder cattle market.

Converse to the previous result, on light cattle (defined here as below 700 pounds) the difference between NCP-EP Georgia location was actually less as compared to the Oklahoma market. This indicates that the hedging risk on cattle that are significantly lighter than feeder cattle contract specifications is actually lower than hedging risk on that class of cattle in the Oklahoma market.

Across all locations, the difference between NCP-EP was found to be greater for the weight categories below 700 pounds than for the base 700-800 pound weight category. Again, this is not surprising given the impact that prices in these weight categories will have on the calculation of the feeder cattle index. It is perhaps notable, though, that for cattle heavier than 800 pounds, there was no significant difference between NCP-EP compared to the 700-800 pound group.

Summary and Conclusions

Feeder cattle cash price data covering the period from 1993 through 2004 from four different feeder cattle markets in different geographic regions of the country were used to estimate optimal (minimum variance) feeder cattle hedge ratios. Prices for cattle weights ranging from 600 to 850 pounds (in 50 pound increments) were used so that optimal hedges could be estimated for different weight classes of cattle as well. Three-month uniform hedges were simulated based on the minimum variance ratios, and hedging risk in each location and for each weight group was calculated. In order to more fully explain differences in hedging effectiveness, an econometric model of differences between Expected Price (EP, the price expected when a hedge is placed) and Net Cash Price (NCP, the price realized when the hedge is lifted, including both the cash price and hedging returns) was estimated.

Results of this study indicate the feeder cattle futures contract appears to be a reasonably effective hedging instrument in most locations. Minimum variance hedge ratios were very close to 1. Hedging risk did appear to vary across locations to some degree, but for hedges in most contract months, location did not explain a great deal of differences in hedging effectiveness.

A more significant factor influencing hedging effectiveness was the weight category of cattle. Hedges on cattle in weight categories below 700 pounds appeared to be significantly less effective than hedges on cattle above 700 pounds. This is not surprising given the fact that prices on heavier weights of cattle are likely to have more influence on the feeder cattle futures price.

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Table 1. Minimum Variance Hedge Ratios for Feeder Cattle Futures by Location and Weight Group

	Contract month							
Location	Jan.	Mar.	April	May	Aug.	Sept.	Oct.	Nov.
Wgt 4 = 750-800								
OK	1.023912	0.990320	1.010396	1.002866	1.031475	1.046970	1.039118	1.023543
GA	0.988239	0.986913	0.986841	0.987139	0.965712	0.963500	0.942387	0.875470
MT	0.957338	0.974605	0.983904	1.024324	1.019908	1.029236	1.008625	0.982806
MO	1.103725	0.976525	1.003979	1.046322	1.024951	1.044191	1.050044	1.007433
Wgt1= 600-650								
OK	1.101942	1.045291	0.993441	1.065913	1.112654	1.091248	1.118130	1.152501
GA	1.055426	1.034681	1.038990	1.074150	1.024684	1.016889	1.001732	0.998768
MT	1.061498	1.015158	1.013707	1.012474	1.072861	1.044646	1.050456	1.008532
MO	1.175214	1.009764	1.048011	1.105660	1.045393	1.000985	1.041352	1.115344

Note: Minimum hedge ratio for other weight categories are available from the authors.

Table 2. Hedging Risk (σ NCP-EP) from 3 Month Uniform Feeder Cattle Hedges: 1993-2004

	Contract Month							
Location	Jan	March	April	May	Aug.	Sept.	Oct.	Nov.
Wgt 4 = 750-800								
OK	1.993	0.691	1.379	1.596	1.197	1.091	2.121	2.226
GA	2.220	1.494	1.307	1.811	1.582	1.788	2.309	1.813
MT	2.608	2.107	2.294	2.150	2.912	2.120	2.516	2.498
MO	1.583	1.743	0.919	4.385	2.375	1.952	3.922	3.933
Wgt 1 = 600-650								
OK	2.177	2.700	4.225	3.679	2.521	1.766	3.210	2.928
GA	2.133	3.014	2.428	2.344	3.163	2.904	2.776	2.777
MT	3.020	4.118	3.414	4.234	2.771	2.218	2.309	2.576
MO	2.210	5.503	3.921	4.114	4.427	4.930	4.203	3.677

Table 3. Estimated Equations for NCP-EP from 3-Months Uniform Feeder Cattle Hedges: 1993-2004

Variable Name	Contract Month Jan	Mar	Apr	May	Aug	Sep	Oct	Nov
Intercept	1.543 (137.28)	0.445 (0.533)	1.783 (1358.92)	1.838 (182.52)	0.833 (1269.43)	1.274 (636.10)	1.699 (147.19)	2.248 (0.469)
GA	3.844 (194.14)	4.446 (0.733)	3.082 (1921.81)	2.529 (258.12)	5.011 (1795.24)	5.859 (899.59)	4.697 (208.16)	2.665 (0.663)
MT	0.369 (194.14)	1.178 (0.733)	0.199 (1921.81)	(-)0.236 (258.12)	0.924 (1795.24)	0.115 (899.59)	0.186 (208.16)	(-)0.312 (0.663)
MO	0.0781 (194.14)	0.701 (0.733)	(-)0.608 (1921.81)	0.556 (258.12)	0.603 (1795.24)	0.634 (899.59)	0.612 (208.16)	(-)0.024 (0.671)
Wgt_light	0.452 (0.4974)	3.545 (0.733)	6.201 (0.801)	4.166 (0.737)	1.673 (0.503)	1.426 (0.570)	0.943 (0.654)	1.089 (0.663)
Wgt_heavy	0.137 (0.6092)	0.610 (0.897)	(-)0.192 (0.981)	(-)0.588 (0.903)	(-)0.297 (0.616)	(-)0.154 (0.699)	(-)0.157 (0.801)	(-)0.628 (0.812)
Ga_light	(-)0.699 (0.7035)	(-)6.141 (1.036)	(-)8.972 (1.132)	(-)6.571 (1.042)	(-)2.943 (0.711)	(-)2.576 (0.807)	(-)1.064 (0.925)	0.305 (0.938)
Mt_light	0.421 (0.7035)	0.519 (1.036)	0.027 (1.133)	(-)1.015 (1.042)	(-)1.397 (0.712)	(-)0.558 (0.807)	(-)0.805 (0.925)	(-)0.589 (0.938)
Mt_heavy	0.900 (0.8616)	(-)0.950 (1.269)	0.858 (1.133)	0.498 (1.277)	0.907 (0.871)	0.604 (0.988)	0.205 (1.133)	0.593 (1.149)
Mo_light	(-)0.462 (0.704)	(-)0.436 (1.036)	(-)0.663 (1.133)	1.231 (1.042)	0.207 (0.712)	0.895 (0.807)	0.473 (0.925)	0.168 (0.943)
Mo_heavy	0.206 (0.862)	0.242 (1.269)	0.811 (1.388)	(-)0.511 (1.277)	0.789 (0.871)	(-)0.791 (0.988)	(-)1.181 (1.133)	(-)0.534 (1.153)
LC_chg	0.009 (0.060)	(-)0.313 (0.099)	(-)0.053 (0.11)	(-)0.194 (0.059)	0.129 (0.037)	0.157 (0.052)	0.125 (0.069)	0.089 (0.060)
C_chg	(-)0.008 (0.005)	0.029 (0.007)	0.018 (0.009)	0.0278 (0.007)	(-)0.014 (0.003)	(-)0.011 (0.004)	(-)0.006 (0.005)	0.0001 (0.006)

Note: Standard Error are in parentheses below parameter estimates.