

The Analysis of Market Capitalization and Growth Determinants in Canadian Companies

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Abstract. Contribution to employment and competition from small and medium companies significantly stimulates economic growth in Canada. Corporate growth in competitive markets is vital for job creation, improved standard of living, and social stability. Understanding the underlying drivers of Canadian corporate growth can help construct better and more targeted corporate policy to stimulate economic growth. This study specifically investigates how firm size, along with other financial indicators as controls, can affect companies' revenue growth. Initial analysis on observed panel data suggests a small negative association between market capitalization and revenue growth. Controlling for sector classifications yields results no different from the baseline time fixed multiple regression model. However, including company fixed effects in general amplifies the negative relation of company size and growth rates, indicating that company specific characteristics undermine the true magnitude of the relation.

1.Introduction and Background

Between 2021 and 2022, total employment in the private sector increased by approximately 802,550 jobs. Small, medium-sized, and large businesses contributed 41.1%, 18.3%, and 39.4%, respectively, to this net employment change. (Government of Canada, 2024) Small and Medium Enterprises (SMEs) are the lifeblood of a dynamic and resilient economy. They create jobs, bring innovative products and ideas to the market, and put pressure on larger businesses to remain competitive. Pro-competitive policies support the ongoing participation of SMEs in the marketplace and promote dynamism and competitiveness in the Canadian economy. (Sandhu, 2020) By understanding the relationship between firm size and its growth rate, policies can be designed to better stimulate the Canadian economy.

This study aims to create an analytical model for different financial performance ratios, with a focus on market capitalization, while controlling for profitability, liquidity, leverage, and rates of research and development, which are the main factors of the growth of Canadian businesses. Our methodology refers to the paper “The Analysis of Company Growth Determinants Based on Financial Statements of the European Companies” written by Bojana Vuković, but we have a bigger focus on the effect of the firm size and the Canadian market. Statistically significant, but small negative relationships between firm size and company growth rate are demonstrated by several regression models including simple linear regression, multiple linear regression, and fixed effects models.

2 Data Collection and Summary Statistics

The panel dataset used in this analysis is constructed from data from Bloomberg Terminal, accessed November 2024. It tracks 449 publicly listed Canadian companies across multiple years (2016–2023), resulting in a balanced panel of 3,143 observations. This structure allows our analysis to capture both cross-sectional variation between companies and temporal dynamics over time. The population of interest for this study are publicly traded Canadian companies from 2016 to 2023. Each observation is measured in units of company-time. The outcome variable is year-on-year revenue growth, which measures percent changes in revenue from the “previous year” to the “current year.” The main variable of interest, market capitalization, is linearized through a log-transformation to improve interpretability as company size is strongly right-

skewed, shown in Figure 1. Other variables examined include return on assets, current ratio, total debt to total equity, research and development to net sales, and dummies that indicate which sector each company operates in. All independent variables use “previous year” observations to infer the effects they may have on the companies’ immediate future performance.

An initial indication of the relation between financial indicators and revenue growth is shown by a correlation matrix. The weak negative correlation of -0.083 between revenue growth and market capitalization suggests that small-sized enterprises could experience slightly higher growth rates than large-sized enterprises. This trend fits with the concept that more minor firms possess the potential to grow and become larger conglomerates quicker than the already established larger corporations due to their adaptable and dynamic nature.

Moreover, the various coefficients, like the correlation of 0.2923 between market capitalization and return on assets, indicate that larger firms are more profitable than smaller ones. This is probably due to economies of scale and better access to resources. The weak negative correlation of market capitalization with current assets (-0.1417) can be interpreted as a signal that large companies tend to have lower liquidity ratios. Large firms may allocate a higher proportion of their assets to fixed or long-term investments rather than maintaining high level of liquidity, and this relationship could also be influenced by the industries. For example, capital intensive sectors might require significant investment in fixed assets rather than current assets. Other variables, such as the debt-to-assets ratio and R&D as a percentage of net sales, show minimal direct correlation with revenue growth, indicating the need for more sophisticated modeling to uncover non-linear effects or sectoral variations.

3 Regression Analysis

3.1 Simple Linear Regression Analysis

Within the framework of simple linear regression, we find that the connection between market capitalization and revenue growth to be relatively small, but not negligible. From specification (1) in Table 1, the coefficient is -3.16 , meaning that a one percent increase in market capitalization translates into, on average, a reduction of approximately 0.0316 percentage points in revenue growth. A 95% confidence interval shows that this effect can range in magnitude

from 0.0171 to 0.0460. With a t-statistic of -4.29, the result is statistically significant at the 1% level, and we can reject the null hypothesis that this coefficient is equal to 0. Although the magnitude of this coefficient is relatively small, it's still valuable for policy formulation and investment strategy and therefore considered as economically significant. This agrees with the idea of smaller firms scaling faster than their larger counterparts, which have more limitations on adaptability in a growing market.

The R^2 value of the model is 0.0069, which suggests a mere 0.69% of variation in revenue growth is attributed to market cap. Such a low contribution reflects the lack of predictors and controls of the simple linear regression model. Observations may also have lagged effects since they come from the same companies across different years. Clustered standard errors are used from here on to address autocorrelation.

3.2 Company and Time Fixed Effects

Specification (2) includes company fixed effects, controlling for unobserved factors that vary across the companies but not across time. Specification (3) also includes time fixed effects on top of this, controlling for factors such as macroeconomic trends or regulatory changes by incorporating year dummy variables (2018–2023). This approach isolates the effects of financial indicators by accounting for variations that affect all firms over the years. The results from (3) reveal that the inclusion of fixed effects improves the model's explanatory power, with an adjusted R^2 of 0.0478. Log-transformed market capitalization remains statistically significant (p-value: 0.002), and negatively associated with revenue growth, with a coefficient of -13.11. The now much larger coefficient indicates that the previous exclusion of fixed effects had led to a strong positive bias in the results, undermining the effect that firm size may have on revenue growth.

Figure 3 plots coefficient shifts from year dummy variables, with a consistent, economically significant (-30% points from 2019-2020) decline in baseline revenue growth from 2018 to 2020 as COVID-19 strained economic conditions. Though a rebound is observed in the following two years, economic growth seems to be halting once again as revenue growth dropped by 10.82% points from 2022 to 2023. A joint F-test on the time dummies across models with time fixed

effects all, except (4), which includes a time interaction, yields p-values of less than 0.0001, indicating strong statistical significance in the time-fixed models.

Further analysis on time shows that year has inconclusive effects on the relation between firm size and revenue growth. Specification (4) includes an interaction variable between year and market cap, yielding mixed coefficient results that are statistically insignificant. Interestingly, despite the interaction coefficients becoming more negative on average, 2020 has a positive coefficient that reduces the effect of firm size on revenue growth, possibly indicating the increased difficulty of smaller companies operating under harsh economic conditions.

3.3 Multiple Linear Regression Analysis

Including further controls, we attempt to address key aspects of financial performance, including profitability, liquidity, leverage, and intensity of research and development. Looking at specification (6), the coefficient on market cap is increased by a small, negligible amount. The coefficients on the added variables (return on assets, current ratio, debt-to-assets ratio, and R&D as a percentage of net sales) are all statistically insignificant with high p-values. However, the economically small standard errors on these coefficients allow us to conclude that these variables have close to no effect on the outcome variable. The variables are more so related to the variable of interest, market cap. Larger companies tend to be more profitable, hence the negative sign on ROA's coefficient that matches market cap. In this model, R^2 is 0.0507, a very small improvement. Altogether, it is implied that other determinants like industry-specific trends or operational strategies may be better in explaining the growth observed.

3.4 Sector-Fixed Analysis

Exploring further into the constituents of company fixed effects, it is replaced with sector fixed effects by including dummies for each sector classification. This allows for analysis through comparison of the estimated coefficient of the variable of interest in the baseline model (5), including only time fixed effects and financial performance indicators, with the estimated coefficients after controlling for sectors or including company fixed effects.

We expected sector differences to constitute a large part of company fixed effects, however, specification (7) shows that the estimated coefficient of market cap on revenue growth changes from -2.25 to -2.24 after the inclusion. This negligible difference suggests that the dynamics of particular sectors do not significantly alter the observed relationship between market capitalization and revenue growth. The sector classifications do shift the constant, or the baseline revenue growth, like year does. Figure 4 shows that the Health Care and Energy sectors demonstrate the highest level of baseline revenue growth: 31.95 and 29.43 percentage points higher, respectively, than the sector with lowest growth, which is Communication Services. This is potentially due to the higher frequency of innovations linked to the two sectors, with renewable energy on the rise and the constant demand and investment for better healthcare.

In specification (6), firm fixed effects are added, which includes sectoral effects. The coefficient on market cap is -10.99, which is much higher in magnitude than the baseline model and the model with only sectoral effects. These results suggest that unobserved firm-level characteristics are major sources of influence on the variation in revenue growth, while sectoral differences have a negligible impact on this relationship. Since the estimated coefficient of interest becomes much more negative, the unobserved company effects undermine the effect of firm size on revenue growth, creating a large positive bias in the results when not accounted for.

Among other things, R&D spending as a proportion of net sales appears to produce a positive (and significant) coefficient of 0.03 (p-value: 0.04) when firm fixed effects are not applied. Intuitively, higher investments in research and development would lead to greater growth as costs can be cut in the long run and superior products can be discovered. However, our analysis shows that, since R&D's coefficient loses its statistical significance after the inclusion of firm fixed effects, the positive effect on revenue comes more from firm characteristics positively related to higher R&D exp/Net Sales rather than the variable itself. This can potentially include a more open and innovative corporate culture or the company's inherent capability to investment in R&D in the first place.

4. Limitations

This study, which contributes to fathoming the relationships between firm size and sales growth in Canadian firms, is nonetheless limited by various constraints. The low explanatory power as presented in the R^2 value, indicates the potential for large amounts of omitted variable bias, as there may be external factors not captured by the controls and fixed effects. Key elements of growth such as market conditions, competitive dynamics, and organizational strategies are only described in broad terms and not included concretely in the analysis, which might leave out crucial sources of revenue growth. The second issue is the presence of extreme values in some variables, such as large corporations with outlandishly high market capitalization and unusually high revenue growth when transitioning from a bad to a good year, which can lead to outlier bias. This can bias the coefficients and create inaccurate estimations.

Whereas issues with heteroscedasticity must have been treated by using robust standard errors, more outlier diagnostics can be performed, and data transformations may lead to a more reliable result. Moreover, the fixed effect models account for constant company characteristics, but they ignore unobserved variables that are changing over time, like management quality and market strategy. Assuming that the effects stay the same for all sectors and firm sizes could lead to overlooking important variations among sectors.

Another big limitation is the use of public firm data, which hinders the extent to which the findings can be applied to private and smaller businesses, which tend to demonstrate different developmental patterns. Missing data points also impacted our sample as they had to be left out, creating inherent bias in our data.

These limitations highlight that future research is in urgent need of redefining certain variables, enhancing the model specifications, and adding more data to make the analysis much stronger and more meaningful.

5. Conclusion

This analysis draws attention to firm size, measured by log-transformed market capitalization, as one of the key determinants of revenue growth in Canadian companies. It has a small, but statistically negative relation to revenue growth. This establishes that, usually, smaller companies

experience stronger growth than larger ones. Other factors considered, such as return on assets, current ratio, debt-to-assets ratio, demonstrate limited effects on growth. Innovation spending seems to share a positive relation with growth, but much of its effect is attributed to company specific characteristics. Time and firm fixed effects shift the baseline revenue growth and exemplify the negative effect found respectively, indicating how crucial it is to factor in the economy's macro conditions along with yearly fluctuations and unobserved company specific factors. Although there are concerns regarding the explanatory power's limitations and the risk of omitted variables, this research contributes to the knowledge about the financial and contextual drivers behind corporate growth.

Appendix

Figure 1

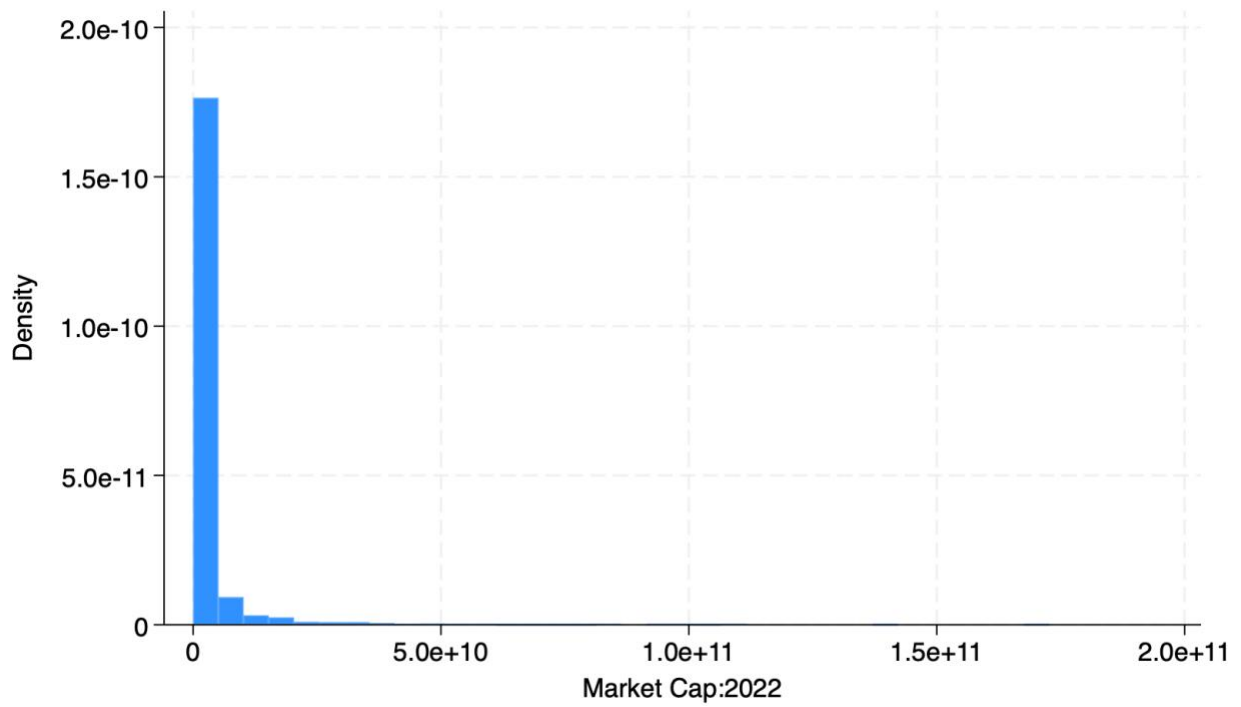


Figure 2

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. corr rv_gw ln_mar_cap roa cr dta rd_ns  
(obs=3,143)
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	rv_gw	ln_mar~p	roa	cr	dta	rd_ns
rv_gw	1.0000					
ln_mar_cap	-0.0833	1.0000				
roa	-0.1117	0.2601	1.0000			
cr	0.0254	-0.1140	0.0318	1.0000		
dta	0.0305	-0.0915	-0.4202	-0.0838	1.0000	
rd_ns	0.0601	-0.0559	-0.1502	0.0294	0.0379	1.0000

Table 1

Regressor	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ln Market Capitalization	-3.16** (0.74)	-9.84* (4.08)	-13.11** (4.30)	-12.31** (4.07)	-2.25** (0.80)	-10.99** (4.15)	-2.24** (0.81)
Return on Assets					-0.153 (0.083)	-0.062 (0.098)	-0.158 (0.081)
Current Ratio					0.179 (0.255)	-0.029 (0.405)	0.106 (0.258)
Total Debt-to-Equity					-0.010 (0.034)	0.064 (0.060)	-0.014 (0.0356)
R&D Expense to Net Sales					0.031* (0.015)	0.022 (0.041)	0.030* (0.015)
Market Cap x Year Interaction?	no	no	no	YES	no	no	no
Control for Sector?	no	no	no	no	no	no	YES ⁱⁱ
Company Effects?	no	YES	YES	YES	no	YES	no
Time Effects?	no	no	YES ⁱ	YES	YES	YES	YES
Clustered Standard Errors?	no	YES	YES	YES	YES	YES	YES

F&Chi²-Statistics Testing Groups of Variables

Time Effects = 0			14.48 (<0.0001)	2.19 (0.0426)	Chi ² : 80.83 (<0.0001)	14.94 (<0.0001)	Chi ² : 80.30 (<0.0001)
Sector Effects = 0							Chi ² : 49.31 (<0.0001)
Adj. R²	0.0066	0.0271	0.0478	0.0480	0.0328	0.0507	0.0380

Coefficients are estimated using panel data on 449 publicly traded Canadian companies from 2017 to 2023. Standard errors are in parenthesis under the estimated coefficients and p-values are given in parenthesis under the F and Chi²-statistics. * and ** indicate statistical significance at the 5% and 1% levels. (ⁱ Refer to Figure 3, ⁱⁱ Refer to Figure 4).

Figure 3

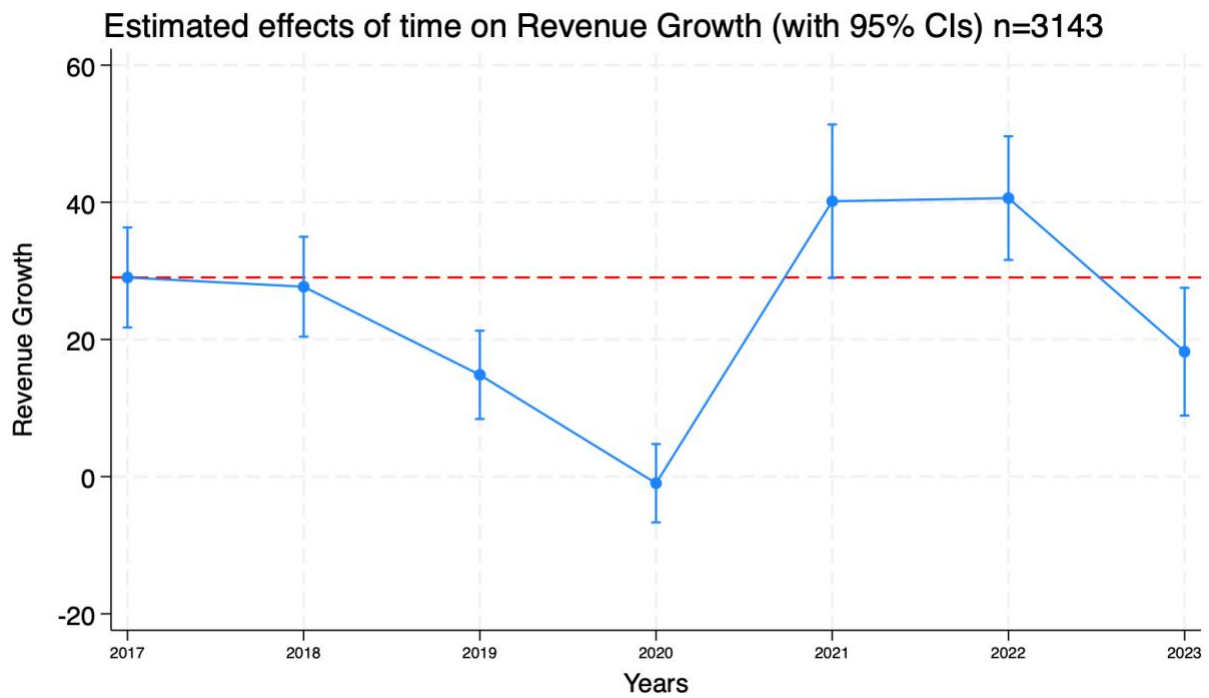
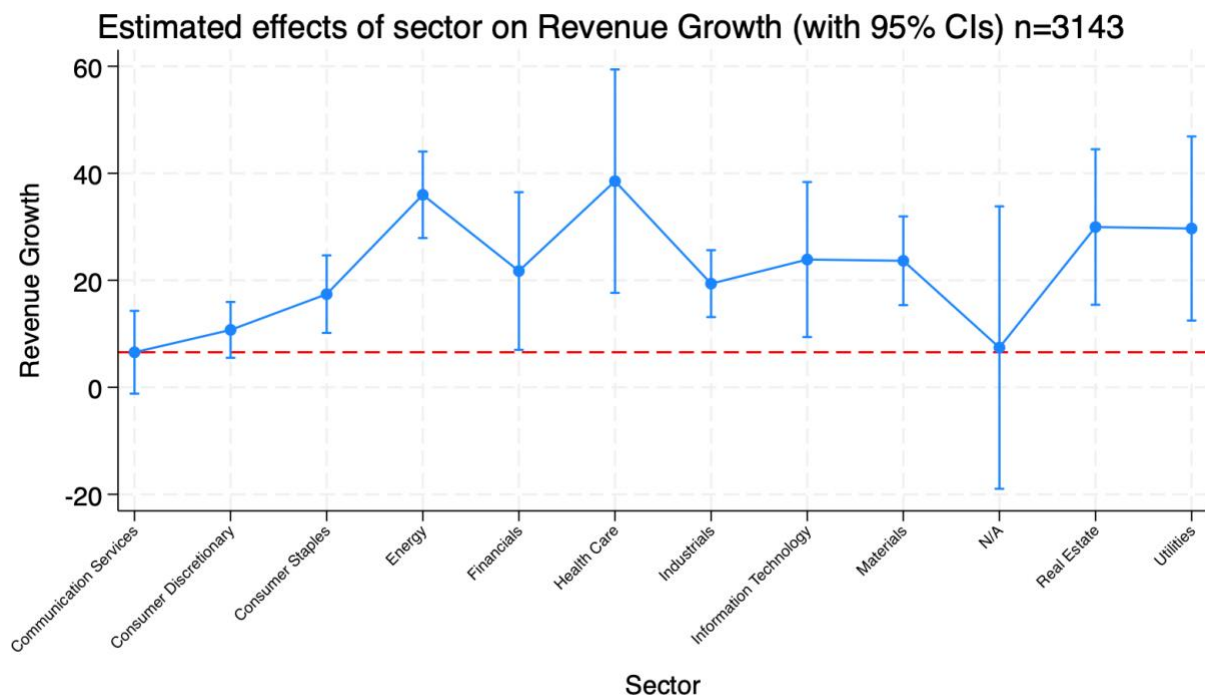


Figure 4



Works Cited

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