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and Edward E. Dorr

Extension Paper Series #86-1

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The effects of quickly rising energy costs on the food distribution system became an issue of concern to the public and policymakers in the late 1970s. Some hypothesized that rising fuel costs would result in a significant shift of food production away from distant growing areas and closer to consuming population centers for products that can be grown locally. Under this hypothesis, higher delivered prices for imported products (those grown outside the immediate region), reflecting rising transportation costs, would act as a price umbrella under which local growers could attain higher prices. These growers would therefore be earning a location premium resulting in higher net revenues and an increase in production levels. This assumes that the local growers are in a position to capture such a premium and that local and imported products are homogeneous.

Energy costs stabilized in the early 1980s and have fallen sharply in 1985 and 1986. This fall in prices would pre-

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sumably have an opposite effect on the distribution of food production to that hypothesized for the rising price case discussed above. In either case, analysis of the impacts on the food distribution system of sharp changes in energy prices will allow public and private decision-makers to better anticipate disruptions and opportunities created by such changes. This paper lays the groundwork for such analysis by presenting data on the market share of New England grown fresh vegetables in the Boston market and the relative prices of locally grown (New England) versus imported (non-New England grown) vegetables. While the emphasis is on the case of rising energy costs, the analysis for the opposite case is also addressed.

In New England, the costs of producing fresh vegetables have historically been higher than in other regions because of smaller producing units and higher land costs due to the pressure of urban growth. Rising transportation costs for imported products could potentially lessen, eliminate, or even reverse this competitive disadvantage while falling prices would worsen it. The ultimate impact depends on the ability of local growers to capture location premiums and the relative sizes of the differences in transportation and production costs between regions.

The objectives of this research are to (1) analyze the market shares of New England grown vegetables during the New England fresh vegetable marketing season and (2) develop data on the relative prices received for locally grown and imported

fresh vegetables. Locally grown market share and existing price differentials are important parameters that limit the potential price premium available to local growers with increases in transportation costs. They are also important factors that condition the potential deterioration in prices as transportation costs decrease. The impact of changes in transportation costs on prices received for locally grown produce are focused on because these changes provide the incentive for shifts in food production from one region to another.

The analysis of market shares and price differentials is based on 1981 data from the Boston-Chelsea market complex which dominates the New England wholesale market for fresh vegetables. This complex consists of two servicing terminals: the Boston Terminal Market in Everett, Massachusetts and the neighboring New England Produce Center in Chelsea, Massachusetts (commonly known as the Chelsea Market). Here the Chelsea Market is referred to as the terminal market. Transaction volumes and prices on the terminal market are reported in several Federal-State Market News reports: the daily Boston Fresh Fruit and Vegetable Report, the daily Federal-State Market News reports, and the Boston Fresh Fruit and Vegetable Wholesale Market Prices and Unloads annual summaries. Additional price data were collected on wholesale plus shipping prices for origination points within New England and are discussed below.

I. Market Shares of New England Grown Vegetables in the Boston Terminal Market

The ability of local growers of fresh vegetables to capture location premiums that reflect their lower transportation costs compared to other growing regions depends on whether their products are in direct competition with those from other regions. The level of direct competition in turn depends on whether the products are on the market at the same time and in what quantities and whether they are judged to be of the same quality by buyers. Here we focus on the market timing aspect of direct competition and assume that the products of the various regions are of comparable quality.

The potential for local growers to capture a location premium (as distinct from a price increase due to being the only supplying region during a particular period of time) exists when both local and imported products can meet local demand. Given that other producing areas of the country and foreign suppliers can deliver fresh product virtually year-round, this period of overlap can be taken to be the entire New England marketing season for New England grown products. The maximum size of the location premium is equal to the difference in transportation costs between the regions if all else is equal. Theoretically, local growers could capture most of this location premium by setting a local price that is just below the delivered price for imported products. Using

this form of limit pricing,[3/] local growers could supply as much of the market as their production levels allow with the rest being supplied by other regions.

This theoretical ability to capture location premiums is severely limited, however, because the market for fresh vegetables in New England is competitive and there is no mechanism for growers to set a limit price. Without the existence of this type of price collusion, a crucial factor in determining whether local growers can get a location premium is the market share of local products in the New England market. Where the local product market share is high, competition between local suppliers will tend to drive the price down to a level that covers production costs and local transportation costs and includes no location premium. Other regions will provide marginal supplies at higher prices that cover their higher transportation costs. On the other hand, where New England market share is low, local growers will be the marginal suppliers and may be able to get a location premium. Whether they are able to capture such a premium for individual vegetable crops will ultimately depend on their bargaining position vis-a-vis buyers.

3/ For a discussion of the concept of limit pricing see F. M. Scherer, Industrial Market Structure and Economic Performance, (Boston: Houghton Mifflin Company, 1980), pp. 232-252.

New England market share data for the Boston terminal market are developed here for 36 vegetables in order to identify crops where there is the greatest potential for location premiums and consequently for shifts in production when transportation costs change. Since a significant share of many locally grown products are marketed directly from farm to retailers and consumers, these terminal market data likely understate overall New England grown market shares.

New England Marketing Seasons

The relevant period for calculating the New England grown share of the Boston terminal market for vegetables, as noted above, is over the New England marketing season during which both local and imported products can supply the market. The marketing season for each vegetable was determined as follows:

1. Unloads of locally grown fresh vegetables were compiled on a monthly basis using data from the daily Boston Fresh Fruit and Vegetable Report.
2. Monthly unloads were added to obtain a yearly total.
3. The New England marketing season was defined as that monthly interval, or set of months, in which at least 90% of the year's total locally grown unloads were marketed.

For example, in 1981 terminal market unloads of locally grown green beans were reported in the months of June through October as follows:

June	July	August	September	October
		Tons		
46	499	315	256.5	28

Thus, total locally grown green bean unloads for 1981 were 1,144.5 tons. For the months of July through September, total unloads of locally grown green beans were 1,070.5 tons which is 93.5% of the total for 1981. This is the minimum monthly range that satisfies the marketing season definition since to delete either the July or September unloads would cause the interval percentage to fall below 90%. Therefore, the marketing season for locally grown green beans is July through September. The marketing seasons for 36 New England grown vegetables are reported in the first two columns of Table 1.

New England Grown Market Shares in the Boston Terminal Market

New England grown market shares were calculated by dividing total locally grown terminal market unloads during the New England marketing season by total unloads from all sources during that season as reported in the Boston Fresh Fruit and Vegetable Report. For example, for green beans total unloads into the terminal market of locally grown green beans for the months of July through September were 1,070.5 tons. Total unloads of green beans from all origins during July through September were 1,687.5 tons. Thus the New England market share is 63.4% for green beans distributed through the terminal market during the defined marketing season.

Table 1

Marketing Seasons and Boston Terminal Market Shares for New England Grown Fresh Vegetables, 1981-1982

Vegetable	Marketing Season (months)	New England Grown Unloads in Marketing Season (tons)	Total Unloads in Marketing Season (tons)	New England Grown Market Share (%)
Asparagus	May-June	20.5	892.5	2.3
Beans, Green	July-Sept.	1,070.5	1,687.5	63.4
Beets	June-Oct.	225.5	346.0	65.2
Broccoli	June, Sept.-Nov.	26.0	3,255.0	0.8
Cabbage	July-Nov.	4,206.0	8,008.5	52.5
Cabbage, Chinese	July-Dec.	88.0	391.5	22.5
Carrots	Aug.-Nov.	1,157.5	9,191.5	12.6
Cauliflower	Aug.-Nov.	157.5	3,088.5	5.1
Celery	Sept.	9.0	3,021.0	0.3
Corn, Sweet	July-Sept.	3,541.5	6,415.0	55.2
Cucumbers	July-Sept.	823.0	7,755.0	10.6
Eggplant	Aug.-Oct.	607.5	916.0	66.3
Endive/Escarole	June-Oct.	432.0	1,308.0	33.0
Greens	June-Dec.	541.5	1,725.0	31.4
Herbs, Misc.	March-Sept.	40.5	364.5	11.1
Lettuce, Iceberg	April, June-July	60.0	31,516.0	0.2
Lettuce, Romaine	June-Oct.	817.5	1,795.0	45.5

(continued)

Table 1 (continued)

Vegetable	Marketing Season (months)	New England Grown Unloads in Marketing Season (tons)	Total Unloads in Marketing Season (tons)	New England Grown Market Share (%)
Lettuce, Other	June-Oct.	833.5	1,473.0	56.6
Mushrooms	Jan.-Dec.	573.5	4,628.5	12.4
Onions, Dry	Feb., Aug.-Nov.	203.0	17,029.5	1.2
Onions, Green	May-Oct.	90.5	706.5	12.8
Parsley	July-Oct.	118.0	347.5	34.0
Parsnips	Sept.-March	215.5	292.0	73.8
Peas, Green	June-July	52.0	109.5	47.5
Peppers	Aug.-Oct.	1,866.5	3,760.5	49.6
Peppers, Other	Aug.-Oct.	92.5	258.5	35.8
Potatoes	Sept.-May	33,863.0	54,045.0	62.7
Potatoes, Chipper	Aug.-March	3,168.0	3,168.0	100.0
Pumpkin	Sept.-Oct.	538.0	538.0	100.0
Radishes	June-Oct.	235.0	1,292.5	18.2
Rhubarb	May-June	43.0	75.5	57.0
Spinach	May-Nov.	283.5	2,266.5	12.5
Squash	July-Feb.	6,188.0	10,123.0	61.1
Tomatoes	July-Sept.	606.0	10,578.0	5.7
Tomatoes, Cherry	Aug.-Nov.	18.5	474.0	3.9
Turnip/Rutabaga	Aug.-Dec.	117.5	2,317.5	5.1

The marketing season for locally grown parsnips, potatoes, and squash spans two calendar years running from summer or fall of one year into late winter or spring of the next year. For these vegetables, 1981 and 1982 data for the relevant months were used to calculate New England market shares.

New England unloads, total unloads, and New England grown market shares for 36 vegetables are reported in columns 3 through 5 of Table 1. The New England grown market share for 17 (47%) of the vegetables is less than 25% while 7 (19%) have market shares of 26-50% (see Table 2). Another 10 (28%) have market shares of 51-75% and 2 (6%) have market shares over 76%. Thus for fully two-thirds of the vegetables studied, New England is not the majority supplier to the terminal market during the New England marketing season. These products, especially those with market shares of less than 25%, appear to have the highest potential for earning location premiums due to lower transportation costs. For the one-third of the vegetables that have New England market shares over 50%, competition will likely prevent the realization of location premiums if all else is equal. For chipper potatoes and pumpkins location premiums will not be available with rising energy costs because New England is supplying all of this market. Thus for nearly half and perhaps two-thirds of the 36 vegetables studied there appears to be a possibility of capturing location rents as transportation costs increase and consequently a potential for shifts in production toward the local growing

Table 2

New England Grown Boston Terminal Market Shares for Fresh Vegetables, 1981-1982 Marketing Season by Percentage Quartiles

Market Share Quartile	Vegetable	New England Grown Market Share (%)
0-25%	Asparagus	2.3
	Broccoli	0.8
	Cabbage, Chinese	22.5
	Carrots	12.6
	Cauliflower	5.1
	Celery	0.3
	Cucumbers	10.6
	Herbs, Miscellaneous	11.1
	Lettuce, Iceberg	0.2
	Mushrooms	12.4
	Onions, Dry	1.2
	Onions, Green	12.8
	Radishes	18.2
	Spinach	12.5
	Tomatoes	5.7
	Tomatoes, Cherry	3.9
	Turnip, Rutabaga	5.1
26-50%	Endive/Escarole	33.0
	Greens	31.4
	Lettuce, Romaine	45.5
	Parsley	34.0
	Peas, Green	47.5
	Peppers	49.6
	Peppers, Other	35.8
51-75%	Beans, Green	63.4
	Beets	65.2
	Cabbage	52.5
	Corn, Sweet	55.2
	Eggplant	66.3
	Lettuce, Other	56.6
	Parsnips	73.8
	Potatoes	62.7
	Rhubarb	57.0
	Squash	61.1
76-100%	Potatoes, Chipper	100.0
	Pumpkin	100.0

region. With drops in transportation costs, the potential appears to exist for the opposite shift in production.

II. Relative Prices of Imported and Locally Grown Produce

The difference between delivered New England prices for locally grown and imported vegetables provides a measure of potential location premiums available to local growers. It is an inexact measure because, in addition to transportation costs, the size of the differential depends on variations in quality and other factors such as stability of supply. Here factors other than transportation costs are assumed to be equal and data on relative prices are compared for selected vegetables sold during the 1981 New England marketing season to provide a benchmark measure of the size of potential location premiums. These benchmark measures will be conservative to the extent that some location premiums have already been captured by local growers and are reflected in smaller reported price differentials. Price differentials, if they persist over time, are a rough measure of the incentives for production to shift from more distant growing areas to the New England region. The major comparison made is between terminal market prices for locally grown and imported vegetables.

Relative Boston Terminal Market Wholesale Prices

Boston-Chelsea terminal market wholesale prices are reported daily for locally grown and imported vegetables in the Boston Fresh Fruit and Vegetable Report. This report quotes

prices as (1) a single price, (2) a single price with the qualifier "mostly" attached (e.g., mostly $3.50), (3) a price range, and/or (4) a price range with the qualifier "mostly" attached. For comparison purposes a single price for each vegetable for each trading day studied was determined as follows:

1. Where a single price or a single price with the qualifier "mostly" was reported, that price was used.
2. Where a price range only was reported, the midpoint of the range was used.
3. Where a price range was reported followed by a single price qualified as "mostly" (e.g., $3.25-3.50, mostly $3.50), the single price was used.
4. Where a price range was reported followed by a narrower price range qualified as "mostly" (e.g., $3.00-5.00, mostly $3.50 to $4.00), the midpoint of the narrower range was used.
5. For those days when a price was not quoted, the closest succeeding price was used.
6. When prices for imported products were not reported for a particular date or a period of two weeks after that date, no comparison was made. This is the case for time periods when New England is supplying most, if not all, of the market for a particular vegetable.

Terminal market wholesale prices for locally grown and imported vegetables for a sample of 15 vegetables for various

dates during the 1981 marketing season are reported in Table 3. The vegetables and dates included were chosen to match origins points price data reported in the next section.

Potential location premiums for the vegetables and marketing dates studied are reported in the final column of Table 3. The potential location premium is calculated as the terminal market wholesale price for imported vegetables minus the price for New England grown products. These premiums are generally positive for cabbage, cucumbers, escarole, potatoes, and scallions ranging from an average of $0.34 per 1-1/9 bushel for cucumbers to $1.12 per 1-1/9 bushel for escarole. Sweet corn, summer squash, and zucchini show mixed positive and negative potential premiums that are negative on average. For beet greens, green peas, peppers, pumpkin, rhubarb, spinach, and several varieties of squash the potential premiums are generally zero or negative. The prices for two vegetables, green beans and lettuce, are not comparable.

No discernible pattern of relationship between New England grown market shares and location premiums is evident for the five vegetables with eight or more trading days reported in Table 3. Cucumbers have a New England grown market share of 10.6% and generally positive potential location premiums providing some support for the hypothesis that low market share vegetables have the greatest potential for earning location premiums. However, the relationship between New England market share and potential location premiums for the

Table 3

Relative Prices of Imported and New England Grown Vegetables
on the Boston-Chelsea Terminal Market, 1981

Vegetable	Date	IMPORTED			NEW ENGLAND-GROWN			Potential Location Premium
		Price[1]	Price Range	Unit	Price[1]	Price Range	Unit	
Beans, Green	7-22-81	9.25	9.25	bu. baskets	4.00	3.50-5.00	asst. bu.	N.C.[2]
Cabbage	7-27-81	3.50	3.00-4.00	1-3/4 bu.	3.00	3.00-3.50	1-3/4 bu.	.50
	7-30-81	3.75	3.50-4.00	"	3.25	3.00-3.50	"	.50
	8-03-81	3.75	3.50-4.00	"	3.50	3.00-4.00	"	.25
	8-05-81	4.00	3.50-4.50	"	3.75	3.50-4.50	"	.25
	8-06-81	4.25	4.00-4.50	"	4.00	3.50-4.00	"	.25
	8-07-81	4.75	4.50-5.00	"	3.25	3.00-3.50	"	1.50
	8-11-81	4.13	4.00-4.25	"	3.50	3.25-3.50	"	.63
	8-14-81	2.75	2.50-3.00	"	3.00	3.00-3.50	"	-.25
	8-19-81	3.75	3.50-4.00	"	3.25	3.00-3.50	"	.50
	8-24-81	3.25	3.00-3.50	"	3.50	3.00-4.00	"	-.25
	8-28-81	3.75	3.50-4.00	"	3.25	3.00-3.50	"	.50
	9-03-81	3.88	3.75-4.00	"	3.50	3.25-4.00	"	.38
	9-05-81	4.25	4.00-4.50	"	3.75	3.50-4.00	"	.50
Corn	7-18-81	4.00	3.00-5.00	4-1/2-5 doz.	5.00	5.00	4-1/2-5 doz.	-1.00
	7-19-81	4.75[3]	4.00-5.50	"	5.00	5.00	"	-.25
	7-20-81	4.75	4.00-5.50	"	5.00	5.00-5.50	"	-.25
	7-21-81	4.50	4.00-5.00	"	5.00	5.00	"	-.50
	7-27-81	4.25	4.00-4.50	"	4.75	4.50-5.00	"	-.50
	7-29-81	5.25[3]	4.50-6.00	"	5.00	4.50-5.00	"	.25
	8-03-81	5.00[3]	5.00	"	5.00	5.00-5.50	"	.00

(continued)

Table 3 (continued)

Vegetable	Date	IMPORTED			NEW ENGLAND-GROWN			Potential Location Premium
		Price[1]	Price Range	Unit	Price[1]	Price Range	Unit	
Corn (cont.)	8-05-81	4.50[3]	4.00-5.00[4]	4-1/2-5 doz.	4.25	4.00-5.00	4-1/2-5 doz.	.25
	8-06-81	4.50	4.00-5.00[4]	"	4.50	4.50-5.00	"	.00
	8-07-81	2.25[3]	2.00-2.50	"	4.50	4.50-5.00	"	-2.25
	8-10-81	2.25[3]	2.00-2.50	"	4.50	4.00-5.00	"	-2.25
	8-11-81	2.25[3]	2.00-2.50	"	4.25	3.50-4.50	"	-2.00
	8-12-81	2.25[3]	2.00-2.50	"	3.75	3.00-4.00	"	-1.50
	8-14-81	2.25	2.00-2.50	"	3.00	3.00-3.50	"	-.75
	8-17-81	4.00[3]	4.00	"	3.00	3.00-3.50	"	1.00
	8-24-81	3.50	3.00-4.00	"	3.50	3.00-4.00	"	.00
	8-27-81	5.00[3]	5.00[4]	"	4.00	4.00-4.25	"	1.00
	9-03-81	6.50[3]	6.50[4]	"	5.75	5.00-6.00	"	.75
	9-05-81	7.25[3]	7.00-7.50[4]	"	5.75	5.50-6.00	"	1.50
	9-13-81	7.25[3]	7.00-7.50[4]	"	7.25	7.00-7.50	"	.00
Cucumber	7-15-81	7.00	5.00-9.00	1-1/9 bu.	7.50	7.00-9.00	1-1/9 bu.	-.50
	7-16-81	8.00	7.00-9.00	"	7.50	7.00-8.00	"	.50
	7-20-81	6.00	5.00-7.00	"	7.00	7.00	"	1.00
	7-21-81	6.75	6.50-7.00	"	6.50	6.00-7.00	"	.25
	7-22-81	7.75	6.50-9.00	"	6.50	6.00-7.00	"	1.25
	7-27-81	6.00	5.50-6.50	"	6.00	5.00-7.00	"	.00
	8-06-81	6.50	6.00-7.00	"	5.25	4.50-6.00	"	1.25
	8-14-81	5.75	5.50-6.00	"	4.75	4.00-5.00	"	1.00

(continued)

Table 3 (continued)

Vegetable	Date	IMPORTED			NEW ENGLAND-GROWN			Potential Location Premium
		Price[1]	Price Range	Unit	Price[1]	Price Range	Unit	
Escarole	9-29-81	5.25	5.00-5.50	1-1/9 bu.	4.25	4.00-5.00	1-1/9 bu.	1.00
	10-05-81	5.50	5.00-6.00	"	4.25	4.00-4.50	"	1.25
Greens, Beet	6-18-81	3.50[3]	3.50	crates	3.25	2.50-4.00	crates-loose	.25
	6-23-81	3.50	3.50	"	4.50	4.50	"	-1.00
	7-07-81	Unavail.			5.00	5.00	"	.00
	7-26-81	"			5.00	5.00	"	.00
Lettuce								
Greenleaf	7-08-81	11.00	10.00-12.00	24s	4.00	4.00-4.50	12s-14s	N.C.[2]
Redleaf	7-08-81	11.00	10.00-12.00	24s	4.50	4.50-5.00	12s-14s	"
	9-29-81	10.00	9.00-10.00	"	4.00	4.00-5.00	18s	"
	10-11-81	10.00	9.00-11.00	"	5.00	5.00	14s	"
Romaine	7-07-81	7.50	5.00-10.00	"	3.25	3.00-3.50	12s-14s	"
	7-17-81	8.00	8.00	"	4.00	3.50-4.00	"	"
Peas	6-17-81	8.00	8.00	bu.	9.50	9.00-10.00	bu. hampers	-1.50
	6-23-81	Unavail.			8.50	8.00-9.00	"	.00
	6-29-81	"			7.75	7.00-9.00	"	.00
	7-04-81	"			15.00	14.00-15.00	"	.00
Peppers	8-03-81	6.25	5.50-7.00	1-1/9 bu.	7.25	7.00-7.50	1-1/9 bu.	-1.00
	8-05-81	6.50	6.00-7.00	"	7.50	7.00-8.00	"	-1.00

(continued)

Table 3 (continued)

Vegetable	Date	IMPORTED			NEW ENGLAND-GROWN			Potential Location Premium
		Price[1]	Price Range	Unit	Price[1]	Price Range	Unit	
Peppers (cont.)	8-06-81	7.00	7.00	1-1/9 bu.	7.25	7.00-7.50	1-1/9 bu.	-.25
	8-11-81	4.25[3]	4.00-4.50	"	5.50	5.50	"	-1.25
	8-14-81	Unavail.			3.75	3.50-4.50	"	.00
	8-19-81	"			3.00	3.00-3.50	"	.00
	8-24-81	"			3.75	3.50-4.00	"	.00
	8-28-81	"			3.50	3.00-4.00	"	.00
	9-05-81	"			4.75	4.50-5.00	"	.00
	9-09-81	"			5.25	5.00-6.00	"	.00
	9-13-81	"			6.25	6.00-7.00	"	.00
Potatoes	10-05-81	5.00	4.50-5.50	50# sack	4.00	4.00	sack	1.00
Pumpkin	10-05-81	Unavail.			.065	.06-.07	lb.	.00
Rhubarb	6-01-81	Unavail.			4.75	4.50-5.00	20 lb.	.00
Scallions	6-29-81	6.25	6.00-6.50	4/5 bu.	5.50	5.50	4/5 bu.	.75
Spinach, Loose	6-18-81	8.50	8.50	bu.	4.50	4.00-4.50	1-1/9 bu.	N.C.[2]
	6-23-81	Unavail.			4.75	4.50-5.00	"	.00
	7-17-81	"			6.50	6.50	"	.00
	7-24-81	"			7.00	7.00	"	.00
	9-29-81	"			6.00	5.50-6.50	"	.00
Squash								
Acorn	10-15-81	Unavail.			3.25	3.00-3.50	1-1/9 bu.	.00

(continued)

Table 3 (continued)

Vegetable	Date	IMPORTED			NEW ENGLAND-GROWN			Potential Location Premium
		Price[1]	Price Range	Unit	Price[1]	Price Range	Unit	
Squash (cont.)								
Buttercup	10-15-81	Unavail.			3.25	3.00-3.50	1-1/9 bu.	.00
Butternut	9-13-81	Unavail.			3.75	3.50-4.00	"	.00
	10-05-81	"			3.50	3.00-4.00	"	.00
	10-15-81	"			3.25	3.00-3.50	"	.00
	11-17-81	"			3.25	3.00-4.00	"	.00
Hubbard	10-05-81	Unavail.			3.50	3.50	50# (sml.)	.00
Italian	7-16-81	Unavail.			6.00	5.00-6.00	1/2 bu.	.00
Summer[5]	7-06-81	3.25	3.00-3.50	1/2 bu.	2.75	2.00-3.00	1/2 bu.	.50
	7-15-81	3.50	3.50	"	4.50	4.00-6.00	"	-1.00
	7-16-81	Unavail.			5.00	5.00-6.00	"	.00
	7-17-81	"			5.25	5.00-6.00	"	.00
	7-21-81	"			3.00	3.00-3.50	"	.00
Zucchini[5]	6-23-81	4.50	4.00-5.00	1/2 bu.	4.75	4.50-5.00	1/2 bu.	-.25
	6-29-81	4.75	4.50-5.00	"	4.50	4.00-5.00	"	.25
	7-04-81	3.50[3]	3.00-4.00	"	4.25	3.50-5.00	"	-.75
	7-06-81	3.50	3.00-4.00	"	3.00	2.50-3.50	"	.50
	7-08-81	2.00[3]	2.00	"	2.00	1.50-2.50	"	.00
	7-15-81	9.50	9.50	1-1/9 bu.	5.00	5.00-7.00	"	N.C.[2]
	7-17-81	13.00	13.00	"	5.75	5.00-6.00	"	"
	7-19-81	9.00	8.00-10.00	"	5.75	5.00-6.00	"	"

(continued)

Table 3 (continued)

Footnotes

[1]See text, page 13, for procedure used to choose a single price to represent the price range.

[2]Unit sizes, and therefore prices, not comparable.

[3]Price not available for this day. Price on closest succeeding day is reported.

[4]Hydrocooling or topice included.

[5]Small-medium size.

other four vegetables provides no such support. These four have comparable New England grown market shares (green peppers 49.6%, cabbage 52.5%, corn 55.2%, and several varieties of squash 61.1%) but, respectively, have generally negative, generally positive, mixed, and generally zero average potential location premiums. The relationship between New England market shares and potential location premiums in this data is no doubt clouded by the fact that prevailing prices already reflect transportation differentials to an uneven degree depending on market conditions for particular vegetables. More extensive data which control for differences in quality and other factors between regions would be required for a full test of this hypothesis.

In general, the relative prices of imported and locally grown vegetables in the Boston-Chelsea terminal market appear to vary greatly from vegetable to vegetable as well as for the same vegetable at different times during the marketing season. This wide variability suggests that factors other than transportation costs such as differentials in quality, dependability of supply, and perhaps bargaining power have a more dominant effect on relative prices than do energy costs. Thus transportation cost changes may, in many cases, be too small a factor to induce significant change in the location of vegetable production.

Origins Point Wholesale Plus Shipping Prices for New England Grown Vegetables

The terminal wholesale market prices discussed above are quotes of prices paid by wholesalers to primary receivers of produce rather than prices paid directly to producers. In an effort to obtain data on prices paid to producers and thus more accurate data on potential location premiums, 32 primary receivers located in New England were contacted. These primary receivers included supermarkets, grocer cooperatives, and produce wholesalers who were believed to be operating produce warehouses in the New England region.

The primary receivers were initially contacted by letters of introduction followed up by an average of five more contacts by telephone or mail. They were generally very reluctant to cooperate with this study. While some of those initially contacted were not in fact primary receivers, only four of the remaining receivers made price and quantity data available. Therefore, the response rate was only 12.5%. In addition, each of the 4 responding receivers handled only a subset of New England grown vegetables so that the sample size for individual products was often less than 4. Given these limitations, the primary receiver price and quantity data collected are not suitable for analysis of location premiums.

Insight into the relationship between prices received by local growers selling directly to primary receivers and those selling in the Boston-Chelsea terminal market can, however, be

gained from the primary receiver data collected. Interviews with primary receivers indicated that terminal market prices were almost always used as a base of reference for direct purchases of locally grown vegetables made outside the terminal market. Table 4 presents price data from a representative primary receiver for marketing dates corresponding to those reported in Table 3. A comparison of prices in these two outlets for locally grown produce generally supports the theory that terminal markets are becoming residual markets for products that could not be sold directly to buyers.4/ Terminal market prices for most products, where comparable, are generally somewhat less than those reported by the primary receiver. Unfortunately, further comparisons of this type are not possible here since most primary receivers were reluctant to disclose price information.

Conclusions

The likelihood that sharply changing energy prices will give rise to shifts in the location of food production depends on the size of transportation cost differentials between growing areas and the amount of direct competition between those areas. For fresh vegetables marketed in New England, the potential for local growers to capture location premiums should

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4/ For a discussion of this theory see, for example, William G. Tomek and Kenneth L. Robinson, Agricultural Product Prices, (Ithaca, New York: Cornell University Press, 1972), p. 224.

Table 4

Origins Point Wholesale Plus Shipping Prices
Paid by a Representative Primary Receiver
for New England Grown Vegetables, 1981

Vegetable	Date	Origins Point Wholesale Plus Shipping		
		Price	Quantity	Unit
Beans, Green	7-22-81	6.00	13	1-1/9 bu.
Cabbage	7-27-81	3.00	50	45# - crates
	7-30-81	3.00	35	"
	8-03-81	3.50	41	"
	8-03-81	"	75	"
	8-05-81	"	38	"
	8-06-81	"	99	"
	8-07-81	"	25	"
	8-11-81	"	100	"
	8-14-81	"	40	"
	8-19-81	"	57	"
	8-24-81	"	50	"
	8-28-81	"	50	"
	9-03-81	4.00	50	"
	9-05-81	4.00	50	"
Corn	7-18-81	7.00	140	bag
	7-19-81	6.00	25	(1 doz.)
	7-20-81	4.00	210	bu.
	7-21-81	5.00	175	(55-60 each)
	7-27-81	4.50	210	"
	7-27-81	4.50	155	"
	7-29-81	4.50	300	"
	8-03-81	4.50	228	"
	"	4.00	125	"
	"	"	300	"
	8-05-81	"	325	"
	8-06-81	"	350	"
	8-07-81	"	100	"
	8-10-81	"	"	"
	8-11-81	"	25	"
	8-12-81	"	20	"
	"	"	200	"
	8-14-81	3.50	100	"
	8-17-81	3.50	100	"

(continued)

Table 4 (continued)

Vegetable	Date	Origins Point Wholesale Plus Shipping		
		Price	Quantity	Unit
Corn (cont.)	8-17-81	3.50	125	(55-60 each)
	8-24-81	"	"	bu.
	8-27-81	"	45	"
	9-03-81	4.50	42	"
	9-05-81	"	20	"
	9-13-81	"	40	"
Cucumber	7-15-81	17.00	16	1-1/9 bu.
	7-16-81	16.00	21	"
	7-20-81	6.00	50	"
	7-21-81	8.00	18	"
	7-22-81	7.00	11	"
	7-27-81	"	35	"
	"	"	16	"
	"	"	25	"
	8-06-81	6.00	38	"
	8-14-81	"	32	"
Escarole	9-29-81	5.00	2	1-1/9 bu.
	10-05-81	"	2	"
Greens, Beet	6-18-81	4.50	3	bu.
	6-23-81	5.00	1	"
	7-07-81	"	3	"
	7-26-81	"	1	"
Lettuce				
Greenleaf	7-08-81	4.50	1	crate (24s)
Redleaf	7-08-81	"	1	"
	9-29-81	5.00	1	"
	10-11-81	"	2	"
Romaine	7-07-81	4.50	5	crate (24s)
	7-17-81	4.00	5	"
Peas	6-17-81	11.00	15	1-1/9 bu.
	6-23-81	10.00	15	"
	6-29-81	"	10	"
	7-04-81	"	10	"

(continued)

Table 4 (continued)

Vegetable	Date	Origins Point Wholesale Plus Shipping		
		Price	Quantity	Unit
Peppers	8-03-81	6.50	75	1-1/9 bu.
	8-05-81	"	40	"
	"	"	42	"
	8-06-81	"	35	"
	8-11-81	6.00	56	"
	8-14-81	4.00	"	"
	8-19-81	3.50	"	"
	8-24-81	4.50	50	"
	8-28-81	"	"	"
	9-05-81	5.00	"	"
	9-09-81	"	"	"
	9-13-81	"	60	"
Potatoes	10-05-81	4.50	25	50# bag
Pumpkin	10-05-81	.05	312	lb.
Rhubarb	6-01-81	4.50	17	30 lb. box
Scallions	6-29-81	6.00	10	4/5 bu.
Spinach, Loose	6-18-81	4.50	1	bu.
	6-23-81	5.00	2	"
	7-17-81	"	2	"
	7-24-81	7.00	1	"
	9-29-81	6.00	1	"
Squash				
Acorn	10-15-81	3.75	15	1-1/9 bu.
Buttercup	10-15-81	3.75	35	1-1/9 bu.
Butternut	9-13-81	4.00	28	1-1/9 bu.
	10-05-81	3.75	25	"
	10-15-81	3.50	40	"
	11-17-81	"	35	"
Hubbard	10-05-81	3.75	15	1-1/9 bu.

(continued)

Table 4 (continued)

Vegetable	Date	Origins Point Wholesale Plus Shipping		
		Price	Quantity	Unit
Squash (cont.)				
Italian	7-16-81	3.00	8	crate (1/2 bu.)
Summer[1/]	7-06-81	3.00	35	crate (1/2 bu.)
	7-15-81	"	11	"
	7-16-81	"	22	"
	7-17-81	"	20	"
	7-21-81	2.50	25	"
Zucchini[1/]	6-23-81	5.00	10	crate (1/2 bu.)
	6-29-81	"	20	"
	7-04-81	4.00	15	"
	7-06-81	3.00	35	"
	7-08-81	"	57	"
	7-15-81	"	7	"
	7-17-81	3.50	20	"
	7-19-81	3.00	17	"

1/ Small-medium size.

be stronger for crops where the New England grown market share is relatively small. Where the New England grown share is large, competition between local growers will tend to eliminate any potential location premium.

Analysis of New England marketing seasons and local market shares for the Boston-Chelsea terminal market show that for half to two-thirds of the 36 vegetables studied the New England market share is less than 50%. These crops appear to have the best likelihood of realizing higher prices as transportation costs increase but are also more vulnerable to price deterioration when transportation costs decline. It should also be noted that location premiums that are significant enough to cause shifts in production from other growing regions to New England are likely to be transitory in a competitive market like that for fresh produce. Increases in local production in response to the availability of location premiums will tend to diminish or eliminate those premiums over time as imported produce makes up less of the market and has a smaller effect on prices.

Comparisons of relative terminal market wholesale prices for imported and locally grown fresh vegetables reported here show no consistent pattern. The potential location premium available to local growers, measured as the difference between the price of imported and local products, varies greatly between crops and for the same crop over the marketing season. These comparisons and those between direct and terminal sale

prices yield few conclusions about the size of potential location premiums available to New England growers of fresh vegetables. Further research on relative prices that controls for differences in quality and other factors between growing regions and markets is needed for a full assessment of the potential for shifts in production to the New England area.