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Factors that Affect Potential Growth of Canadian Firms

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Abstract

The purpose of this study is to find the factors that affect potential growth of Canadian firms. This study also seeks to extend the study of Mateev and Anastasov [1]. A sample of 164 Canadian firms listed on the Toronto Stock Exchange for a period of 3 years (from 2008-2010) was selected. This study applied co-relational and non-experimental research design. The findings of this paper show that potential growth of Canadian firms is affected by firm size, current liquidity, leverage, cash flow, age, and industry. This study contributes to the literature on the factors that affect potential growth of the firm. The findings may be useful for financial managers, investors, and financial management consultants.

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Keywords: Potential growth, firm size, cash flows, current ratio, leverage

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1 Introduction

Business growth plays an integral role in the Canadian economy [2]. This study examines the factors that affect the potential growth of Canadian firms listed on the Toronto Stock Exchange. Potential growth, in the context of this study, is defined as estimated growth that a firm sees based on the parameters like firm size, cash flows, capital structure, previous years' performance, and others. The understanding of the potential growth is important for investors who like to invest in the stock market.

Different theories that have attempted to identify the main factors underlying firm growth can be divided into two main schools. The first school addresses the influence of firm size and age on growth and the second school deals with the influence of variables such as strategy, organization, and the characteristics of the firm's owners/managers. In fact, many studies have been devoted to examining the relationship between firm growth, firm size, and [1, p. 270].

As business growth literature suggests, firm growth is determined not only by the traditional characteristics of size and age but also by other firm-specific characteristics. In the conventional framework of firm growth analysis, financing of growth is investigated through the growth-size-profitability relationships. A variety of variables that might potentially be associated or 'responsible' for firm growth can be found in current literature. In this study, the selection of explanatory variables is based on theories related to firm growth and additional variables that were studied in reported empirical work. The choice is sometimes limited, however, due to lack of relevant data. As a result, the final set of proxy variables includes eight variables: firm size, current liquidity measured by current ratio, leverage, capital productivity of firm, cash flow, firm age, potential growth, and industry dummy. The variables, together with theoretical predictions as to the direction of their influence on potential growth of Canadian firms are summarized in Table 1.

The factors that affect business growth have been widely recognized.

Previous authors have examined factors that affect firm growth in i) United States [3], ii) Sweden [4], iii) Italy [5], iv) Germany [6], v) Europe [7], vi) Argentina [8], vii) Portugal [9], viii) Italy [10], and ix) Central and Eastern European [1]. This study seeks to extend these studies using data about Canadian manufacturing and service firms. The results might be generalized to manufacturing and service industries.

The study contributes to the literature on factors that affect potential growth of the firm in at least two ways. First, it focuses on Canadian manufacturing and service firms, while only limited research has been conducted on such firms recently. Second, it validates some of the findings of previous authors by testing the relationships between firm size, current liquidity measured by current ratio, leverage, capital productivity of firm, cash flow, firm age, potential growth, and industry dummy of the sample firms. Thus, this study adds substance to the existing theory developed by previous authors.

2 Literature Review

Potential growth is one way to look at the firm if it will become larger in the future. Potential growth is also the inherent ability or capacity for firm growth and development in near future. This section presents the findings of previous authors on the factors that affect firm growth.

Evans [3] took a sample of all US firms operating in 100 manufacturing industries to examine some aspects of firm dynamics. The author found that firm growth, the variability of firm growth, and the likelihood that a firm will fail decrease with firm age. The author also found that firm growth decreases at a diminishing rate with firm size even after regulating for the exit of slow-growing firms from the sample. Based on his findings, Evans criticized Gibrat's Law [a rule defined by Robert Gibrat (1904-1980) stating that the size of a firm and its growth

rate are independent] by arguing that Gibrat's Law is not a reasonable assumption for smaller firms.

Heshmati [4] obtained data from Market Manager's database in Sweden. Both the public and private firms from 1993 to 1998 were selected to examine the relationship between size, age, and growth rate of firms. The author found that the degree of indebtedness positively affects sales growth.

Becchetti and Trovato [5] conducted an empirical analysis of the determinants of growth for a sample of Italian small and medium sized firms. Their results suggest that the hypothesis of independence of firm growth from the initial size and other factors (usually referred to as Gibrat's law in the literature) is accepted for large firms, but rejected for small and medium sized firms under financial constraints in a bank-oriented financial system in which access to external finance is difficult.

Elston [6] analyzed the relationship between firm size and growth for Neuer Market firms from its inception in 1997 until 2000. The author found that the cash flow has an impact on the firm growth, even when controlling for firm size and age.

Wagenvoort [7] used financial data from European manufacturing and construction firms and found that the sensitivity of company growth to cash flow rises as company size falls, which suggests that SMEs indeed encountered finance constraints that prevented them from fully exploiting their growth potentials during the sample period 1996-2000.

Hermelo and Vassolo [8] collected data from Argentina. Through correlation, they found that the growth of the firm was not significantly related with its size, which is consistent with Gibrat’s law.

Oliveira and Fortunato [9] collected data from the Portuguese service sector over the period from 1995 to 2001. Their results indicate that firm growth is mainly explained by firm size and age.

Morone and Testa [10] used a sample of 2,600 Italian SMEs and found that

turnover growth is positively associated with firm size.

Mateev and Anastasov [1] used a panel dataset of 560 fast growing small and medium enterprises from six transition economies and found that firm size when measured by firm total assets can explain to a large extent the growth in SMEs in these countries. They also found that firm specific characteristics such as leverage, current liquidity, future growth opportunities, internally generated funds, and factor productivity are found to be important factors in determining a firm's growth. In addition, their results suggest that age and ownership do not explain firm growth.

In summary, the literature review indicates that firm size, current liquidity measured by current ratio, leverage, capital productivity of firm, cash flow, firm age, and industry dummy affect firm growth. The present study investigates the relationship between a set of such variables and potential growth of a sample of Canadian manufacturing and service firms. Table 1 below summarizes the definitions and theoretical predicted signs.

Table 1: Proxy variables definition and predicted relationship

Proxy Variables	Definitions	Predicted sign
PG (Potential growth)	Firm's market value (market value of equity) divided by its book value of assets	+/
FS (Firm size)	Logarithm of total assets	+/
CR (Current ratio)	Current assets divided by current liabilities	+/
LEV (Leverage)	Total debt divided by total assets	+/
CPOF (Capital productivity of firm)	Operating revenues divided by tangible assets	+/
CF (Cash flow)	Pre-tax income plus depreciation divided by total assets	+/
Age (Firm age)	Number of years of existence	+/
IndDum	Industry Dummy	+/

3 Methods

3.1 Measurement

To remain consistent with previous studies, all measures (except potential growth of the firm) pertaining to factors that affect potential growth of the firm were taken from Mateev and Anastasov [1, p. 279]. Measures pertaining to potential growth were taken from Su and Vo [11, p. 63]. The measurement of the variables that were used in this study are as follows:

$PG_{i,t}$ (Potential growth) = Firm's market value (market value of equity) / Book value of assets

$FS_{i,t}$ (Firm size) = Logarithm of total assets

$CR_{i,t}$ (Current ratio) = Current assets / Current liabilities

$LEV_{i,t}$ (Leverage) = Total debt / Total assets

$CPOF_{i,t}$ (Capital productivity of firm) = Operating revenues / Tangible assets

$CF_{i,t}$ (Cash flow) = (Pre-tax income + depreciation) / Total assets

$Age_{i,t}$ (Firm age) = Number of years of existence (measured by the log of firms' age)

$IndDum_{i,t}$ = IndDum is used as industry code

$\mu_{i,t}$ = the error term

This study used panel data for the period 2008-2010 and an Ordinary Least Square (OLS) regression model to estimate the factors that affect potential growth of Canadian manufacturing and service firms. The model is as follows:

$$PG_{it} = \alpha + \beta_1 FS_{it} + \beta_2 CR_{it} + \beta_3 LEV_{it} + \beta_4 CPOF_{it} + \beta_5 CF_{it} + \beta_6 Age_{it} + \beta_7 IndDum_{it} + \mu_{it}$$

The study applied co-relational and non-experimental research design. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships.

3.2 Data Collection

A database was built from a selection of approximately 800 financial reports that were made public by publicly traded companies between January 1, 2008 and December 31, 2010. The selection was drawn from Mergent Online [http://www.mergentonline.com/compsearch.asp] to collect a random sample of manufacturing and service companies. Out of approximately 800 financial reports announced by public companies between January 1, 2008 and December 31, 2010, only 164 financial reports were usable. The cross sectional yearly data was used in this study. Thus, 164 financial reports resulted to 492 total observations. Since the random sampling method was used to select companies, the sample is considered a representative sample.

For the purpose of this research, certain industries were omitted due to the type of activity. For example, all companies from the financial services industry were omitted. In addition, some of the firms were not included in the data due to lack of information for the time periods being studied.

3.3 Descriptive Statistics

Table 2 shows descriptive statistics of the collected variables. The explanation on descriptive statistics is as follows:

i) Total observations: 164 x 3 = 492

ii) Manufacturing firms: 91; Service firms: 73

iii) PG (Potential Growth): 1.10 times

iv) FS (Firm size): 2.625 million

v) CR (Current ratio): 1.864 times

vi) LEV (Leverage): 39.60%

vii) CPOF (Capital productivity of firm): 1.041%

vii) CF (Cash flow): 12.60%

ix) Age (Firm age): 1.324 (measured by log of firms' age)

Table 2: Descriptive Statistics of Independent, Dependent, and Control Variables (2008-2010)

Descriptive Statistics (N = 492)				
	Min	Max	$\bar{x}$	σ
GP	-0.240	18.268	1.100	2.090
FS	0.754	4.436	2.625	0.723
CR	0.060	7.913	1.864	1.786
LEV	0.002	0.801	0.396	0.181
CPOF	0.005	5.580	1.041	0.900
CF	-0.341	0.451	0.126	0.095
AGE	0.477	2.045	1.324	0.337

N = Number of observations
Min = Minimum
Max = Maximum

$\bar{x}$ = Mean score
σ = Standard deviation

Table 3 provides the Pearson correlation for the variables used in the regression model. The findings are as follows:

Overall, potential growth is positively correlated with LEV and CF, and negatively correlated with FS. The potential growth is positively correlated with CF and negatively correlated with FS of the firm in the Canadian manufacturing industry. The potential growth is positively correlated with CR, LEV, and CF in the Canadian services industry (see Table 3).

Table 3: Pearson Bivariate Correlation Analysis

Entire Sample (N = 492)								
	GP	FS	CR	LEV	CPOA	CF	AGE	IndDum
GP	1	-0.153*	0.089	0.247**	0.063	0.309**	-0.093	0.135
FS		1	-0.293**	0.316**	-0.064	-0.074	0.022	0.047
CR			1	-0.553**	-0.151	0.058	0.076	-0.576**
LEV				1	0.264**	-0.031	0.144	0.273**
CPOA					1	0.120	0.143	0.123
CF						1	-0.083	-0.001
AGE							1	0.036
IndDum								1

Manufacturing Industry (N = 273)							
	GP	FS	CR	LEV	CPOA	CF	AGE
GP	1	-0.224*	0.129	0.086	-0.003	0.380**	-0.099
FS		1	-0.415**	0.282**	-0.107	-0.066	-0.185
CR			1	-0.618**	-0.077	0.069	0.192
LEV				1	0.248*	-0.067	0.157
CPOA					1	0.093	0.148
CF						1	-0.074
AGE							1

Service Industry (N = 219)							
	GP	FS	CR	LEV	CPOA	CF	AGE
GP	1	-0.144	0.481**	0.325**	0.062	0.323**	-0.111
FS		1	-0.189	0.349**	-0.048	-0.088	0.239*
CR			1	-0.245*	-0.022	0.094	-0.068
LEV				1	0.198	0.021	0.117
CPOA					1	0.163	0.129
CF						1	-0.099
AGE							1

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

4 Regression Analysis

The regression analysis section presents empirical findings on the relations of firm size (FS), current ratio (CR), leverage (LEV), capital productivity of the firm (CPOF), cash flow (CF), age (AGE), and industry dummy (IndDum) with potential growth (PG) of the firm. The Ordinary Least Square (OLS) model with cross section weight of seven sectors (consumer products, services, utilities, health care, information technology and communication, industrials, materials) from manufacturing and services industries was used to perform data analysis. The results are as follows:

Overall, positive relationships between i) CR and PG, ii) LEV and PG, iii) CF and PG, iv) IndDum and PG were found. Negative relationships between i) FS and PG and ii) AGE and PG were found. No significant relationships between CPOF and PG were found (see Table 4).

In the Canadian manufacturing industry, positive relationships between i) CR and PG, ii) LEV and PG, and iii) CF and PG were found. Negative relationships between i) FS and PG and ii) AGE and PG were found. No significant relationships between CPOF and PG were found (see Table 4).

In the Canadian service industry, positive relationships between i) CR and PG, ii) LEV and PG, and iii) CF and PG were found. A negative relationship between FS and PG was found. No significant relationships between i) CPOF and PG and ii) AGE and PG were found (see Table 4).

Table 4: Regression Estimates on Factors Influencing Potential Growth of Canadian Firms [a, b, c]

Entire Sample (N = 492)

[R^2 = 0.346; SEE = 1.728; F = 11.925; ANOVA's Test Sig. = 0.000]

Regression Equation (A): PG = 0.055 – 0.499 FS + 0.587 CR + 6.346 LEV – 0.141 CPOF + 6.047 CF – 1.152 AGE + 1.241 IndDum

	Unstandardized Coefficients		Standardized Coefficients [c]			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	0.055	0.892		0.061	0.951		
FS	-0.499	0.203	-0.173	-2.455	0.015	0.838	1.194
CR	0.587	0.112	0.502	5.243	0.000	0.452	2.211
LEV	6.346	0.957	0.550	6.634	0.000	0.602	1.660
CPOF	-0.141	0.160	-0.061	-0.881	0.380	0.876	1.141
CF	6.047	1.434	0.276	4.216	0.000	0.965	1.037
AGE	-1.152	0.419	-0.186	-2.751	0.007	0.908	1.101
IndDum	1.241	0.337	0.296	3.682	0.000	0.641	1.560

Manufacturing Industry (N = 273)

[R^2 = 0.294; SEE = 1.124; F = 5.830; ANOVA's Test Sig. = 0.000]

Regression Equation (B): PG = 2.007 – 0.485 FS + 0.211 CR + 3.130 LEV – 0.176 CPOF + 4.563 CF – 0.859 AGE

	Unstandardized Coefficients		Standardized Coefficients [c]			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	2.007	0.865		2.320	0.023		
FS	-0.485	0.200	-0.251	-2.429	0.017	0.789	1.268
CR	0.211	0.091	0.302	2.320	0.023	0.496	2.017
LEV	3.130	0.932	0.433	3.359	0.001	0.506	1.975
CPOF	-0.176	0.149	-0.115	-1.181	0.241	0.888	1.126
CF	4.563	1.162	0.365	3.928	0.000	0.972	1.028
AGE	-0.859	0.384	-0.228	-2.239	0.028	0.812	1.231

Service Industry (N = 219)

[R^2 = 0.552; SEE = 1.914; F = 13.951; ANOVA's Test Sig. = 0.000]

Regression Equation (C): PG = -1.368 – 0.694 FS + 1.895 CR + 8.869 LEV – 0.226 CPOF + 7.986 CF – 0.456 AGE

	Unstandardized Coefficients		Standardized Coefficients [c]			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	-1.368	1.282		-1.068	0.289		
FS	-0.694	0.315	-0.199	-2.200	0.031	0.808	1.238
CR	1.895	0.292	0.549	6.479	0.000	0.920	1.087
LEV	8.869	1.476	0.545	6.010	0.000	0.800	1.249
CPOF	-0.226	0.251	-0.077	-0.900	0.371	0.902	1.109
CF	7.986	2.671	0.249	2.990	0.004	0.948	1.055
AGE	-0.456	0.701	-0.055	-0.651	0.518	0.913	1.096

[a] Dependent Variable: PG

[b] Independent Variables: FS, CR, LEV, CPOF, CF, AGE, and IndDum

[c] Linear Regression through the Origin

SEE = Standard Error of the Estimate

Also note that:

- A test for multicollinearity was performed. All the variance inflation factor (VIF) coefficients are less than 2 and tolerance coefficients are greater than 0.45.
- 34.60% ($R^2 = 0.346$) of the variance in the degree of PG can be explained by the degree of IndDum, CF, FS, AGE, CPOF, LEV, and CR in Canada.
- 29.40% (R2 = 0.294) of the variance in the degree of PG can be explained by the degree of AGE, CF, LEV, CPOF, FS, and CR in the Canadian manufacturing industry.
- 55.20% (R2 = 0.552) of the variance in the degree of PG can be explained by the degree of AGE, CR, CPOF, CF, FS, and LEV in the Canadian service industry.
- The analysis of variance (ANOVA) tests are also significant at 0.000.

5 Discussion, Conclusion, Implications, and Future Research

The main purpose of this study was to find the factors that influence potential growth of Canadian firms. This was achieved by collecting data from the Canadian manufacturing and service industries. Findings show that the factors that affect growth potential are different in the manufacturing and service industries. Overall, regression analysis results show that potential growth (dependent variable) is positively related to i) current liquidity measured by current ratio, leverage, cash flow, and industry, and ii) negatively related to firm size and firm age.

Regression analysis results related to the Canadian manufacturing industry show that potential growth is positively related to i) current liquidity measured by current ratio, leverage, and cash flow, and ii) negatively related to firm size and firm age.

In addition, findings from the Canadian service industry show that potential growth is positively related to i) current liquidity measured by current ratio, leverage, and cash flow, and ii) negatively related to firm size.

Table 7 describes previous authors' findings. The findings of this study related to:

i) Firm size are consistent with the findings of Becchetti and Trovato [5], and Hermelo and [8] but contradicts with the findings of Oliveira and Fortunato [9], Morone and Testa [10], and Mateev and Anastasov [1].

ii) Current liquidity measured by current ratio support the findings of Mateev and Anastasov [1].

iii) Leverage contradict with the findings of Heshmati [4] and Mateev and Anastasov [1]. This may be due to different corporate tax brackets in different countries because interest payment on debt is tax deductable.

iv) Cash flow are consistent with the findings of Elston [6], Wagenvoort [7], and Mateev and Anastasov [1].

v) Age is consistent with the findings of Evans [3] and Mateev and Anastasov [1] [see Table 5].

Table 5: Previous Authors' Findings Related to Factors that Affect Firm Growth

Author	**Findings**	**Country/Area**
Evans [3]	►Found that firm growth, the variability of firm growth, and the likelihood that a firm will fail decrease with firm age	USA
Heshmati [4]	►Found that the degree of indebtedness positively affects sales growth	Sweden
Becchetti and Trovato	►Their results suggest that the hypothesis of independence of firm growth from the initial size and other factors (usually referred to as	Italy

[5]	Gibrat's law in the literature) is accepted for large firms	
Elston [6]	►Found that the cash flows impact the firm growth	Germany
Wagenvoort [7]	►Found that the sensitivity of company growth to cash flow rises as company size falls	Europe
Hermelo and Vassolo [8]	►Found that the growth of the firm was not significantly related with its size	Argentina
Oliveira and Fortunato [9]	►Found that firm growth is mainly explained by firm size and age	Portugal
Morone and Testa [10]	►Found that turnover growth is positively associated with firm size	Italy
Mateev and Anastasov [1]	►Found that firm size when measured by firm total assets can explain to a large extent the growth ►They also found that firm specific characteristics such as leverage, current liquidity, future growth opportunities, internally generated funds, and factor productivity are important factors that determine a firm’s growth ►Their results suggest that age and ownership do not explain firm growth	Central and Eastern Europe

5.1 Conclusion

In conclusion, potential growth of Canadian firms is influenced by firm size, current liquidity, leverage, cash flow, age, and industry. It is also important to note that firm size and age of Canadian firms do not guarantee the potential growth. However, positive operating cash flow and current liquidity have positive impact on the potential growth of the Canadian firms.

5.2 Limitations

This study is limited to a sample of Canadian manufacturing and service industry firms. The findings of this study could only be generalized to manufacturing and service firms similar to those that were included in this research. In addition, the sample size is small.

5.3 Future Research

Future research should investigate generalization of the findings beyond the Canadian manufacturing and service sector. Other variables such as labor productivity and number of employees can also be included in the future research.

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