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***Market Structure, Market Share, and Profits
in the Surface Freight Industry***

by

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Abstract

The surface freight industry was deregulated in 1980. The purpose of this paper is to investigate the relationship between profitability and market power in the trucking industry that transport agricultural commodities. Fulfilling this objective would allow us to determine whether the market structure that has emerged is one that is based on competition. The research method will be based on the structure-conduct-performance paradigm. Results of this study indicated that efficiency is the driving force behind performance of firms. These suggest that the 1980 Motor Carrier Act had produced its intended purpose in the agricultural commodities transport industry.

Market Structure, Market Share, and Profits in the Surface Freight Industry

Introduction

The Motor Carrier Act was signed into law by President Franklin D. Roosevelt on August 9, 1935. Under the act, all surface freight firms serving a particular route had to charge the same rate. At the same time, firms in the surface freight industry were also required to provide equal services to large and small shippers, in large or small cities across the country.

The surface freight industry was regulated by the government in this way until Congress passed the Motor Carrier Act of 1980. This act was passed with the idea that economic regulation hindered competitive pricing and deregulation would open up the industry. Although some regulations still exist, the legislation made entry into the industry much easier and allowed for existing firms to expand their operating areas.

After some twenty years of deregulation, the market structure that would have emerged is one that is based on efficiency. That is, any market concentration that emerged would be the result of competition and firms that are more efficient would be dominant.

This paper investigates the relationship between profitability and market power in the trucking industry that transport agricultural commodities. The research method will be based on the structure-conduct-performance paradigm (SCP).

The SCP Paradigm

There are two competing hypotheses in the SCP paradigm: the traditional “structure performance hypothesis” and “efficient structure hypothesis”. The structure performance hypothesis holds that the degree of market concentration is inversely related to the degree of competition. This is because market concentration encourages firms in the industry to collude. As such, the more concentrated the market, the higher is the degree of collusion and the less is the degree of competition. This hypothesis would be supported if market concentration has a positive impact on the performance of the firm (irrespective of the degree of efficiency of the firm).

The efficient structure hypothesis holds that performance of the firm is positively related to its efficiency. This is because market concentration emerges from competition where firms with low cost structure increase profits by reducing prices and expanding market share. As such, firms that are more efficient will have better performance. This hypothesis would be supported if the firm’s market efficiency has a positive impact on its performance (regardless of the degree of concentration in the market).

Data and Method

To test the hypotheses, accounting data of trucking companies that transport agricultural commodities for years 1997, 1998, and 1999 were obtained from the Blue Book of Trucking

Companies (published by the Transportation Technical Services). These pooled data were fit into the following profit equation:

$$PFT_i = \alpha_0 + \alpha_1 CTR_i + \alpha_2 MKS_i + \alpha_3 CAE_i + \alpha_4 CAR_i + \alpha_5 DER_i + \alpha_6 DSO_i + U_i.$$

In the above equation, PFT_i is net income (in million) of firms i and is a measure of performance. The variable CTR_i is four-firm revenue concentration ratio by region and is a measure of market structure. The variable MKS_i is percentage revenue market share of firm i and is a measure of firm efficiency. The variable CAR_i is capital to asset ratio and DER_i is debt to equity ratio. Both these variables are generally associated with risk taking capacity of the firm. The variable DSO_i is region dummy variable that equals 1 if the firm is located in the south, and 0 otherwise. The variable U_i is the error term.

As indicated in the previous section, it is expected that if the structure performance hypothesis were correct than the coefficient to CTR would be highly significant. On the other hand, if the efficient structure hypothesis were correct, then the coefficient to MKS would be highly significant.

Estimation and Results

Results of the estimation are presented in Table 1. The first regression is for pooled sample while the second, third, and fourth is for the 1997, 1998, and 1999 samples, respectively. Surprisingly, the adjusted R-squares for all equations are very high for all regression.

In all equations, coefficients for market share are highly significant and coefficients for concentration ratio are not significant. Signs of coefficient of other variables are theoretically consistent. These findings therefore support the efficiency structure hypothesis and reject the structure performance hypothesis.

Table 1: Regression Results.

Variables	<u>1997-1999</u> Parameter Estimates	<u>1997</u> Parameter Estimates	<u>1998</u> Parameter Estimates	<u>1999</u> Parameter Estimates
Intercept	-0.102 (-0.41)	-0.304 (-1.23)	0.344 (0.54)	-0.189 (-0.11)
CTR	-0.038 (-0.07)	0.249 (0.4)	-1.298 (-0.85)	0.859 (0.27)
MKS	0.052 (3.88)*	0.052 (2.44)*	0.073 (2.55)*	0.050 (2.39)*
CAE	1100.775 (23.37)*	1300.200 (20.38)*	1095.903 (11.06)*	884.921 (11.49)*
CAR	-0.191 (-1.07)	-0.033 (-0.16)	-0.401 (-1.18)	-0.513 (-1.34)
DER	-0.020 (-0.62)	0.020 (0.57)	-0.031 (-0.53)	-0.214 (-1.94)**
DSO	-0.410 (-2.67)*	-0.402 (-2.03)*	-0.302 (-0.88)	-0.609 (-2.27)*
Adj R-sq	0.82	0.91	0.75	0.80
F-stat	118.17	100.52	28.03	31.35
Observations	159	58	55	46

Note: *t*-value in parenthesis.

* significant at 5% level.

** significant at 10% level.

Conclusion

This paper investigates the relationship between profitability and market power in the trucking industry that transport agricultural commodities. The aim of the investigation was to determine if the Motor Carrier Act of 1980 had produced the desired market structure. The research method was based on the SCP paradigm. Four regressions were estimated. All results supported the efficient structure hypothesis, implying efficiency is the driving force behind performance of firms. These suggest that the 1980 Motor Carrier Act had resulted in market structure that is based on competition with efficient firms being dominant. However, it must be stressed that this conclusion is confined to the trucking industry that transport agricultural commodities.

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