COWLES COMMISSION DISCUSSION PAPER: ECONOMICS NO. 2124

Commodity Futures IV: An Empirical Test of the Theory of Normal Backwardation

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June 22, 1955

In earlier papers (2,3) reference was made to Keynes' theory of normal backwardation, according to which the currently quoted futures price is always below the spot price that is expected to rule at the maturity of the futures contract. A critical discussion of this theory and of its elaboration by Hicks will be given elsewhere. It will be shown there that to make the theory operational and to free it from certain theoretical and practical objections it has to be substantially revised. The reformulated doctrine may be simply stated as follows: The price of a futures contract tends to rise as the contract approaches maturity.

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*/ I am indebted to William O. Jones, Lester G. Telser and Holbrook Working for helpful comments, to John G. Herriott for advice on the use of the Card Programmed Calculator of the Stanford Computation Service, and to Joy C. Love for assistance in the calculations.

The argument, briefly summarized, is based on the normal predominance of short hedging over long hedging, itself a result of the fact that in short hedging losses are limited, whereas in long hedging profits are limited. The greater the excess of short hedging over long hedging, the more the futures price will be depressed below its speculative equilibrium. The speculative equilibrium price, which is an extension of the "expected price" for the case where expectations differ between traders, is the price at which long and short speculators' commitments just offset each other. If there is an excess of short hedging over long hedging this must be offset by an excess of long speculation over short speculation, and the latter excess can only exist when the futures price is below its speculative equilibrium. Moreover the volume of hedging is bound to decrease as the futures contract nears maturity, since there is little point in hedging in a contract that is about to expire. Hence the futures price must rise in relation to its speculative equilibrium as maturity approaches. This does not yet mean that the futures price must rise in absolute terms, for the speculative equilibrium in general does not remain constant over time: it shifts continually under the influence of a multitude of factors.

In a stationary state the speculative equilibrium would not necessarily remain strictly constant; over time it might exhibit various seasonal and random movements, but it would not show any upward or downward trend. The normal backwardation doctrine, as stated in the first paragraph, would then be correct on the average. The normal rise in the futures price would accrue to the benefit of the speculators, who are long on the average. Their profit would be paid by the hedgers (since in a futures market all profits must be exactly offset by losses), and the hedgers are willing to pay this tribute as a risk premium because they can use their capital more profitably in merchandizing and production than in speculation. Estimates of profits and losses in futures markets [3] do in fact indicate that in the periods considered hedgers lost on the average, but this is not definite evidence in favor of the theory because conditions were not stationary. A similar reservation applies to the data in Tables I and II, to be discussed below.

In a non-stationary state the rising tendency of futures prices may still exist, but it may be offset or reinforced by other influences affecting the speculative equilibrium. It is therefore necessary to allow for changes in the speculative equilibrium, and doing so will also enable us to dispense with the notion of a stationary state. Since the speculative equilibrium itself is not observable, it has to be linked to some other variable. The obvious choice is the spot price, for the factors influencing the cash speculators [2] are not different in nature from those affecting the futures speculators, though their effect may differ in intensity. It is not assumed that the speculative equilibrium is equal to the spot price but only that the two change proportionally. If the spot price is denoted by s, the speculative equilibrium by e, and changes in both by Δ, the assumption therefore is that

$$\Delta e = b \Delta s \qquad (1)$$

The theory of normal backwardation, as revised, would say in its simplest form that (if f denotes the futures price)

$$\Delta f = a + \Delta e \qquad (2)$$

where a is the change in the futures price that occurs irrespective of changes in the speculative equilibrium; more particularly the theory therefore says that a is positive. Substituting (1) in (2) we get

$$\Delta f = a + b \Delta s \tag{3}$$

This equation is the basis for the calculations that follow. All estimates were obtained by least squares, regarding Δ s as independent. A large variety of objections can be raised against this technique of estimation, and some technique using instrumental variables would no doubt be more appropriate. There are so many variables influencing spot and futures prices, however, and it would be so difficult to express some of them quantitatively, that any gain in consistency from using instrumental variables would probably be outweighed by a loss of efficiency.

As a useful byproduct of the estimation of (3) we obtain information on the correlation between spot and futures prices, which is one of the factors determining the willingness to hedge. Generally speaking, both long and short hedging are more attractive the closer this correlation. Thus if a hedger has a choice between different futures contracts he will prefer the one most highly correlated to the spot price, provided other determining factors are the same. The principal other factors are the remaining life of the future, since hedging in near futures may necessitate much switching as the contracts approach maturity, and the current difference between the spot price and the future price, considered more extensively in [4].

The data used in the estimation of a and b in (3) referred to two commodities, cotton and corn. They were monthly averages of daily price quotations extending over some 20 years in each case. Only those months were considered in which a futures contract was quoted on every day, so as to make sure that the spot price average referred to the same period as the futures price average. This meant that the first and the last month in which a futures contract was quoted had to be left out, because the quotations for these months were usually not complete. In accordance with (3) first differences were formed by subtracting from each monthly average the average of the preceding month.

In the case of cotton the period considered extended over the crop years 1931-32 through 1953-54 (the cotton crop year starts on August 1). The six months from February through July of 1951 had to be omitted because the spot price and some futures prices had reached the ceiling set by the Office of Price Administration, so there were 270 monthly observations in all. For each month first differences of four or five futures prices were available. The spot price used was the average price per pound of 15/16 inch middling at the 10 "designated" spot markets. The futures prices are actually more immediately related to the spot price at Houston or Galveston, Texas, which are the usual points for delivery on contracts, but it was thought that for the present purpose a widely based spot price average would be more appropriate.

The futures prices used, both for corn and for cotton, were monthly averages of daily closing prices (at Chicago and New York respectively) obtained through the courtesy of the Commodity Exchange Authority. The spot price used for corn was the monthly average for No. 3 Yellow at Chicago; since Chicago is the center of the U.S. corn trade this average is sufficiently representative. In the latter average the daily quotations are weighted by the number of carloads sold, which may cause some slight inconsistency with the unweighted futures price average. The period of observation for corn consisted of the calendar years 1930 through 1941 and 1947 through 1954, making 240 months in all; the war and early post-war years were omitted because of the many interruptions in futures trading. For each month first differences of two or three futures prices were available.

The main results are set out in Tables I -VIII. Each of the columns refers to a particular futures contract or (in Tables I and II) to the spot price; some contracts appear in two columns so as to leave the order of maturity unchanged. Each row refers to a month of quotation; since first differences were used "January," for instance, means the change in January from the preceding December. All prices are expressed in cents (per pound for cotton, per bushel for corn).

Tables I and II give the average price changes per month. An entry such as

	March
January	.25

means that on the average the March future during January rose from December by .25 cents. At the bottom are the average monthly price changes for each futures contract over the months considered in the tables. Thus the entry .21 for the March cotton future means that from April (the first month appearing in a first difference) through February the March futures price rose on the average by .21 cents per pound per month.

Although the results of Tables I and II are broadly similar, it is perhaps instructive to start by considering the cotton data separately. Looking first at the spot price we notice a sustained but rather irregular rise during most of the year and a sharp fall in August, continued on a lesser scale during the following two months. This pattern no doubt reflects the movement of the crop from producers to consumers during the crop year. The spot price falls when new supplies reach the market in late summer and fall, then rises gradually as stocks are used up. In the case of cotton this pattern is somewhat complicated by the fact that over the period 1931-54 as a whole the cotton spot price rose by an average of .11 cents per month. Assuming this overall rise to be equally distributed over all months, the harvest-time price fall is thus seen to be underestimated and the post-harvest rise overestimated. If this amount is subtracted, the net average change in the spot price is for January +.21, February +.04, March +.23, April +.14, May -.03, June +.19, July +.31, August -.86, September -.26, October -.26, November +.07, December +.23.

The average carrying charge on cotton stocks (storage cost plus interest) during this period was probably between .15 and .20 cents per pound per month, while during the nine post-harvest months the average net spot price change was about .16 cents per pound per month. It appears therefore that during the storage season the spot price increased <u>on the average</u>, apart from any secular rise, by an amount barely sufficient to cover the direct cost of carrying stocks during the crop year. Needless to say such an increase did not take place during <u>every</u> month in the storage season, and stockholders therefore ran a price risk which they could wholly or partly shift by selling futures. According to the theory of normal backwardation they would have to pay a premium to the buyers of these futures, and it is then seen that, as far as the present data can show, there is no margin over direct carrying costs from which such a premium could be recouped. Broadly similar conclusions concerning corn and wheat were drawn in [3]. They do not imply, however, that on the whole the carrying of stocks is done at a loss, for our price data refer only to the standard grade in the most important marketing centers, and such run-of-the-mill transactions will rarely be the most profitable part of a menchant's operations.

Next considering futures prices in Table I we notice that in most months the changes in spot and futures prices are quite similar in magnitude. The outstanding exception are the summer months. As early as April there is a greater rise in the futures prices than in the spot price; the same is true in May and June. In July the spot price is much higher than in June, but the rise in the futures price is about twice as large. From July to August the spot price falls sharply, while the futures prices fall only slightly. In September the spot price declines a little more, but futures prices rise somewhat. From then on spot and futures prices move in a more or less parallel fashion, though in December and January the latter fail to keep up with the rise in the former.

These movements are in general consistent with the seasonal characteristics of stocks and of short hedging. When the new crop reaches the market the futures prices have to rise sharply relative to the spot price so as to make the placing of an appropriate volume of short hedging possible, for it has been shown in [3] that the volume of short hedging is inversely related to the "basis" (the difference between the spot price and a futures price). Once the new relation between spot price and futures prices has been established the basis changes much less, since during the storage period stocks and the volume of short hedging decline only gradually. Towards the end of the crop year the lifting of short hedges exercises an upward pressure on the old crop futures, and the placing of long hedges has a similar effect on the new crop futures.

It will be realized that the above is only a very summary description of a complicated process, but in the present context it must suffice. The main feature of our explanation is the emphasis on the behavior of hedgers rather than that of speculators. It is held, in fact, that hedging provides the fundamental pattern of seasonal price movement and that speculation causes irregular deviations from this pattern. In any particular year the irregularity may of course be more important than the constancy, and the present theory therefore has only a rather remote usefulness for short-term predictions.

In corn (Table II) the seasonal movement of the spot price is much the same as that of the cotton spot price. Since over the periods of observation as a whole there was only a negligible price rise it is not necessary to correct the monthly averages from "gross" to "net", as was necessary in cotton. The corn harvest reaches its peak in October and is accompanied by a sharp drop, followed in November by a more moderate decline. During the storage period the spot price moves more irregularly than in cotton; the fall in February is especially remarkable (about half of this fall is due to the single year 1948, however).

During the ten months from December through September the average rise in the spot price was about 1.2 cents per pound per month, whereas carrying costs amounted to at least $1\frac{1}{2}$ cents. As in cotton the carrying of standard grade stocks in the principal merket does not seem a profitable business.

The changes in corn futures prices are rather more irregular than those in Table I, but the general picture is not too different. Towards the end of the crop year (from June onwards, to be precise) futures price start to gain on the spot price, and this gain is (as it was in cotton) largest during the harvest months (in this case October and November). From then until June futures prices fall behind spot prices, a tendency which in the case of cotton was only apparent during December and January and which is hard to explain. Otherwise the explanation is the same as for cotton.

To provide more direct evidence on the theory of normal backwardation Tables I and II finally show the average change per month for each futures contract during the months observed. In cotton these changes were quite close to each other for all the five contracts; their average rise was .22 cents per pound per month, compared to an average rise of .11 cents per pound per month in the spot price. In corn there is much more variation between contracts, partly as a result of the fact that the number of months of quotation for each future was smaller than in cotton. The average rise in futures prices was .87 cents per pound per month, as against only .03 cents for the spot price.

These over-all averages therefore indicate that futures prices in the years observed did rise during the life of the respective contracts, in accordance with the theory of normal backwardation. They also show that futures prices rose more than the spot price, which suggests that the rise in futures prices was not only due to changes in the general price level.

Nevertheless the theory can hardly be regarded as established by mere inspection of these averages. In the first place there is very considerable year-to-year variation among the observations from which the averages were derived, so that all the figures in Tables I and II have large standard errors. In the second place it is desirable to look more closely into the consequences of the fact that the periods of observation were undoubtedly not periods of stationary equilibrium. Both of these purposes can be achieved by estimating the coefficients in equation (3) above together with their standard errors and the correlation between the changes in spot and futures prices. (Tables III-VIII)

Tables III and IV give the squares of the correlation coefficients between the first differences of the spot price and the first differences of each futures price. The results for cotton and corn are sufficiently similar to be discussed together. We notice first that, apart from a few minor exceptions, the correlations diminish along each row from left to right. Consequently for each month of quotation the changes in the spot price are more closely associated with changes in the near futures than with changes in the more distant futures. This is hardly surprising, though quantitative evidence on this phenomenon had hitherto been slight.

Down the columns the pattern of the coefficients is less regular. We may observe first that on the whole the coefficients are higher for cotton than for corn, which is probably connected with the comparatively greater importance of futures trading in the cotton trade. Disregarding this difference, and considering that cotton harvesting reaches its peak in August and corn harvesting in October, the general pattern is the same for the two commodities. During the harvest period the spot-futures correlations are lowest, dropping to almost zero in corn. They then rise rapidly to values close to unity, which are reached about four months after the peak harvesting month. From then on the correlations decline slowly and somewhat irregularly, finally falling rather abruptly to their harvest-time lows.

This seasonality is again roughly consistent with the behavior of stocks and hedging. The basic connection between spot and futures price is provided by the possibility of making or taking delivery at the expiration of the futures contract. At other times a link is formed by the short hedgers who act as arbitrageurs between the spot and futures markets; the long hedgers may be regarded as arbitrageurs between the forward and futures markets. Since short hedgers' profits depend mainly on the "basis" (the difference between spot and futures prices), any change in the spot price affects their willingness to buy or sell futures. Thus if the spot price goes up in relation to the futures price hedging becomes less attractive and existing hedges are listed by selling spot and buying futures, which tends to reduce the initial discrepancy between spot and futures prices. The effect of long hedgers' reactions, which we need not trace here, is similar as far as the futures market is concerned; because of the smaller volume it is much less important than the effect of short hedging.

When the new crop is entering storage the basis must be such as to induce a sufficient amount of short hedging, which means in practice that the prices of the near futures then have to exceed the spot price by the carrying cost. Before harvest, however, the prices of these new-crop futures probably were below the spot price by an amount depending on the size of the carry-over (cf. [45]). Since the carry-over varies considerably from year to year, the change in the basis during the harvest period must also vary much from year to year. During this period the correlation between changes in spot and futures prices therefore must be relatively low. Once the appropriate volume of hedging has been attained, however, changes in the spot price must be highly correlated with changes in the futures price since the volume of hedging is fairly stable around the middle of the crop year. Towards the end of the crop year there is again considerable year-to-year variation in the basis, associated with the size of the carry-over, and the correlations must therefore be lower. The coefficients in Tables III and IV can thus be satisfactorily explained.

Estimates of the constant a in equation (3) with their standard errors are contained in tables V and VI. This constant indicates the rate of change per month of a futures prices with respect to time when the spot price is held constant. It has been labelled the "Keynes effect" for the theorem $a > o$ may be regarded as the essence of Keynes' original theory, provided that a refers not to individual months of quotation but to the whole life of the future. There is much variation among the individual a's for both cotton and corn, which does not contradict the theory. For corn, in fact, there are more negative than positive a's, but the former are on the whole smaller than the latter.

A more definite test of the theory is provided by the values of a for the observed life of each contract, given at the bottom of the table. In cotton all five of these a's are positive, and most of them significantly so. Too much should not be made of the differences between the various futures, since they depend on which months are included in the average. Thus the figure for July cotton is low because we were unable to compute first differences for July and August, the months in which the a's are largest. This has also affected the aggregate a's for the corn futures, two of which are negative though not significantly so whereas the other two are significantly positive.

Finally estimates of a for all futures combined will be found in the bottom right hand corner of Tables V and VI. They show that the "average" cotton future increased on the average by .136 cents per pound per month in addition to the effect of changes in the spot price, and the "average" corn future by .754 cents per bushel per month. The standard errors of both these estimates are small.

It is interesting to convert these over-all average monthly rates of changes into an annual percentage of the spot price. In his original discussion [6, p. 145] Keynes gave as a "modest estimate" of the rate of backwardation for commodities such as cotton and corn a figure of 10 per cent per annum. Apart from a vague reference to the "statistics of organized markets" Keynes produced no evidence for this estimate, but it now appears to have been remarkably shrewd. Since the average spot prices over the periods here considered were 20.87 cents per pound for cotton and 106.4 cents per bushel for corn, our results indicate an annual rate of backwardation of 7.8 per cent per annum for cotton and 8.6 per cent per annum for corn. Our figures are somewhat lower than Keynes's, but this could well be attributed to the reduction in price risk since 1930 due to government price support, improved futures contradts and better protection against market manipulation.

To conclude, we come to the parameter b in equation (3), which represents the rate of change of a futures price with respect to a unit change in the spot price. We have termed it the Hicks effect, not only because of Hicks's contribution to the theory of normal backwardation, but more especially because of b's relation to the substitutability between the spot commodity and the futures contract concerned. A theorem of Hicks 1 , p.75, 318 asserts that if the demand for one member of a group of substitutes shifts upwards, then the prices of all members of the group will go up, but the price of the commodity (or asset) which has experienced the shift will show the largest proportionate increase. A full application of this theorem would call for more extensive investigation than we have been able to undertake, but there can be no doubt that the b's in Tables VII and VIII depend on the marginal rate of substitution and, for statistical reasons, on the relative importance of demand shifts in the spot and futures markets. By comparing Tables III and VII, and IV and VIII, respectively, it will be found that b and r^2 are as a rule very similar in magnitude. This implies that if we had taken the regression (3) with variables interchanged, that is in the form

$$\Delta s = a' + b'\Delta f$$

then the estimates of b' would have been in the neighborhood of unity. It appears that our least-squares technique of estimation is too arbitrary in this respect to permit a detailed discussion of the seasonal pattern of the b's.

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TABLE I - COTTON

Average Change in Spot and Futures Prices

	Spot	March future	May future	July future	Oct. future	Dec. future	March future (cont.)	May future (cont.)	July future (cont.)	Oct. future (cont.)	All future comb.
Jan.	.32	.25	.26	.28	.35						
Feb.	.15	.14	.10	.07	.09	.08					
March	.34		.35	.37	.32	.30					
April	.25		.31	.34	.32	.30					
May	.08			.12	.12	.11	.10				
June	.30			.34	.36	.38	.37				
July	.42				.79	.85	.86	.86			
Aug.	-.75				-.15	-.11	-.08	-.08			
Sept.	-.15				.11	.09	.09	.10	.11		
Oct.	-.15					-.16	-.14	-.12	-.12		
Nov.	.18					.26	.18	.14	.10		
Dec.	.35						.30	.29	.26	.24	
TOTAL	.11	.21	.22	.19	.26	.21					.22

TABLE II - CORN

Average Change in Spot and Futures Prices

	Spot	May future	July future	Sept. future	Dec. futures	May future cont.	July future cont.	All futures combined
Jan.	.87	-.11	-.08					
Feb.	-4.19	-4.20	-3.88					
Mar.	2.56	1.42	1.55	1.54				
Apr.	3.28	2.04	1.69	.92				
May	.98		.06	-.58				
June	.91		1.06	.92				
July	2.19			2.80	2.74			
Aug.	.58			2.27	1.66			
Sept.	.21				1.40	1.05		
Oct.	-10.36				-1.86	-2.00		
Nov.	-1.54				2.94	3.19	3.20	
Dec.	4.86					2.14	1.64	
TOTAL	.03	.44	.66	1.31	1.37			.87

TABLE III - COTTON

Correlation between changes in spot price and in futures prices (values of r^2)

	Mar.	May	July	Oct.	Dec.	Mar.	May	July	Oct.	All futures comb.
Jan.	.937	.931	.880	.757						
Feb.	.957	.961	.939	.860	.839					
Mar.		.961	.906	.757	.709					
Apr.		.933	.920	.868	.840					
May			.908	.711	.646	.623				
June			.919	.816	.819	.806				
July				.784	.718	.674	.645			
Aug.				.571	.528	.504	.488			
Sept.				.781	.747	.697	.646	.607		
Oct.					.909	.851	.804	.737		
Nov.					.957	.986	.976	.953		
Dec.						.981	.976	.937	.647	
Total	.743	.741	.878	.766	.741					.754

TABLE IV * CORN

Correlation between changes in spot price and in futures prices (values of r^2)

	May	July	Sept.	Dec.	May	July	All futures combined
Jan.	.803	.846					
Feb.	.985	.982					
Mar.	.959	.930	.896				
April	.878	.791	.619				
May		.684	.553				
June		.813	.728				
July			.725	.664			
August			.875	.795			
Sept.				.711	.670		
Oct.				.044	.047		
Nov.				.342	.303	.278	
Dec.					.575	.641	
TOTAL	.555	.725	.748	.482			.589

TABLE v - COTTON
Keynes Effect (With Standard Error)

	Mar.	May	July	Oct.	Dec.	Mar.	May	July	Oct.	All futures combined
Jan.	-.074 (.038)	-.058 (.040)	-.042 (055)	.043 (.079)						
Feb.	-.016 (.039)	-.059 (.037)	-.077 (.045)	-.046 (.065)	-.049 (.066)					
Mar.		-.017 (.033	.020 (.050)	.001 (.080)	-.003 (.085)					
Apr.		.063 (.044)	.095 (.048)	.119 (.051)	.114 (.055)					
May			.047 (.048)	.061 (.074)	.058 (.083)	.048 (.087)				
June			.020 (.056)	.091 (.078)	.113 (.076)	.109 (.077)				
July				.466 (.132)	.543 (.151)	.571 (.160)	.583 (.164)			
Aug.				.245 (.168)	.267 (.174)	.289 (.178)	.279 (.181)			
Sept.				.218 (.085)	.195 (.087)	.187 (.092)	.185 (.094)	.193 (.094)		
Oct.					-.013 (.050)	-.005 (.063)	.007 (.072)	.006 (.083)		
Nov.					.091 (.072)	-.002 (.042)	-.037 (.054)	-.076 (.078)		
Dec.						-.031 (.023)	-.034 (.025)	-.030 (.037)	.032 (.077)	
Total	.150	.147	.036	.163	.161					.136 (.014)

TABLE VI - CORN
Keynes Effect (With Standard Error)

	May	July	Sept.	Dec.	May	July	All futures combined
Jan.	-1.007 (.406)	-1.010 (.365)					
Feb.	-.255 (.315)	-.101 (.336)					
Mar.	-1.187 (.379)	-.838 (.466)	-.697 (.541)				
April	-1.278 (.511)	-1.019 (.578)	-1.393 (.753)				
May		-.964 (.527)	-1.382 (.542)				
June		.384 (.672)	.364 (.711)				
July			.497 (1.170)	.800 (1.138)			
Aug.			1.708 (.967)	1.106 (1.255)			
Sept.				1.237 (.712)	.893 (.757)		
Oct.				-1.093 (1.189)	-1.275 (1.080)		
Nov.				3.644 (1.032)	3.762 (.910)	3.713 (.868)	
Dec.					-1.010 (1.055)	-1.514 (.893)	
Total	.741 (.349)	-.057 (.263)	-.198 (.350)	2.358 (.563)			.754 (.189)

TABLE VII - COTTON
Hicks Effect (With Standard Error)

	Mar.	May	July	Oct.	Dec.	Mar.	May	July	Oct.	All futures combined
Jan.	1.012 (.057)	1.014 (.060	1.019 (.082)	.957 (.118)						
Feb.	1.025 (.048)	1.025 (.046)	.973 (.056)	.886 (.080)	.831 (.081)					
Mar.		1.082 (.049	1.034 (.075)	.947 (.120)	.895 (.128)					
Apr.		.972 (.058)	.972 (.064)	.775 (.068)	.743 (.073)					
May			.893 (.064)	.693 (.099)	.665 (.110)	.663 (.116)				
June			1.056 (.070)	.906 (.096)	.892 (.094)	.865 (.095)				
July				.762 (.089)	.726 (.102)	.696 (.108)	.668 (.111)			
Aug.				.526 (.100)	.498 (.103)	.487 (.105)	.479 (.107)			
Sept.				.728 (.084)	.679 (.086)	.634 (.091)	.575 (.093)	.528 (.093)		
Oct.					.973 (.067)	.919 (.084)	.888 (.090	.844 (.110)		
Nov.					.947 (.044)	.978 (.026)	.953 (.033)	.967 (.047)		
Dec.						.950 (.029)	.906 (.031)	.819 (.046)	.603 (.097)	
Total	.755	.750	.904	.695	.745					.764

TABLE VIII - CORN
Hicks Effect (With Standard Error)

	May	July	Sept.	Dec.	May	July	All futures combined
Jan.	1.031 (.120)	1.075 (.108)					
Feb.	.943 (.027)	.903 (.029)					
Mar.	1.019 (.049	.937 (.061)	.878 (.071)				
Apr.	1.011 (.089)	.828 (.100)	.707 (.131)				
May		1.045 (.168)	.813 (.172)				
June		.737 (.083)	.611 (.881)				
July			1. 049 (.152)	.884 (.148)			
Aug.			.977 (.087)	.964 (.115)			
Sept.				.793 (.119)	.766 (.127)		
Oct.				.074 (.061)	.069 (.074)		
Nov.				.460 (.150)	.371 (.133)	.333 (.127)	
Dec.					.667 (.135)	.649 (.114)	
Total	.555 (.040)	.738 (.036)	.863 (.046)	.551 (.058)			.637 (.023)