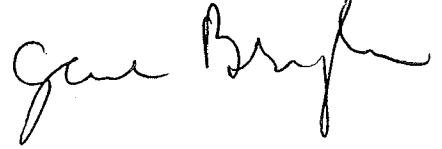


# EXHIBIT 5

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**Table 5-3** Estimated Demand Function for Frozen Pies

$$Q = -500 - 275P_{it} + 5A_{it} + 150PX_{it} + 7.25Y_{it} + 0.25Pop_{it} + 875T. \quad (5-23)$$

	(52)	(1.1)	(66)	(3.2)	(0.09)	(230)
$t =$	5.29	4.54	2.27	2.26	2.78	3.90

Coefficient of determination =  $R^2 = 0.92$ .  
 Standard error of the estimate = 775.  
 $F = 78.6$ .

The terms in parentheses are the standard errors of the coefficients. An analysis of the error terms, or residuals, indicated that all the required assumptions regarding their distribution were met; hence the least squares regression procedure is a valid technique for estimating the parameters of this demand function.

The parameters of the regression equation can be interpreted as follows: The intercept term, -500, has no economic meaning—it lies far outside the range of observed data and obviously cannot be interpreted as the demand for Wisco's frozen fruit pies when all the independent variables take on zero values. The coefficient of each independent variable indicates the marginal relationship between that variable and sales of the pies, holding constant the effect of all the other variables in the demand function. For example, -275, the coefficient of  $P$ , the price charged for Wisco's pies, indicates that when we hold constant the effects of all other demand variables, each 1¢ increase in price will cause quarterly sales to decline by 275 pies. Similarly, the coefficient of  $A$ , the advertising and promotional variable, indicates that for each dollar spent on advertising during the quarter, 5 additional pies will be sold, and the coefficient of the disposable income variable, +7.25, indicates that an added dollar of disposable per capita income leads on the average to an increase of 7.25 pies demanded quarterly.

The coefficient of determination ( $R^2 = 0.92$ ) indicates that 92 percent of the total variation in pie sales has been explained by the regression model, a very satisfactory level of explanation for the model as a whole. Furthermore, the F-statistic for the regression is 78.6, which is much larger than the critical F-value ( $F_{0.40} = 3.29$  at the 1 percent significance level), indicating that the regression equation provides a statistically significant explanation of variation in sales of Wisco's frozen fruit pies. Also, each parameter estimate (the coefficients associated with each independent variable) is over twice as large as its standard error, which means that the estimates are all statistically significant. That is, we can reject at the 95 percent confidence level the hypothesis that any of the independent variables is unrelated to the demand for Wisco's frozen fruit pies. Note further that the standard errors of the two key controllable decision variables, price and advertising, are very small in relation to their respective coefficients. This means that the regression coefficients for these two variables are

$\frac{\partial Q}{\partial P} = -275$

t. statistic