



FACT SHEET

Maryland Corn Basis and Price Information

Fact Sheet 495

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The local basis, defined as the cash price minus futures price, reflects important information about regional supply and demand for a commodity. Corn basis estimates can be used by farmers, grain marketing firms, processors and feed buyers to forecast regional prices, make production or storage decisions, or assess different grain purchasing alternatives. This fact sheet gives estimates of corn basis and cash prices for seven regions in Maryland.

Methodology and Interpretation

Tables 1-7 display the 5-year average monthly corn basis for seven regions: Baltimore, western Maryland, central Maryland, southern Maryland, the upper Eastern Shore, the lower Eastern Shore, and southeastern Pennsylvania. The regional average cash price bid is collected each Wednesday by the Maryland Department of Agriculture and published in the Maryland Grain and Livestock Report. Regional prices were collected for the marketing years 1990-

91, 1991-92, 1992-93, 1993-94, and 1994-95. For each day that a cash price is quoted, the array of futures prices for that day is merged with the cash price to construct a profile of basis values. The basis is computed by taking the difference between a regional cash price and the futures price for a specific contract month. Monthly average basis values are computed for each contract month and then averaged over the 5 marketing years. The average and standard deviation (SD) of the basis for the 5 years is presented in the tables.

The columns for tables 1-7 represent the futures contract month while table rows signify the calendar month of the marketing season. For example, in table 1, the intersection of the September row and the March column is 6 and would be read as follows: "In the calendar month of September, the average basis for the March futures contract is 6 over." Or, alternatively, "In September, the March futures price is on average 6 cents lower than the cash price." The nearby basis can be obtained from the lefthand entry in every row.

A standard deviation is associated with each average basis estimate; it represents the variability of the basis estimates. As a general rule, the actual basis is likely to fall within plus or minus one SD of the average basis. An optimistic basis is the average basis estimate plus the SD, while a pessimistic basis estimate is the average basis minus the SD. If the basis is normally distributed, 67 percent of the time the actual basis will fall within the bounds of the optimistic and pessimistic basis values.

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Using the Basis Tables: Some Examples

In this section, various examples are presented that show how the basis tables can be used.

(I) Harvest-Time Storage Decisions

For deciding whether to store grain after harvest it is important to recognize the market signals that encourage storage. The first thing to examine is the current harvest-time basis. Is the current basis stronger or weaker than normal? A general rule, which can improve storage profitability, is to store grain after harvest whenever the harvest-time basis is below the pessimistic basis level and sell grain if the basis is above the optimistic basis value. A producer harvesting corn in October would want to compare the current December basis with the average December basis in October. For Baltimore, the average December basis in October is 11 cents over with a SD of 8 (see table 1). A basis less than 3 (i.e., $11-8$) is a good indicator to store. In contrast, a strong basis (i.e., higher than 19) is a good indicator to sell grain at harvest in lieu of storing.

The second piece of important information for analyzing a post-harvest storage decision is the current "storage futures price." Simply stated, the storage futures price represents what the futures market is willing to pay to have grain stored from a nearby contract month to a distant contract month and is computed from the price spread between consecutive contracts (i.e., distant futures price minus nearby futures price). For example, suppose that in October the December and March corn prices are 250 and 260 cents per bushel, respectively. Given these prices, the market is willing to pay 10 cents to store grain from December to March. This price is for storing grain in delivery locations for the Chicago futures market, but it can be useful for determining storage prices for Maryland.

The basis tables can be used to calculate the average storage futures price. The average storage futures price can be obtained

by taking the nearby basis and subtracting a distant basis. Using Baltimore as an example, in the calendar month of October the average price of storage between December and March is as follows:

December basis in October - March basis in October

$$11 - 2 = 9$$

Thus, in October the average price of storage is 9 cents per bushel for 3 months or 3 cents per month. On any given day one can obtain the current storage futures price by looking at the difference between consecutive futures contract prices. Higher than average storage prices indicate it is a good year to store, while lower than normal prices indicate that it is not good to store.

(II) Optimal Selling Month of Stored Grain

The basis tables can also be used to calculate the average return to grain storage. By placing corn in storage after harvest and simultaneously selling a distant futures contract, a producer earns a return whenever the contracted basis increases over the season. Thus, instead of storage returns being dependent on cash price appreciation, a hedged storage position earns profits if a contract month basis increases over the season. Using Baltimore as an example, suppose a producer wants to store corn from October to February. The futures side of this hedging decision is to sell the March contract in October and, when the cash grain is sold in February, buy back the March futures contract. The return to storage accounts for the short futures position and long cash position. On average, this return is as follows:

March basis in February - March basis in October

$$22 - 2 = 20$$

Thus, on average, storing from October to February earns 20 cents per bushel when hedging with a March futures contract.

The tables can also be used to calculate the optimal month to sell stored grain. If a producer harvests in October and has a storage cost of 4 cents per month, average storage profit is equal to the average storage return (i.e., basis appreciation) for each month less storage cost. This is illustrated below using the Baltimore May corn basis. Average return is computed from the amount of appreciation in the May basis from October (i.e., harvest) until grain is sold. For example, the average return in January is 15 cents per bushel, which reflects the difference between the May basis in January (10 cents) and the May basis in October (-5 cents).

Baltimore Average Corn Storage Profit With 4 Cents/Month Storage Cost and Storing In October

Selling Month	Average Return (Cents/Bushel)	Total Storage Cost (Cents/Bushel)	Average Profit (Cents/Bushel)
November	3	4	-1
December	9	8	1
January	15	12	3
February	20	16	4
March	25	20	5
April	23	24	-1

The producer's optimal selling month is March, since that month has the highest average profit. This only illustrates what the best strategy would be on average. For any given year, it may be best to sell grain at a different time during the season. By February, the differential has shrunk to 20 cents, making interregional sales less profitable.

Price Information

Table 8 gives the average monthly corn cash price for the seven regions. These values are reflected in figures 1-3 for various regions. Harvest-time corn prices for October tend to be highest in the western Maryland and southeastern Pennsylvania regions, while the lowest prices occur in southern Maryland and the upper Eastern Shore. The price differential at harvest tends to be about 25 cents per bushel from the high to low price regions. By February, this differential has shrunk to 20 cents, making interregional sales less profitable.

Table 1. Average Baltimore Corn Basis: 1990-95.

Calendar Month	Futures Contract Month				
	December	March	May	July	September
September	15 (9) ¹	6 (9)	0 (10)	-3 (10)	0 (13)
October	11 (8)	2 (9)	-5 (10)	-9 (12)	-7 (17)
November	13 (11)	4 (12)	-2 (14)	-7 (17)	-4 (24)
December		10 (11)	4 (13)	0 (16)	2 (24)
January		17 (6)	10 (7)	6 (8)	8 (15)
February		22 (8)	15 (9)	10 (11)	11 (18)
March			20 (10)	14 (12)	16 (17)
April			18 (10)	12 (11)	13 (15)
May				15 (11)	16 (14)
June				17 (11)	16 (14)
July					25 (10)
August					14 (7)

¹Standard deviation given in parentheses. All values are in cents per bushel.

Table 2. Average Western Maryland Corn Basis: 1990-95.

<i>Futures Contract Month</i>					
<i>Calendar Month</i>	<i>December</i>	<i>March</i>	<i>May</i>	<i>July</i>	<i>September</i>
September	35 (13) ¹	27 (12)	21 (12)	17 (12)	21 (14)
October	22 (10)	13 (10)	7 (11)	3 (11)	5 (17)
November	12 (22)	3 (22)	-4 (23)	-8 (24)	-5 (30)
December		6 (22)	0 (24)	-5 (25)	-2 (32)
January		11 (18)	4 (19)	0 (20)	2 (29)
February		18 (17)	11 (18)	5 (19)	7 (28)
March			16 (19)	11 (21)	12 (28)
April			26 (23)	20 (24)	21 (29)
May				25 (20)	25 (24)
June				30 (19)	28 (22)
July					36 (30)
August					34 (18)

¹Standard deviation given in parentheses. All values are in cents per bushel.

Table 3. Average Central Maryland Corn Basis: 1990-95.

<i>Futures Contract Month</i>					
<i>Calendar Month</i>	<i>December</i>	<i>March</i>	<i>May</i>	<i>July</i>	<i>September</i>
September	32 (14) ¹	23 (13)	17 (13)	14 (13)	17 (15)
October	15 (10)	6 (10)	0 (10)	-4 (11)	-2 (16)
November	9 (17)	-1 (18)	-7 (18)	-11 (19)	-9 (25)
December		7 (16)	0 (17)	-4 (18)	-2 (24)
January		11 (10)	5 (10)	0 (11)	3 (19)
February		17 (10)	10 (11)	4 (13)	6 (21)
March			14 (12)	8 (13)	10 (21)
April			23 (14)	18 (15)	18 (20)
May				23 (16)	23 (20)
June				27 (11)	25 (15)
July					32 (21)
August					30 (12)

¹Standard deviation given in parentheses. All values are in cents per bushel.

Table 4. Average Southern Maryland Corn Basis: 1990-95.

Futures Contract Month

<i>Calendar Month</i>	<i>December</i>	<i>March</i>	<i>May</i>	<i>July</i>	<i>September</i>
September	-2 (9) ¹	-11 (10)	-17 (10)	-20 (11)	-17 (17)
October	-7 (11)	-16 (11)	-22 (13)	-26 (14)	-24 (19)
November	-6 (15)	-15 (16)	-22 (18)	-26 (20)	-24 (27)
December		-8 (15)	-14 (17)	-18 (19)	-16 (27)
January		2 (9)	-5 (10)	-10 (12)	-7 (21)
February		7 (5)	0 (6)	-6 (8)	-4 (16)
March			4 (7)	-2 (8)	0 (16)
April			5 (6)	0 (7)	0 (13)
May				3 (8)	2 (13)
June				7 (10)	5 (14)
July					9 (11)
August					0 (8)

¹Standard deviation given in parentheses. All values are in cents per bushel.

Table 5. Average Upper Eastern Shore Corn Basis: 1990-95.

Futures Contract Month

<i>Calendar Month</i>	<i>December</i>	<i>March</i>	<i>May</i>	<i>July</i>	<i>September</i>
September	6 (5) ¹	-3 (5)	-8 (6)	-12 (6)	-9 (11)
October	-1 (10)	-10 (10)	-16 (11)	-20 (12)	-18 (17)
November	0 (15)	-10 (16)	-16 (18)	-20 (20)	-18 (27)
December		0 (16)	-6 (18)	-10 (20)	-8 (28)
January		9 (12)	3 (13)	-2 (15)	0 (25)
February		13 (7)	5 (8)	0 (10)	1 (18)
March			8 (5)	3 (6)	5 (13)
April			10 (6)	4 (8)	5 (11)
May				9 (6)	8 (10)
June				10 (5)	8 (9)
July					9 (7)
August					6 (3)

¹Standard deviation given in parentheses. All values are in cents per bushel.

Table 6. Average Lower Eastern Shore Corn Basis: 1990-95.

<i>Calendar Month</i>	<i>Futures Contract Month</i>				
	<i>December</i>	<i>March</i>	<i>May</i>	<i>July</i>	<i>September</i>
September	15 (6) ¹	6 (7)	0 (7)	-3 (7)	0 (11)
October	7 (15)	-2 (15)	-8 (16)	-13 (17)	-11 (21)
November	10 (20)	0 (21)	-6 (22)	-10 (24)	-8 (31)
December		13 (17)	6 (18)	2 (20)	4 (28)
January		24 (10)	17 (11)	12 (13)	15 (22)
February		29 (6)	21 (7)	16 (9)	17 (17)
March			25 (7)	19 (8)	21 (15)
April			29 (7)	23 (8)	24 (12)
May				28 (8)	28 (11)
June				32 (6)	30 (7)
July					32 (4)
August					23 (9)

¹Standard deviation given in parentheses. All values are in cents per bushel.

Table 7. Average Southeastern Pennsylvania Corn Basis: 1990-95.

<i>Calendar Month</i>	<i>Futures Contract Month</i>				
	<i>December</i>	<i>March</i>	<i>May</i>	<i>July</i>	<i>September</i>
September	37 (13) ¹	29 (12)	23 (12)	19 (11)	22 (11)
October	21 (6)	11 (6)	5 (7)	1 (8)	3 (13)
November	16 (13)	6 (14)	0 (15)	-4 (17)	-1 (24)
December		13 (12)	6 (14)	2 (16)	5 (24)
January		21 (7)	15 (8)	10 (10)	13 (19)
February		26 (7)	18 (8)	13 (9)	14 (18)
March			22 (9)	17 (10)	18 (18)
April			30 (12)	25 (13)	25 (18)
May				30 (7)	30 (10)
June				37 (7)	35 (11)
July					38 (14)
August					34 (7)

¹Standard deviation given in parentheses. All values are in cents per bushel.

Figure 1. Seasonal Average Cash Corn Price for Western Maryland and Southeastern Pennsylvania:1990-1995

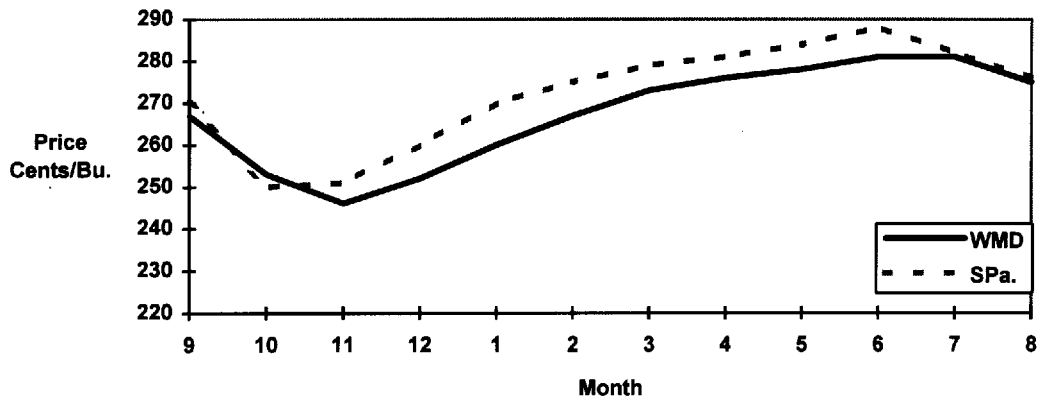


Figure 2. Seasonal Average Cash Corn Price for Southern, Central and Baltimore Maryland: 1990-95

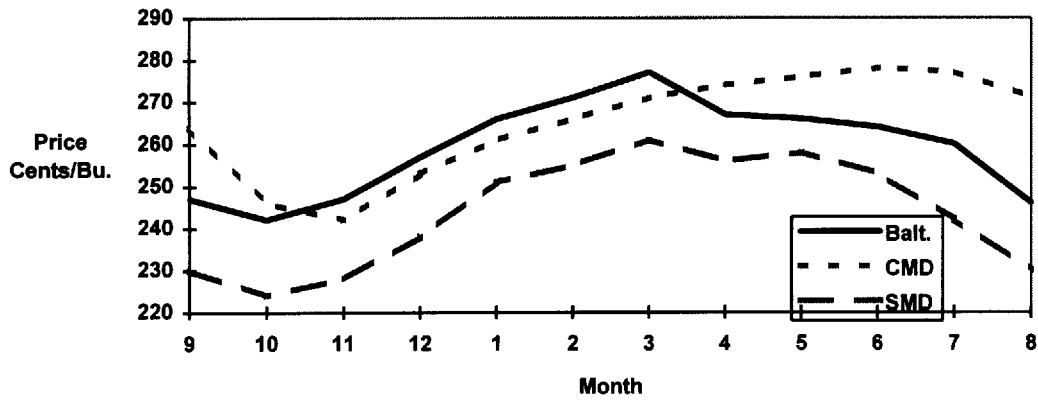


Figure 3. Seasonal Average Cash Corn Price for Upper and Lower Eastern Shore Maryland: 1990-95

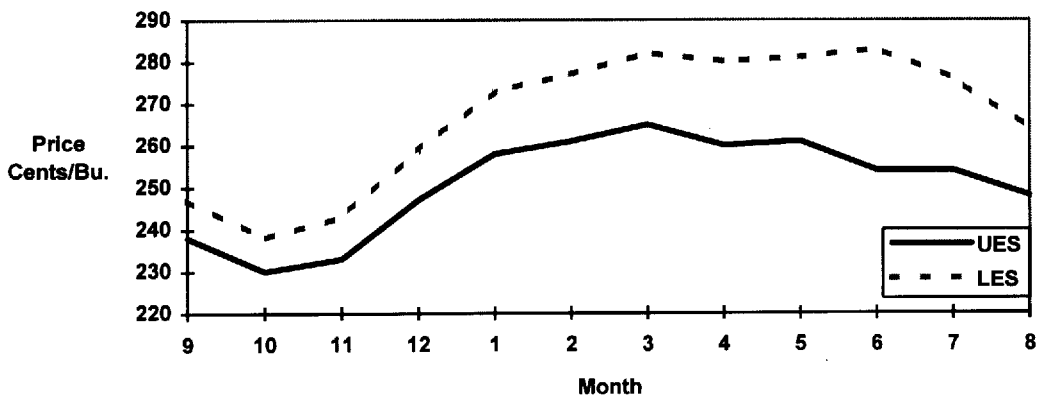


Table 8. Seasonal Average Cash Corn Prices: 1990-95.

Month	Balt.	WMD	CMD	SMD	UES	LES	SPa.
September	247	267	264	230	238	247	270
October	242	253	246	224	230	238	250
November	247	246	242	228	233	243	251
December	257	252	253	238	247	259	260
January	266	260	261	251	258	273	270
February	271	267	266	255	261	277	275
March	277	273	271	261	265	282	279
April	267	276	274	256	260	280	281
May	266	278	276	258	261	281	284
June	264	281	278	253	254	283	288
July	260	281	277	242	254	276	282
August	246	275	271	230	248	264	276