On the Mercantilist Objective of Canadian State-Owned Enterprises

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Abstract

In theory, the purpose of state ownership is to allow firms to deviate from profit maximization in order to maximize social welfare. Yet Canadian state-owned firms have profit rates that greatly exceed those of U.S. firms in the same industries, while Canadian private sector firms do not. We suggest a more plausible objective of state owned firms: the extraction politically enforced monopoly rents from consumers. Consistent with rent-seeking based theories of public enterprise, Canadian state-owned enterprises may serve as cash cows for politicians.

I. Introduction

Externalities, natural monopolies, public goods and information asymmetries are all capable of rendering competitive outcomes suboptimal. State-owned enterprises in Canada and elsewhere, or government regulation of private firms in the U.S., are two alternatives viewed by many economists as solutions to these sorts of market failure. Regulated firms must be continually restrained from following market signals to improve social welfare. But, in principle at least, state-owned enterprises would appear to be a more complete solution as they are able to ignore market signals entirely and thereby generate socially optimal results.

In doing this, state-owned enterprises presumably sacrifice profits, since the competitive outcomes they are avoiding are, by definition, the profit maximizing outcomes. We should therefore expect to state-owned enterprises to record lower profits than comparable privately run firms.

To test this, we contrast the profit rates of both large Canadian state-owned enterprises and private sector firms with U.S. firms in the same industries. Briefly, we find that Canadian private sector firms have profit rates below those of U.S. industry rivals, while Canadian state-owned firms have profit rates that greatly exceed those of U.S. firms in the same industries.

This seems inconsistent with state ownership correcting market failures more efficiently than the regulation of private firms does. However, this finding is consistent with state-owned enterprises exploiting politically protected monopolies to extract rents from consumers. Canadian state owned enterprises may, in fact, be cash cows for politicians. This is consistent with rent-seeking based theories of public enterprise (Baumol, 1990; Murphy *et al*. 1991).

II. Accounting Profits and Economic Profits

A firm's economic profits are the residual left over after all factors of production have been paid. In practice, economic profits are combined with the return to capital paid to shareholders and, in some cases, creditors. Dividend payments and capital gains on common shares, preferred shares, convertible bonds, etc. are partially a return to capital and partially economic profit.

Accounting profits, which can be adjusted to approximately measure this combination of return to capital and economic profit, are readily available for a large number of firms. The return to capital is related to systematic risk, and the risk exposure of investors is, to a reasonable first approximation, equal across a given industry. Thus, accounting profits minus average industry profits, which we call *profit margin*, is arguably a proxy for economic profits.

Our approximation that firms in the same industry have the same cost of capital can be refined to take into account two factors that might distort it. First, large firms and small firms are likely viewed differently by capital markets, so a "firm size" control variable is called for. Second, young, start-up firms likely are viewed differently from older, mature firms, so a "firm age" control variable seems reasonable.

Finally, microeconomic theory actually requires firms to maximize the expected present value of profits, not current profits. The expected present value of profits is not observable since market value data are not available for state-owned enterprises and for many private sector firms whose capital structure includes privately placed issues of stock or debt. To circumvent this, we also examine firm growth, on the assumption that high growth may mitigate low profits.

III. Data.

Our basic sample is the 550 largest companies in Canada in 1989. Of these, 533 could be unambiguously classified as either state-owned or private-sector firms. Because of missing financial data in the *Toronto Globe and Mail's* InfoGlobe database, this number is reduced to 345. Cook's D tests were used to remove outliers, further reducing the sample to 327 firms.

To make a firm profit measure operational, we must first control for firm size. We do this by dividing accounting profits by total revenues to obtain a profit rate. A more natural definition of a firms profit rate would be divide revenue minus expensed by assets. Unfortunately, only book values of assets are available for state-owned enterprises, and book values are known to diverge substantially from actual values in private sector firms. Thus, we chose comparability and consistency over theoretical appeal, and divide by total revenue. To reduce distortions caused by extraordinary events or macroeconomic factors, we smooth our measure by taking the median of the industry adjusted profit rates between 1984 and 1989 for each Canadian firm. Since this often involves six observations, an even number; after ordering the observations we define their median as the half-way point between the third and fourth observations. We use industry aggregate profit rates rather than an average of firm level data because the Canadian firm must compete for capital with all its foreign rivals, not an average foreign rival. Comparing a given firm to its industry in Canada is problematic. First, there are often very few large Canadian firms in an industry. Second, they may all have similar ownership structures. We thus make across the board comparisons of Canadian firms to U.S. industry rivals. We feel that measuring corporate profit rates relative to foreign rivals rather than to an absolute standard or to domestic rivals is especially sensible in a relatively small, open economy such as Canada.

We define a firm's *profit rate* as its operating income (earnings gross of depreciation, interest and tax payments) per dollar of sales. This data is obtained from the *Toronto Globe and Mail* InfoGlobe database. We include accounting depreciation and interest payments because we are interested in the overall return to capital. The specific way the firm provides this return, that is, whether funds are paid out to bondholders as interest, to shareholders as dividends, or reinvested in new plant and equipment to generate capital gains for shareholders and convertible bondholders, is largely irrelevant for our purposes.

We assume different industries have different costs of capital, but within an industry, the cost of capital is roughly constant across firms. This is certainly false, but as a first approximation, it is defensible. Regulated firms' rates of return are established using industry benchmarks, for instance; and leverage adjusted betas are similar across industries too.

We thus define the *profit margin* of a Canadian firm as its profit rate minus the profit rate of

the U.S. industry with which it competes. Industry classifications are made using the Standard Industrial Classification (SIC) codes system of Standard and Poor's *Compustat* data base[1]. U.S. rivals are defined as all U.S. firms belonging to the same industry (defined by 3 digit SIC codes) as the Canadian firm. For each set of U.S. rivals we construct an industry profit rate by adding up the total operating income of the firms and dividing this by the total of their sales. U.S. financial data is obtained from the Standard and Poor's *Compustat* database. Figures that seemed unusual or extreme were verified using annual reports, the *Financial Post Survey of Industrials*, or the *Financial Post Survey of Energy and Mining Companies*; and were corrected if necessary.

Thus if the profit margin of a Canadian firm is 2%, this means that its profit rate is 2% higher than that of its U.S. rivals.

We use "firm size" and "firm age" to control for within industry variations in the cost of capital. We use the logarithm of a firm's total sales as a measure of firm size. This is obtained from the *Toronto Globe and Mail* InfoGlobe database along with our other Canadian financial variables. We use the logarithm of the number of years since the firm's first incorporation date as a measure of firm age. This date is obtained from the *Blue Book of Canadian Business, Who's Who*, financial reports and corporate histories.

We construct two growth margins using the same procedure as was used for profit margins. A firm's *sales growth margin* is its real sales growth minus that of its rival U.S. industry, and its *job creation margin* is the percent increase in its number of employees minus that of its rival U.S. industry. Data for these variables are from the same sources as that for profit margins.

The name of each firm's dominant shareholder is obtained from the Financial Post 500 listings. This information is verified and, where necessary, corrected by cross-checking with proxy statements and the *Compact Disclosure* (Canadian) C.D. data base. We classify a firm as state-owned if its largest shareholder is a government and if that government owns more than 20% of the firms' voting stock. Where firms have multiple classes of common stock we prorate ownership and if a government controls more votes than any other shareholder and controls more than 20% of all votes, we define the firm as state-owned. We also mark firms whose dominant shareholder is another firm as "subsidiaries" if that firm controls more than 20% of outstanding votes. We choose 20% rather than 51% because, in a firm where other ownership is diffuse, a single dominant shareholder usually has effective control. (See Holderness and Sheehan, 1988 and Morck et al. 1988.) Firms whose dominant shareholder type changed during our sample period are dropped.

Table I shows univariate statistics for our data.

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[1]   Many of our Canadian firms are not included in Compustat. For these, an industry classification was found in Dunn and Bradstreet's Canadian Directory. Since the industry codes used by Dunn and Bradstreet are not identical to those used by *Compustat*, a conversion table was worked out using firms listed in both. The first three industry codes (in declining importance by sales in that industry) from Dunn and Bradstreet were used in deriving the conversion table.

IV. Empirical Results

The first panel of Table 2 shows that, during our sample period, large Canadian firms have lower profit rates than do their rival U.S. industries. For example, the first number in the third column of table 2 in the "profit margin" column is .049%, indicating that the mean operating income per dollar of sales for our large Canadian firms is .00049 less than that for their rival U.S. industries. Below, the number -1.29% is the median difference in this ratio. The numbers in parenthesis below the means and medians are the probability levels at which one can reject the hypotheses that the means and medians of the Canadian firms are indistinguishable from those of their rival U.S. industries. The .92 indicates that using a standard t-test, we can not reject the hypothesis that the mean profitability margin is zero. In contrast, the .03 below the median difference indicates that, using a signed rank test, the hypothesis of equal medians can be rejected at a confidence level of .97.

The lower panels of Tables 2 contrast the profit margins of state-owned Canadian firms with those of private-sector independent Canadian firms and with subsidiaries. Canadian state-owned enterprises' profit rates significantly exceed those of U.S. firms in the same industries. This is not due to differences between the Canadian and U.S. economies, since Canadian independent private sector firms and Canadian foreign-owned subsidiaries both actually trail their U.S. industry rivals in terms of profit rates. Firms whose dominant shareholder is another Canadian firm are also shown for completeness.

Private-sector Canadian firms are growing faster than their U.S. rivals, so they may be performing well in terms of the expected present value of their profits. State-owned Canadian firms are not growing more slowly than their U.S. rivals, so it is arguable that their economic profits are truly higher.

Firm age (years since first incorporation) and firm size (total sales in 1989) are also given for each group. State-owned enterprises are slightly larger and older than the other groups.

Table 3 displays statistics for tests that compare the means and medians shown in Table 2 across subsamples. The F-test shown is the standard test for comparing the means of two subsamples. Kruskal-Wallis tests compare the medians of the two subsamples using rank transformations of the data. Both tests show state-owned enterprises to have significantly higher profit margins than independent private-sector firms or foreign-owned subsidiaries, yet growth rates comparable to other groups'.

Table 4 regresses profit margin on ownership structure indicator variables with firm size and firm age included as controls. Although the other differences between subsamples do not survive, state-owned enterprises still have significantly higher profit rates than their U.S. peers, but comparable growth rates. Including the growth measures as additional control variables does not change the results in the profit margin regression.

V. Conclusions

Canadian state-owned firms post significantly higher profit rates than those shown by U.S. firms in the same industries, and this difference survives controls for firm size and firm age. In contrast, private-sector Canadian firms show profit rates lower than (or at most equal to) those of their U.S. industry rivals. These findings seem inconsistent with state-owned firms forsaking profits to maximize the social good.

We can not reject the possibility that state-owned firms are managed so efficiently that they

produce higher profits despite maximizing the social good instead of profits. However, we find this explanation implausible.

It is more likely that the government has come to view state-owned firms as "cash cows", and is using them to extract monopoly rents form consumers. This is consistent with rent-seeking based theories of public sector behaviour (Baumol, 1990; Murphy *et al*. 1991).

References

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Table 1: UNIVARIATE STATISTICS FOR VARIABLES USED.

variable	median	mean	standard deviation	minimum	maximum	sample size
sales growth margin	1.19%	3.15%	14.6%	-41.2%	80.1%	266
job creation margin	.872%	2.08%	9.68%	-17.7%	33.8%	183
profit margin[a]	-1.29%	.049%	9.17%	-33.4%	38.3%	327
firm age in years	36	42	31	0	319	275
total sales in billions of dollars	.371	1.10	2.19	.105	19.7	327

[a]The term "margin" means that this variable is measured relative to U.S. industry performance.

Table 2: UNIVARIATE STATISTICS OF FIRM AGE, FIRM SIZE AND PERFORMANCE MEASURES (RELATIVE TO U.S. INDUSTRY RIVALS) BY OWNERSHIP STRUCTURE CLASSIFICATION: FOREIGN OWNED SUBSIDIARIES, CANADIAN OWNED SUBSIDIARIES, GOVERNMENT CONTROLLED FIRMS AND ALL OTHER FIRMS.

ownership structure	firm age[a]	total sales[b]	profit margin[c]	sales growth margin[c]	job creation margin[c]
entire sample					
means	42.0	$1,100	.049%	3.15%	.827%
prob. > t			(.92)	(.01)	(.01)
medians	36.0	$371	-1.29%	1.19%	2.08%
prob. > S			(.03)	(.01)	(.01)
sample	275	327	327	266	183
state-owned corporations					
means	46.3	$1,196	6.14%	1.65%	1.00%
prob. > t			(.10)	(.42)	(.48)
medians	41.0	$572	5.06%	2.78%	-.117%
prob. > S			(.05)	(.15)	(.67)
sample	18	24	24	22	20
independent private-sector firms					
means	41.4	$1,087	-.154%	4.33%	2.66%
prob > t			(.80)	(.01)	(.01)
medians	34.0	$367	-1.20%	1.75%	.661%
prob > S			(.02)	(.01)	(.09)
sample	168	180	180	165	115
foreign owned subsidiaries					
means	45.8	$1,127	-1.24%	.769%	1.99%
prob > t			(.12)	(.64)	(.04)
medians	39.0	$370	-2.29%	-.156%	1.94%
prob > S			(.01)	(.92)	(.06)
sample	75	106	106	65	39
Canadian owned subsidiaries					
means	31.8	$1,023	1.63%	2.67%	-2.57%
prob. > t			(.45)	(.43)	(.24)
medians	25.0	$434	-1.28%	1.15%	-3.13%
prob. > S			(.85)	(.27)	(.36)
sample	14	17	17	14	9

The numbers in parentheses are probability levels. Below means, they are for standard t-tests, and below medians they are for signed rank tests.

[a] *Years since date of first incorporation*
[b] *1989 figures in millions of dollars.*
[c] *The term "margin" means these variables are relative to comparable measures for U.S. rival industries.*

Table 3: PROBABILITY LEVELS FROM TESTS FOR STATISTICAL DIFFERENCES BETWEEN SUBSAMPLES LISTED ABOVE.

	firm age[a]	total sales[b]	profit margin[c]	sales growth margin[c]	job creation margin[c]
State-owned Corporations vs. Independent private sector firms					
F-test for comparison of means					
prob. > F	.55	.80	.01	.44	.52
χ^2 *approximation to the Kruskal-Wallis test for comparison of medians*					
prob. > χ^2	.20	.24	.01	.70	.80
State-owned corporations vs. foreign owned subsidiaries					
F-test for comparison of means					
prob. > F	.93	.90	.01	.77	.55
χ^2 *approximation to the Kruskal-Wallis test for comparison of medians*					
prob. > χ^2	.83	.33	.01	.34	.34
Independent private sector firms vs. foreign owned subsidiaries					
F-test for comparison of means					
prob. > F	.32	.88	.27	.11	.72
χ^2 *approximation to the Kruskal-Wallis test for comparison of medians*					
prob. > χ^2	.05	.64	.11	.10	.69

[a]*Years since date of first incorporation*
[b]*1989 figures in millions of dollars.*
[c]*The term "margin" means these variables are relative to comparable measures for U.S. rival industries.*

Table 4: O.L.S. REGRESSIONS OF FIRM PERFORMANCE RELATIVE TO RIVAL U.S. INDUSTRIES ON FIRM AGE AND SIZE CONTROL VARIABLES AND OWNERSHIP STRUCTURE DUMMIES: FOREIGN OWNED SUBSIDIARIES, CANADIAN OWNED SUBSIDIARIES, GOVERNMENT CONTROLLED FIRMS RELATIVE TO INDEPENDENT PRIVATE SECTOR FIRMS. SAMPLE CONSISTS OF ALL FIRMS.

independent variable	*profit margin[c]*	*sales growth margin[c]*	*job creation margin[c]*
intercept	-.0356	.177	.162
	(.70)	(.23)	(.17)
log of firm age[a]	-.00441	-.0523	-.0300
	(.52)	(.01)	(.01)
log of total sales[b]	.00272	.00240	-.0013
	(.59)	(.76)	(.84)
foreign owned subsidiary	-.0132	-.0377	-.00534
indicator variable	(.28)	(.08)	(.76)
domestically owned subsidiary	-.00594	-.0445	-.0548
indicator variable	(.82)	(.28)	(.12)
state-owned corporation	.0980	.000729	-.0146
indicator variable	(.01)	(.98)	(.56)
R^2	.0846	.114	.0753
sample size	274	239	175

[a]*Years since date of first incorporation*
[b]*1989 figures in millions of dollars.*
[c]*The term "margin" means these variables are relative to comparable measures for U.S. rival industries.*