The Size of Selling Costs

Leonard W. Weiss, George Pascoe, Stephen Martin

The Review of Economics and Statistics, Volume 65, Issue 4 (Nov., 1983), 668-672.

Stable URL:
http://links.jstor.org/sici?sici=0034-6535%28198311%2965%3A4%3C668%3ATSOSC%3E2.0.CO%3B2-5

THE SIZE OF SELLING COSTS

Leonard W. Weiss, George Pascoe, and Stephen Martin*

There is a rich literature on advertising costs, but little has been written on other selling expenses, presumably because of scanty data. The new Federal Trade Commission (FTC) Line of Business (LB) surveys do ask about this, however. The purpose of this paper is to summarize those data and to make a first effort of explaining it.

The LB Selling Expense Data

The LB data are reported by 471 firms for each of 270 LBs in which they operate. The LBs correspond to one or a few SIC 4-digit products. The respondents include the 250 largest firms in manufacturing plus a sample of the next 750. In this paper we work with aggregate 1975 data by LB. All statements about individual LBs are based on the FTC's *Annual Line of Business Report, 1975* (ALBR 1975) (FTC 1981b), but the regressions reported later cover 18 LBs not reported in the ALBR because of possible disclosure. The questionnaire asks firms to report "Media Advertising Expense" and "Other Selling Expense."[1] The FTC defines "Media Advertising Expense" as

> All expenditures related to advertising the company's name, products or services by television, radio, newspapers, newspaper supplements, magazines, business periodicals, billboards (outdoor advertising), transit, direct mail, handbills, and other media. Expenditures for the use of media and for advertising agency services are included. Expenditures for support of advertising such as the cost of an advertising department, a market research group which specializes in evaluation of advertising and promotional efforts, a media buying department, or a graphic arts department that specializes in the preparation of advertising copy are included.

It does not define "Other Selling Expense." In an informal telephone survey of six respondents, it appeared that this item included salesmen, point of sale displays, coupons, samples, advertising allowances to retailers and trade allowances to retailers to induce them to stock particular items. Salesmen make store door deliveries for a few products (bread, cookies and crackers, soft drinks.) Neither deliveries to warehouses nor maintenance (for office machines and computers) are selling expenses.

A review of the data reveals great variety. Industry average advertising costs as a percentage of sales range from 0.0% to 20% with a mean of 1.6%.[2] The mean is 3.6% for consumer goods (consumer demand ÷ total demand ≥ 25%) and 0.6% for producer goods.

Other selling expenses range from less than 0.1% to 26% of sales with a mean of 7.3%. They are higher for consumer goods (mean of 9.8%) than for producer goods (mean of 6.1%). Table 1 shows the advertising to sales ratios, other selling expense to sales ratios, and total selling cost to sales ratios for the LBs where total selling cost to sales ratio is important, where it is lowest, and for a few other LBs which strike us as interesting.

The high "other selling expenses" for consumer goods suggests that a large part of other selling expenses are coupons, samples, and advertising and trade allowances. But there are tens of thousands of retail firms in most product lines—more than 100,000 in food stores. Reaching them all with salesmen must involve larger selling staffs than are required for many producer goods. The high selling costs for office equipment and supplies are probably due to the use of salesmen to reach millions of offices.

Many of the industries with very low other selling expenses sell inputs produced for particular industries. This is true of logging camps, wood pulp, paper board, and metal cans. In addition, defense products report few selling expenses. These have limited numbers of customers, so that salesmen need reach only a few buyers.

Received for publication October 5, 1981. Revision accepted for publication November 9, 1982.

* University of Wisconsin, Madison; Federal Trade Commission; and Michigan State University, respectively.

This paper was written when the authors were employed by the Line of Business Section of the Bureau of Economics of the Federal Trade Commission. The underlying data and computations for this study were supplied by the Federal Trade Commission.

The representations and conclusions presented herein are those of the authors and have not been adopted in whole or in part by the Federal Trade Commission or its Bureau of Economics. The Assistant Director of the Bureau of Economics for Financial Statistics has certified that he has reviewed and approved the disclosure avoidance procedures used by the staff of the Line of Business Program to ensure that the data included in this paper do not identify individual company line of business data.

[1] The questionnaire asked for both "traceable expenses" and "non-traceable expenses" (FTC, 1981b, p. 223). Of the 471 firms in the 1975 survey, 151 had some non-traceable media advertising expense and 153 reported non-traceable other selling expense. For the sample as a whole, 7.5% of media advertising expense and 6.8% of other selling expense were non-traceable.

[2] There are more producer goods than consumer goods products in the LB data. The unweighted average value of consumer demand divided by total demand for the entire sample is 24.9%. Respondents were asked to report LB "Sales" which was explicitly defined to include transfers to other LBs of the same firm.

TABLE 1.—SELECTED LINES OF BUSINESS SELLING COSTS

Rank	Line of Business	Media Advertising Expense	Other Selling Expense	Total Selling Expense
1	Proprietary Drugs	20.1%	15.0%	35.1%
2	Toiletries	13.8	14.8	28.6
3	Bread, Cake, etc.	2.0	26.3	28.3
4	Cutlery (incl. razors)	12.8	12.8	25.6
5	Chewing Gum	12.3	13.1	25.4
6	Distilled Liquor	11.9	13.4	25.3
7	Household Vacuum Cleaners	3.0	22.2	25.2
8	Typewriters	1.2	22.5	23.7
9	Hosiery	9.4	14.1	23.5
10	Calculating, Accounting Machines	2.8	19.3	22.1
16	Ethical Drugs	4.3	16.4	20.7
20	Soap and Other Cleaning Preparations	8.0	11.7	19.7
22	Breakfast Cereals	10.2	9.3	19.5
29	Electronic Computing Equipment	0.5	15.7	16.2
38	Cigarettes	8.0	6.6	14.6
111	Radio and Television Receiving Sets	2.9	5.0	7.9
149	Petroleum Refining	0.2	5.5	5.7
169	Household Refrigerators and Freezers	1.1	3.7	4.8
197	Meat Packing	0.5	2.5	3.0
210	Passenger Cars	0.8	1.5	2.3
218	Blast Furnaces and Basic Steel	0.1	1.5	1.6
221	Paper Board	0.0	1.5	1.5
222	Metal Cans	0.0	1.5	1.5
223	Metal Forgings	0.1	1.3	1.4
224	Pulp Mills	0.0	1.2	1.2
226[a]	Secondary Non-Ferrous Metals NEC	0.0	0.9	0.9
227	Fabricated Structural Metal	0.0	0.8	0.8
229[a]	Guided Missiles, Space Vehicles	0.1	0.5	0.6
231[a]	Ship and Boat Building and Repair	0.2	0.3	0.5
232	Primary Copper	0.0	0.3	0.3
233	Logging Camps and Logging Contractors	0.0	0.1	0.1

Source: FTC, ALBR, 1975, table 2-7.
[a] Three LBs are excluded because the FTC did not report the advertising–other selling expense breakdown. Their ranks and total selling expense ratios were: 225 Automotive stampings, 0.9%; 228 Primary Zinc 0.7; and 230 Combat Vehicles, Tanks 0.5.

It is possible that advertising and other selling expense are substitutes with sellers using advertising or salesmen depending on the number of potential buyers. This suggests a negative relationship between the two types of selling expense. In fact the relationship is positive— $\bar{r} = 0.285$ for consumer goods, 0.491 for producer goods, and 0.425 for all LBs together (with 83, 173, and 258 degrees of freedom, respectively). All three are significantly greater than zero. It appears that the two types of selling cost are more nearly complements than substitutes.

Relationship to Retail Margins

Total selling expense in our economy includes expenses incurred by distributors as well as those incurred by the manufacturer. The size of total selling expense at the two levels seems of interest in its own right and will be explored briefly. In addition, it is sometimes suggested (see Weiss, 1980, p. 257) that heavy promotion by the manufacturer leads to strong consumer loyalties to particular brands and reduced loyalties to particular merchants. As a result retail margins might be lower where manufacturers' promotional effect is great.

Overall selling costs, including retail margins, are very large for some consumer goods. Our selling expense ratios are expressed as percentages of manufacturers' sales while retail gross margins (RM) are percentages of retail sales. To make them comparable, manufacturers' selling expenses are multiplied by $1 - RM$. As a result they are all expressed as percentages of retail prices. Total selling expense seems to be greatest for proprietary drugs (58.2% of retail price), toiletries (53.5%), cutlery including razors (52.1%), ethical drugs (48.9%), all four assumed to be sold through drug stores, and pens, pencils, office and art supplies sold through office supply stores (48.1%). The lowest overall selling costs among consumer goods seem to be in passenger cars (less than 16.3%), gasoline (21.8%), poultry dressing,

poultry and egg processing (22.4%), meat (23.5%), and cane sugar (23.9%).[3]

Three qualifications are in order. First, the procedure assumes uniform gross margins within classes of stores. If margins are lower for well-known brands, our procedure may overstate total selling expense. A second qualification is that if the product is sold through jobbers, then the "overall" selling costs estimated above are understated. Finally, these overall selling costs certainly include transport costs at some level.

If heavy promotion enhances brand preferences and reduces the need for retail services, advertising might have a negative effect on retail margins. As a crude test of this, retail gross margins were correlated with unweighted averages of manufacturers' media selling cost ratios for the main products sold by various types of retailers—twelve retail lines in about 1975 and thirteen other retail lines in about 1965. All retail lines used are for consumer goods except perhaps office products and lumber and building supply dealers. They had non-significantly positive relationships in both periods—$\bar{r}$ = 0.100 in 1965, 0.381 in 1975, and 0.238 in the two years together (with 11, 10, and 23 degrees of freedom, respectively). Total selling expense had a stronger positive effect—$\bar{r}$ = 0.350 for 1965, 0.664 for 1975, and 0.502 for the two years together. The last two correlation coefficients are statistically significant at the 0.05 level. These results yield no support for the notion that heavy promotion reduces retail selling costs.[4]

Determinants of Selling Expense

It is tempting to account for inter-industry differences in selling expenses. This paper makes a first cut. Two of the authors have previously estimated models (Strickland and Weiss, 1976; Martin, 1979) in which advertising intensity depended on (1) consumer demand ÷ total demand for which we expected and found a positive effect, (2) concentration and concentration squared where we expected and found a positive sign on the first and a negative sign on the second, and (3) price-cost margin where we expected and found a positive coefficient. Those estimates were part of a three equation simultaneous system in which advertising intensity, margin, and concentration were endogenous. In the present study we have limited ourselves to a single equation model which we treat as a reduced form equation. We have excluded margins as hopelessly endogenous but we have retained concentration and concentration squared because concentration changes relatively slowly over time. Moreover, technically it is a lagged variable since it was measured in 1972 and the LB selling cost data were for 1975. Our consumer demand variable is derived from the 1972 input-output matrix (Bureau of Economic Analysis, 1980) and our concentration variable is 1972 concentration ratios adjusted for non-competing subproducts, local or regional markets, interindustry competition, and imports.[5]

We have added two new variables which seem relevant to other selling expenses at least in producer goods where those expenses seem to reflect mainly salesmen. One is the 1972 buyer concentration ratio based on the procedure of Guth, Schwartz and Witcomb (1976) but including non-manufacturing buyers based on the *Statistics of Income* Source Book for 1972 (Internal Revenue Service). We expect selling costs to fall as buyer concentration rises because sellers have fewer customers to reach. Finally, we included distance shipped, the radius within which 80% of shipments occur (in hundreds of miles) (Weiss, 1972). This variable would also be endogenous in a complete multiple equation model where margin was also included, but we fall back on the fact that distance shipped was a lagged variable, mostly estimated as of 1963. A firm selling on a broad geographic market must reach more customers than one selling on a narrow one, given the level of buyer concentration. We expected selling cost to rise as distance shipped increases.

Table 2 shows regressions relating the two types of selling expense to the variables discussed above for consumer goods, producer goods, and the two combined.

None of our variables other than concentration have significant effects on a consumer goods selling expense. Even the consumer demand variable has a non-significant effect. We found the same in our previous advertising studies (Strickland and Weiss, 1976; Martin, 1979). Advertising intensity reaches a peak at a concentration ratio of 56 and other selling expense, at a concentration of 50.

Our variables "explain" a good deal of the variability for producer goods. The consumer demand variable has an important positive effect on both advertising and other selling expense even though consumer demand was constrained to be less than 25% of total demand. Buyer concentration has the expected negative effect but it is only significant in the case of other selling expense when seller concentration is left out. Distance shipped

[3] These are calculated using the following retail gross margins: drug stores, 1975, 35.5% (*Lilly Digest*, 1976, p. 7); auto dealers, 1966, 14.3% (*Automotive News Almanac*, 1967, p. 74); gasoline, 1975, 16.9% (*National Petroleum News Fact Book*, 1976, p. 83); food chains, 1975, 21.1% (Marion et al., 1979, p. 163). Auto dealer gross margins are not available for the 1970s, but they were almost certainly lower in 1975 than in 1966. All other margins are from NCR (about 1966 and about 1977). Selling expenses are all from the 1975 ALBR.

[4] Lists of the LBs assigned to each retail field are available from Leonard Weiss at the University of Wisconsin, Madison.

[5] Available from Leonard Weiss at the University of Wisconsin on request.

TABLE 2.—REGRESSION COEFFICIENTS RELATING MEDIA AND OTHER SELLING EXPENSE TO INDICATED EXOGENOUS VARIABLES (*t*-RATIOS IN PARENTHESES)

Variable	Consumer Goods				Producer Goods				All Lines of Business			
	Media		Other		Media		Other		Media		Other	
Constant	0.0059	−0.054	0.068	−0.022	0.0039	0.0035	0.042	0.043	0.0023	−0.013	0.054	0.015
	(0.28)	(−1.74)	(2.16)	(−0.48)	(3.19)	(1.14)	(7.09)	(2.89)	(0.76)	(−1.74)	(8.78)	(1.77)
Consumer Demand ÷ Total Demand	0.034	0.040	0.049	0.061	0.042	0.042	0.178	0.176	0.043	0.043	0.049	0.054
	(1.34)	(1.62)	(1.27)	(1.65)	(4.55)	(4.49)	(3.98)	(3.97)	(10.01)	(9.74)	(5.55)	(6.03)
Buyer Concentration	−0.060	−0.078	0.087	0.082	−0.0047	−0.0047	−0.042	−0.024	−0.0060	−0.0099	−0.039	−0.031
	(−0.51)	(−0.68)	(0.48)	(0.47)	(−1.42)	(−1.30)	(−2.63)	(−1.42)	(−0.64)	(−1.02)	(−2.00)	(−1.54)
Distance Shipped	0.0010	0.0015	−0.0008	−0.0002	0.0002	0.0002	0.0024	0.0026	0.0005	0.0005	0.0013	0.0015
	(1.22)	(1.73)	(−0.62)	(−0.12)	(2.04)	(2.03)	(4.24)	(4.50)	(1.73)	(1.89)	(2.28)	(2.60)
Adjusted Concentration		0.229		0.372		0.0020		0.030		0.068		0.154
		(2.52)		(2.70)		(0.14)		(0.46)		(2.17)		(2.41)
ACR Squared		−0.205		−0.372		−0.0023		−0.081		−0.063		−0.188
		(−2.32)		(−2.78)		(−0.15)		(−1.10)		(−1.94)		(2.84)
$\bar{R}^2$	0.0308	0.0856	—[a]	0.0555	0.1144	0.1030	0.1647	0.1942	0.3278	0.3362	0.1745	0.2015
n	85	85	85	85	175	175	175	175	260	260	260	260

[a] $\bar{R}^2$ is a negative number.

has a significant positive effect as expected. Seller concentration has no significant effect.

When consumer and producer goods are combined, our variables "explain" a much larger percentage of variability in media expense but about the same proportion of other selling expense. All the coefficients have the expected signs, and all are significant except buyer concentration after seller concentration is included. The effect of the consumer demand variable is extremely strong.

Advertising intensity reaches a maximum at a concentration ratio of 54. This is in the same range that we found in previous work with other data. Other selling expense reaches a maximum at a concentration ratio of 41. This is a very low level for collusion to take hold, especially for producer goods where it probably refers mainly to salesmen.

An after-the-fact interpretation might be that in unconcentrated markets most sales go through independent jobbers, but as the leading firms attain larger market shares, they turn to their own salesmen. Beyond that level increased market shares may result in lower selling cost per unit if they try to reach all potential customers. With this in mind we repeated the other regressions using concentration and, as an alternative, the natural logarithm of mean sales instead of concentration and concentration squared. The signs, significance, and levels of the coefficients of other variables did not change much with these alternative specifications. The linear concentration variable had the suggested negative effect for all three samples, but its coefficient was only significant for producer goods where it was $-0.042(-2.66)$.[6] The log of average sales had a stronger negative effect for all three samples, but its coefficient still was not significant for consumer goods. Its coefficient was $-0.0137(-4.48)$ for producer goods and $-0.0103(-3.59)$ for all lines of business.

These results suggest that what we are seeing is economies of scale in other selling expense rather than collusion. Although our alternative hypothesis was formulated after the fact, it has been proposed elsewhere by others (Bucklin, 1972, p. 40; Jeffreys, 1950, p. 42; and Ward, 1973, p. 127). This result could mean that while manufacturers' selling costs increase and then decrease as concentration rises, the inclusion of independent jobbers' margins might show all selling costs decreasing continuously for producer goods.

Conclusions

Although advertising expense is very high for a few products, other selling expenses are more important on average. Other selling expenses rise with advertising and with retail margins suggesting that the three types of selling are more nearly complements than substitutes. Total selling expense and retail margins together exceed 50% of retail price for a few products, mainly drugs and toiletries. Both advertising and other selling expense are higher for consumer goods, for products sold on large geographic markets, and, probably, where buyer concentration is low. Both rise with concentration at first but ultimately decline, but other selling expense per

[6] *t*-ratios are in parentheses.

dollar of sale in producer goods is better explained in a model where concentration or sales are entered as single variables. It falls as concentration increases, and even more strongly, as the log of mean LB sales increases. This suggests economies of scale in the use of salesmen.

REFERENCES

Automotive News, 1967 Almanac (Detroit: Slocum Publishing Co., 1967).

Bucklin, Louis P., *Competition and Evolution in the Distributive Trades* (Englewood Cliffs, New Jersey: Prentice Hall, 1972).

Federal Trade Commission, *Annual Line of Business Report*, 1974 (Washington: FTC, 1981a) processed.

_____, *Annual Line of Business Report*, 1975 (Washington: FTC, 1981b) processed.

Guth, Louis A., Robert A. Schwartz, and David K. Whitcomb, "The Use of Buyer Concentration Ratios in Tests of Oligopoly Models," this REVIEW 58 (Nov. 1976), 488–491.

Jeffreys, James B., *The Distribution of Consumer Goods* (New York: Cambridge University Press, 1950).

Lilly Digest (Indianapolis: Ely Lilly and Co., 1976).

Martin, Stephen, "Advertising, Concentration and Profitability: The Simultaneity Problem," *Bell Journal* 10 (Autumn 1979), 639–647.

National Petroleum News, Fact Book 1976 (New York: McGraw Hill, 1976).

NCR, *Expenses in Retail Business* (Dayton, Ohio: NCR, undated but about 1966 and about 1976).

Strickland, Allyn D., and Leonard W. Weiss, "Advertising, Concentration, and Price-Cost Margins," *Journal of Political Economy* 84 (Oct. 1976), 1109–1123.

U.S. Department of Commerce, Bureau of Economic Analysis, *The Detailed Input-Output Structure of the U.S. Economy: 1972 Volume 1, The Use and Make of Commodities by Industries* (Washington, D.C.: Government Printing Office, 1979).

U.S. Treasury Department, Internal Revenue Service, *Statistics of Income Source Book*, 1972, processed.

Ward, T. S., *The Distribution of Consumer Goods: Structure and Performance* (New York: Cambridge University Press, 1973).

Weiss, Leonard W., "The Geographic Size of Markets in Manufacturing," this REVIEW 54 (Aug. 1972), 245–257.

_____, *Case Studies in American Industry* (New York: John Wiley and Sons, 1980).

PUBLIC VERSUS PRIVATE WATER DELIVERY: A HEDONIC COST APPROACH

Susan Feigenbaum and Ronald Teeples*

Policymakers, faced with unprecedented resistance to public sector expansion, have rekindled debate about the merits of government versus private supply of public services. Crucial to this debate is evidence concerning the impact of ownership form on the cost structure of firms. Previous studies have generated evidence for water and electric utilities (see Meyer, 1975; Neuberg, 1977; Crain and Zardkoohi, 1978; Bruggink, 1982). Utilities are of particular interest because the impact of ownership on efficiency may depend on the degree to which Averch-Johnson effects in private, rate regulated, operations outweigh inefficiencies associated with potentially greater property rights attenuation in government enterprises.[1] Moreover, researchers have suggested that, because of the comparative ease in defining utility output, such firms are well-suited for an empirical examination of the impact of ownership form on cost-of-operation.

However, these previous studies have offered conflicting results concerning whether utility cost structures vary systematically with type of ownership. This inconclusiveness may be at least partially explained by differences in specification of the utility production process. Specifically, we suggest that the cost models used to date suffer from at least one of the following weaknesses: (1) improper measurement of firm output as a scalar value representing delivery volume; (2) arbitrarily imposed specifications of production technology; and (3) omission of relevant factor prices. In this paper, we address these weaknesses through use of a hedonic cost model.

Section I presents a cost-of-service function for water delivery which reflects the multidimensional nature of

Received for publication July 21, 1982. Revision accepted for publication January 27, 1983.

* Claremont McKenna College and Claremont Graduate School.

The authors gratefully acknowledge support from the Lincoln Foundation and the Center for the Study of Law Structures, Claremont. Lynn Karoly provided valuable research and computer assistance.

[1] In reality, government utilities may have incentive structures that result in less attenuation of property rights than in strictly regulated private operations. Thus, the legal form of an enterprise will not always be a good indicator of its relative efficiency. In their study of Canadian railroads, Caves and Christensen (1980) found no difference in the efficiency of public and private firms that were subject to the same competitive environment.