

# **Factors that Influence Corporate Liquidity Holdings in Canada**

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## **Abstract**

The purpose of this study is to find the factors that influence corporate liquidity holdings in Canada. This study also seeks to extend the studies of Isshaq and Bokpin [1] and Bruinshoofd and Kool [2] related to corporate liquidity management. 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 corporate liquidity holding is influenced by liquidity ratio, firm size, net working capital, near liquidity, short-term debt, investment, internationalization of firm, and industry. This study contributes to the literature on the factors that affect corporate liquidity holdings. The findings may be useful for financial managers, investors, and financial management consultants.

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**Keywords:** Corporate liquidity holdings, Firm size, Return on Assets, Corporate liquidity demand.

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## 1 Introduction

This study examines corporate liquidity management of companies listed on the Toronto Stock Exchange (TSX) with the aim of ascertaining the factors that influence corporate liquidity holdings. Corporate liquidity, in the context of this study, refers to how quickly and cheaply a corporation's assets can be converted into cash. Corporations hold a certain amount of liquid balance for various motives such as precautionary, speculative and transactional [1]. Precautionary motive refers to cash held for safety reasons; that is, cash balance is held in reserve for unforeseen fluctuations. From the speculation motive point of view, corporations hold cash balance to take advantage of any bargain purchases that may arise. Transaction motive refers to cash which is held for everyday transactions to pay for goods or services; that is, cash is held for day-to-day operations to make routine payments [3].

Bruinshoofd and Kool [2] describe that the level of liquid balance held by a corporation is influenced by factors such as transaction costs, opportunity costs, and informational asymmetries. Asymmetric information issues between firms and financial markets rise because insiders (e.g., executives and managers) have better information than outsiders (e.g., investors). As a result of information asymmetric issues, the costs of obtaining external finance tend to increase, which in turn, creates precautionary demand for corporate liquidity [4]. Thus, informational asymmetries between firms and capital markets are an important precautionary motive for corporate liquidity demands.

Myers and Rajan [5] argue that the more liquid the firm's assets, the greater the value in a short-notice liquidation. They also indicate that firms with excessively liquid assets are in the best position to finance illiquid projects by raising capital on the capital markets. However, the communication of financial management practices of the firm to the market is influenced by the issues of information asymmetries [5, p. 189].

Greater asset liquidity gives owners control over managers; but it also gives

managers the power to transform assets in their own favor [5]. The reason for this paradox is that managers have implicit rights in the liquidity of assets, and altering asset liquidity would affect these implicit rights. However, financiers' control over managers is enhanced by greater asset liquidity. This is in essence a conflict of interest between owners and managers [1, p. 190].

Firm level liquidity management behavior is not absolved by macroeconomic liquidity management trends. Corporations do not actively manage liquidity holdings. That is to say, corporations adopt largely passive liquidity management strategies. The reason has been that low rates of adjustments have been found, at the aggregate level, with respect to changes in corporate liquidity holdings in response to changes in the stock of money in studies based on stock-adjustment models [1, p. 190]. On the other hand, Bruinshoofd and Kool [2] provide contrary evidence to these results from their paper, which is based on firm level data. Bruinshoofd and Kool [2] examined the concept of a targeted convergence in corporate liquidity holdings and found that changes in corporate liquidity holdings are driven by short-run shocks as well as the urge to converge toward targeted liquidity levels.

A variety of variables that might potentially be associated or 'responsible' for corporate liquidity management can be found in current literature. In this study, the selection of explanatory variables is based on alternative theories related to corporate liquidity management 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 thirteen variables: liquidity, liquidity ratio, firm size, net working capital, near liquidity, total debt, short-term debt, investment, return on assets, earnings uncertainty, interest rate, internationalization of the firm, and industry dummy. The variables, together with theoretical predictions as to the direction of their influence on corporate liquidity holdings are summarized in Table 1.

Isshaq and Bokpin [1] have tested variables by collecting data from Ghana Stock

Exchange (GSE) Factbook. Bruinshoofd and Kool [2] have tested variables by collecting data from Statistics Netherlands' data on the Finances of Large Firms (SFGO). 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.

This study contributes to the literature on corporate liquidity holdings 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, this study validates some of the findings of previous authors by testing the relationship between liquidity, liquidity ratio, firm size, net working capital, near liquidity, total debt, short-term debt, investment, return on assets, earnings uncertainty, interest rate, internationalization of the firm, and industry dummy of the sample firms. Thus, this study adds substance to the existing theory developed by previous authors.

## **2 Literature Review**

The theory of motives for the liquidity demand by investors was set forth by Keynes [6] in his seminal work related to monetary policy. Since that time, motives such as precautionary, speculative, transactional, etc., have been applied at the firm level to determine the factors that influence corporate liquidity demand. The transaction cost, opportunity cost, and information asymmetries are also determinants of corporate liquidity demand [2]. The firm's liquidity levels are adjusted as management learns about the firm's need for liquidity, and as business cycle and other economic events unfold. In addition, short-term financial obligations are good predictors of demand for liquidity [1]. However, the optimal amount of liquidity is determined by a tradeoff between the low return earned on liquid assets and the benefit of minimizing the need for costly external financing [7].

When opportunity costs are zero, the optimal liquidity holdings are unbounded. But, when opportunity costs are positive, firms economize on liquidity holdings. Transaction and opportunity costs together then determine a positive and finite optimal amount of corporate liquidity holdings. In applied work, often used variables to capture the transaction motive are sales, in an inventory approach, or assets, in a Keynesian or portfolio framework. A benchmark interest rate is generally assumed to account for the opportunity cost of holding liquid assets. In general, all relevant substitutes for liquidity such as net working capital and minority holdings in other firms, for example, may need to be taken into account [2, p. 198].

Precautionary motives, for example future investment opportunities, cause demand for liquidity holdings. Firms that have a more volatile cash flow history desire to have higher liquidity in order to meet uncertainties [2]. In addition, firms that carry more short-term debt try to have higher levels of liquid assets because of the uncertainty of refinancing for loans [4]. However, the higher level of liquid balance may exacerbate the information asymmetry problem and thus lead to increased cost of external finance [5]. To minimize the asymmetry problem, Myers and Rajan [5] describe that through the monitoring channel, increased leverage could lead to reduced levels of liquidity.

The level of leverage in the firm plays a role in determining the level of liquidity. With higher leverage, a firm faces a higher degree of uncertainty regarding future access to debt financing and desires higher precautionary liquidity holdings. Factors related to a certain sector may also determine the level of liquidity. For example, investment in the information and communication technologies (ICT) sectors may be more sensitive to asymmetric information than investment in the manufacturing sector [2].

The agency problems between agent (management) and principal (owners of a firm) affect liquidity holdings. Informational asymmetries cause agency problems. For example, managers may value corporate liquidity more than owners for a

number of reasons. First, management may be overly concerned with liquidation risk, whereas shareholders can more easily diversify and reduce the impact of a single bankruptcy on their portfolio return. Shareholders, therefore, likely put more emphasis on profits and hence prefer lower levels of precautionary liquidity. Second, managers may be empire builders rather than profit maximizers. Thus, managers value projects that add to the size of the firm without necessarily being profitable. As the market does not value such projects, empire builders prefer a precautionary amount of liquidity that allows them to exploit empire building investment opportunities. Third, management may also value liquidity more than shareholders do simply because it can be freely spent on perquisites [2, p. 199].

Myers and Majluf [8] argue that because of information asymmetry-induced financing constraints, firms should stock up on liquid assets to finance future investment opportunities with internal funds. Since there are no offsetting costs to liquid assets in their model, the optimal amount of liquidity is a corner solution. In contrast, Jensen [9] argues that firms should be forced to pay out funds in excess of the amount necessary to finance all positive net present value (NPV) investments to minimize the agency cost of free cash flow. In the absence of benefit from liquid assets, Jensen's analysis implies that the firm would optimally carry no liquid assets. However, Kim *et al.*'s [7, p. 337] analysis included both benefits and costs of holding liquid assets to develop predictions about the determinants of corporate liquidity. Kim *et al.*'s model predicts that the optimal investment in liquidity is increasing in cost of external financing, the variance of future cash flows, and the return on future investment opportunities, while it is decreasing in the return differential between the firm's physical assets and liquid assets.

Baumol's cash management models [10] place emphasis on the inventory management models which bring working capital variables into focus as proxies for liquidity. Dealing with working capital items (current assets and liabilities) relates to precautionary demand for money. Precautionary demand for money is a

demand for money to meet expected payments that are uncertain in amount in the future [1, p. 191].

Opler *et al.* [11] constructed a sample of US firms for empirical tests by merging the Compustat annual industrial and full coverage files with the research industrial file for the 1971-1994 period. They found that firms with strong growth opportunities and riskier cash flows hold relatively high ratios of cash to total assets. Firms that have the greatest access to the capital markets (e.g., large firms and those with credit ratings) tend to hold lower ratios of cash to total assets.

To test the corporate liquidity holdings framework, Bruinshoofd and Kool [2] derived data from Statistics Netherlands' data on the Finances of Large Firms (SFGO) covering the period 1977-1997. Authors constructed one balanced panel that ran from 1986 to 1997 and contained 453 firms, of which 197 were manufacturing firms and 182 were services firms. They used descriptive and inferential statistics to conduct data analysis. Through regression analysis, Bruinshoofd and Kool [2, p. 195] confirmed the existence of long-run liquidity targets at the firm level. They also found that changes in liquidity holdings are driven by short-run shocks as well as the urge to converge toward targeted liquidity levels. The rate of target convergence was higher when authors included more firm-specific information in the target. This result supports the idea that increased precision in defining liquidity targets is associated with a faster observed rate of target convergence. It also suggests that the slow speeds of adjustment obtained in many macro studies on money demand are artifacts of aggregation bias. Finally, authors found a positive and statistically significant relationship between net working capital and firms' liquidity holding.

Afza and Adnan [12] collected a sample of 205 public limited companies listed at Karachi Stock Exchange (KSE) over a period of eight years (1998-2005). Through regression analysis authors found that firm size, cash flow, cash flow uncertainty, net working capital, and leverage significantly affect the cash holdings of non-financial firms in Pakistan.

Isshaq and Bokpin [1, p. 189] collected annual data from the Ghana Stock Exchange (GSE) Factbook for the years 1991-2007. Authors used regression analysis to test the relationships between liquidity, size, net working capital, near liquidity, total debt, short-term debt, investment, return on assets, risk, and interest rate. They found that the liquidity is statistically significantly influenced by a target liquidity level, size of the firm, return on assets, and net working capital. In addition, authors found i) a positive relationship between investment and corporate liquidity demand, and ii) a negative relationship between near liquidity and liquidity holding.

In summary, the literature review indicates that liquidity ratio, firm size, net working capital, near liquidity, total debt, short-term debt, investment, return on assets, earnings uncertainty, interest rate, and industry dummy determine demand for liquidity holdings in corporations. The present study investigates the relationship between a set of such variables and the working capital requirements 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
LIQDRAT (Liquidity ratio)	Cash and marketable securities over net assets	+/
LIQD (Liquidity)	Logarithm of liquidity (cash and marketable securities)	+/
SIZE (Firm size)	Logarithm of net assets	+/
NETWOKAP (Net working capital)	Ratio of short-term claims less short-term debt to net assets	+/
NLIQD (Near liquidity)	Ratio short-term claims to net assets	+/
TOTDEBT (Total debt)	Total debt over total assets	+/
SHOTDEBT (Short-term debt)	Ratio of short-term debt to total debt	+/



INVST (Investment)	Changes in tangible fixed assets over net assets	+/-
ROA (Return on assets)	Earnings after depreciation, interest, taxes, but before dividends to net assets	+/-
RISK (Earnings uncertainty)	Firm specific three-year rolling standard deviation of ROA	+/-
INTEREST (Average interest rate)	Interest expense as a fraction of total debt	+/-
MULTI	Internationalization of firm	+/-
IndDum	Industry Dummy	+/-

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### 3 Methods

#### 3.1 Measurement

To remain consistent with previous studies, all measures (except internationalization of the firm) pertaining to corporate liquidity management were taken from Isshaq & Bokpin [1, p. 192]. They used cross sectional yearly data and measured the variables as follows:

$LIQD_{i,t}$  = Logarithm of liquidity (cash and marketable securities)

$LIQDRAT_{i,t}$  = Cash and marketable securities divided by net assets

$SIZE_{i,t}$  = Logarithm of net assets

$NETWOKAP_{i,t}$  = Ratio of short-term claims (accounts receivables) minus short-term debt (accounts payables) divided by net assets

$NLIQD_{i,t}$  = Short-term claims (accounts receivables) divided by net assets

$TOTDEBT_{i,t}$  = Total debt divided by total assets

$SHOTDEBT_{i,t}$  = Short-term debt divided by total debt

$INVST_{i,t}$  = Changes in tangible fixed assets divided by net assets

$ROA_{i,t}$  = Earnings after depreciation, interest, taxes, but before dividends divided by net assets

$RISK_{i,t}$  = Firm specific three-year rolling standard deviation of ROA

$INTERST_{i,t}$  = Average interest rate divided by total debt

$MULTI_{i,t}$  = Internationalization of firm (Firm is assigned value 1 if it is a multinational corporation and zero otherwise)

$IndDum_{i,t}$  = 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 influence corporate liquidity holdings. The model is as follows:

$$LIQD_{it} = \alpha + \beta_1 LIQDRAT_{it} + \beta_2 SIZE_{it} + \beta_3 NETWOKAP_{it} + \beta_4 NLIQD_{it} + \beta_5 TOTDEBT_{it} + \beta_6 SHOTDEBT_{it} + \beta_7 INVST_{it} + \beta_8 ROA_{it} + \beta_9 RISK_{it} + \beta_{10} INTERST_{it} + \beta_{11} MULTI_{it} + \beta_{12} IndDum_i + \mu_{it}$$

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 700 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 700 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. All variables were calculated using balance sheet (book) values. The book value was used because the companies did not provide any market value related to the variables that were used in this study. The explanatory variables are all firm specific quantities and there is no way to measure these variables in terms of their 'market value.' Furthermore, when market values are considered in such studies there is always a rather legitimate question of the date for which the 'market values' refer to. This is rather arbitrary [13, p. 5]. Hence, 'book values' as of the date of the financial reports were used in this study.

The explanation on descriptive statistics is as follows:

- i) Total observations:  $164 \times 3 = 492$
- ii) Manufacturing firms: 91; Service firms: 73; Multinational firms: 115; Local firms: 49
- iii) LIQD (Liquidity): 1.471
- iv) LIQDRAT(Liquidity ratio): 0.275
- v) SIZE (Firm size): 2.420 million
- vi) NETWOKAP (Net working capital): 16.30%
- vii) NLIQD (Near liquidity): 37.10%
- viii) TOTDEBT (Total debt): 39.80%
- ix) SHOTDEBT (Short-term debt): 40%
- x) INVST (Investment): 20.30%
- xi) ROA (Return on assets): 10.30%
- xii) RISK (Earnings uncertainty): 11.60%
- xiii) INTERST (Average interest rate): 8.20%

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

Descriptive Statistics (N = 492)				
	Min	Max	$\bar{x}$	$\sigma$
LIQD	-1.602	3.121	1.470	0.861
LIQDRAT	0.000	2.183	0.275	0.344
SIZE	0.703	4.169	2.420	0.697
NETWOKAP	-0.820	1.973	0.163	0.405
NLIQD	-1.257	3.227	0.371	0.486
TOTDEBT	0.051	1.306	0.398	0.189
SHOTDEBT	0.007	2.085	0.400	0.381
INVST	-0.684	1.591	0.203	0.364
ROA	-0.833	0.727	0.103	0.153
RISK	0.004	1.538	0.116	0.174
INTERST	0.000	0.740	0.082	0.099

N = Number of observations

Min = Minimum

Max = Maximum

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$\bar{x}$  = Mean score

$\sigma$  = Standard deviation

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

Overall, corporate liquidity holdings is positively correlated with LIQDRAT, SIZE, and the internationalization of the firm. Corporate liquidity holdings is also positively correlated with LIQDRAT, SIZE, and the internationalization of the firm in the Canadian manufacturing and service industries (see Table 3).

Table 3: Pearson Bivariate Correlation Analysis.

Entire Sample (N = 492)													
	LIQD	LIQDRAT	SIZE	NETWOKAP	NLIQD	TOTDEBT	SHOTDEBT	INVST	ROA	RISK	INTERST	MULTI	IndDum
LIQD	1	0.312**	0.561**	-0.025	0.037	0.000	0.030	0.093	0.078	0.036	0.003	0.211**	0.128
LIQDRAT		1	-0.360**	0.274**	0.263**	-0.013	0.491**	0.100	0.144	0.243**	-0.133	0.148	0.275**
SIZE			1	-0.146	-0.122	0.134	-0.222**	0.046	-0.006	-0.125	0.114	-0.068	0.004
NETWOKAP				1	0.898**	0.194 <sup>†</sup>	0.516**	0.1040	0.318**	-0.108	-0.084	0.070	0.462**
NLIQD					1	0.309**	0.625**	0.1270	0.260**	-0.116	-0.132	0.076	0.470**
TOTDEBT						1	0.428**	0.092	-0.007	0.060	-0.041	-0.016	0.233**
SHOTDEBT							1	-0.002	0.163 <sup>†</sup>	0.011	-0.176 <sup>†</sup>	0.068	0.675**
INVST								1	-0.019	0.105	-0.029	0.014	0.016
ROA									1	-0.312**	-0.099	-0.099	0.136
RISK										1	0.011	0.078	0.019
INTERST											1	-0.041	-0.024
MULTI												1	-0.220**
IndDum													1
Manufacturing Industry (N = 273)													
	LIQD	LIQDRAT	SIZE	NETWOKAP	NLIQD	TOTDEBT	SHOTDEBT	INVST	ROA	RISK	INTERST	MULTI	
LIQD	1	0.432**	0.530**	-0.009	0.064	-0.172	-0.196	0.195	0.085	-0.012	-0.052	0.260 <sup>†</sup>	
LIQDRAT		1	-0.320**	0.114	0.059	-0.284**	-0.149	0.225 <sup>†</sup>	-0.096	0.200	0.100	0.255 <sup>†</sup>	
SIZE			1	-0.190	-0.184	0.120	-0.198	0.068	0.101	-0.181	-0.114	-0.009	
NETWOKAP				1	0.423**	-0.273**	-0.279**	-0.016	0.304**	-0.078	0.012	0.118	
NLIQD					1	0.026	0.135	0.063	0.025	-0.023	-0.086	0.006	
TOTDEBT						1	0.712**	-0.024	-0.179	0.204	-0.051	-0.016	
SHOTDEBT							1	-0.211 <sup>†</sup>	-0.101	-0.014	-0.106	0.095	
INVST								1	-0.143	0.204	-0.042	-0.069	
ROA									1	-0.354**	-0.067	-0.117	
RISK										1	0.174	0.083	
INTERST											1	0.060	
MULTI												1	
Service Industry (N = 219)													
	LIQD	LIQDRAT	SIZE	NETWOKAP	NLIQD	TOTDEBT	SHOTDEBT	INVST	ROA	RISK	INTERST	MULTI	
LIQD	1	0.258 <sup>†</sup>	0.596**	-0.137	-0.068	0.155	-0.048	-0.028	0.035	0.060	0.085	0.234 <sup>†</sup>	
LIQDRAT		1	-0.425**	0.181	0.177	0.017	0.519**	0.051	0.231 <sup>†</sup>	0.260 <sup>†</sup>	-0.302**	0.226	
SIZE			1	-0.185	-0.143	0.159	-0.379**	0.023	-0.114	-0.104	0.395**	-0.118	
NETWOKAP				1	0.935**	0.275 <sup>†</sup>	0.367**	0.181	0.357**	-0.143	-0.147	0.249 <sup>†</sup>	
NLIQD					1	0.408**	0.524**	0.195	0.356**	-0.171	-0.199	0.307**	
TOTDEBT						1	0.347**	0.273 <sup>†</sup>	0.166	-0.039	-0.009	0.104	
SHOTDEBT							1	0.054	0.191	0.000	-0.336**	0.401**	
INVST								1	0.138	0.054	-0.008	0.112	
ROA									1	-0.327**	-0.142	-0.025	

RISK	1	-0.104	0.089
INTERST		1	-0.183
MULTI			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 liquidity ratio (LIQDRAT), firm size (SIZE), net working capital (NETWOKAP), near liquidity (NLIQD), total debt (TOTDEBT), short-term debt (SHOTDEBT), investment (INVST), return on assets (ROA) earnings uncertainty (RISK), average interest rate (INTERST), internationalization of the firm (MULTI), and industry dummy (IndDum) with corporate liquidity holdings (LIQD). 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) LIQDRAT and LIQD, ii) SIZE and LIQD iii) NLIQD and LIQD, iv) MULTI and LIQD, and v) IndDum and LIQD were found. Negative relationships between i) NETWOKAP and LIQD and ii) SHOTDEBT and LIQD were found. No significant relationships between i) TOTDEBT and LIQD, ii) INVST and LIQD, iii) ROA and LIQD, iv) RISK and LIQD, and v) INTERST and LIQD were found (see Table 4).

In the Canadian manufacturing industry, positive relationships between i) LIQDRAT and LIQD, ii) SIZE and LIQD and iii) MULTI and LIQD were found. No significant relationships between i) NETWOKAP and LIQD, ii) NLIQD and LIQD, iii) TOTDEBT and LIQD, iv) SHOTDEBT and LIQD, v) INVST and LIQD, vi) ROA and LIQD, vii) RISK and LIQD, and viii) INTERST and LIQD were found (see Table 4).

In the Canadian service industry, positive relationships between i) LIQDRAT and LIQD, ii) SIZE and LIQD, iii) and iii) MULTI and LIQD were found. Negative relationships between i) NETWOKAP and LIQD, ii) SHOTDEBT and LIQD, and iii) INVST and LIQD were found.

No significant relationships between i) NLIQD and LIQD, ii) TOTDEBT and LIQD, iii) ROA and LIQD, iv) RISK and LIQD, and v) INTERST and LIQD were found (see Table 4).

Table 4: OLS Regression Estimates on Factors Influencing Working Capital Requirements<sup>a, b, c</sup>

Entire Sample (N = 492)							
[R <sup>2</sup> = 0.694; SEE = 0.492; F = 28.32; ANOVA's Test Sig. = 0.000]							
Regression Equation (A): LIQD = -1.385 + 1.614 LIQDRAT + 0.889 SIZE - 1.030 NETWOKAP + 0.852 NLIQD - 0.223 TOTDEBT - 0.790 SHOTDEBT - 0.024 INVST + 0.340 ROA - 0.114 RISK -0.098 INTERST + 0.456 MULTI + 0.417 Industry							
	Unstandardized		Standardized			Collinearity Statistics	
	Coefficients	Std. Error	Coefficients <sup>e</sup>	t	Sig.	Tolerance	VIF
(Constant)	-1.385	0.192		-7.229	0.000		
LIQDRAT	1.614	0.151	0.649	10.721	0.000	0.558	1.793
SIZE	0.889	0.063	0.724	14.019	0.000	0.765	1.307
NETWOKAP	-1.030	0.291	-0.487	-3.539	0.001	0.108	9.286
NLIQD	0.852	0.289	0.468	2.948	0.004	0.081	12.350
TOTDEBT	-0.223	0.298	-0.046	-0.746	0.457	0.543	1.841
SHOTDEBT	-0.790	0.219	-0.352	-3.607	0.000	0.214	4.675
INVST	-0.024	0.110	-0.010	-0.222	0.825	0.930	1.076
ROA	0.340	0.289	0.061	1.177	0.241	0.761	1.314
RISK	-0.114	0.256	-0.023	-0.447	0.655	0.752	1.329
INTERST	-0.098	0.404	-0.011	-0.242	0.809	0.929	1.076
MULTI	0.456	0.093	0.245	4.892	0.000	0.813	1.230
IndDum	0.417	0.126	0.243	3.306	0.001	0.378	2.646

**Manufacturing Industry (N = 273)**[R<sup>2</sup> = 0.708; SEE = 0.463; F = 17.21; ANOVA's Test Sig. = 0.000]

Regression Equation (B): LIQD = -1.779 + 2.725 LIQDRAT + 0.992 SIZE - 0.339  
 NETWOKAP + 0.526 NLIQD - 0.736 TOTDEBT + 0.762 SHOTDEBT + 0.058  
 INVST + 0.526 ROA + 0.488 RISK - 0.148 INTERST + 0.226 MULTI

	Unstandardized Coefficients		Standardized Coefficients <sup>c</sup>		t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta				Tolerance	VIF
(Constant)	-1.779	0.301			-5.911	0.000		
LIQDRAT	2.725	0.335	0.608		8.122	0.000	0.668	1.497
SIZE	0.992	0.098	0.774		10.161	0.000	0.645	1.551
NETWOKAP	-0.339	0.646	-0.053		-0.524	0.602	0.370	2.705
NLIQD	0.526	0.607	0.117		0.866	0.389	0.205	4.882
TOTDEBT	-0.736	0.467	-0.158		-1.576	0.119	0.374	2.677
SHOTDEBT	0.762	1.005	0.099		0.758	0.451	0.220	4.553
INVST	0.058	0.146	0.027		0.396	0.693	0.816	1.225
ROA	0.526	0.389	0.100		1.351	0.181	0.682	1.465
RISK	0.488	0.552	0.068		0.883	0.380	0.634	1.579
INTERST	-0.148	0.474	-0.020		-0.312	0.756	0.921	1.086
MULTI	0.226	0.134	0.116		1.692	0.095	0.799	1.251

**Service Industry (N = 219)**[R<sup>2</sup> = 0.780; SEE = 0.464; F = 19.67; ANOVA's Test Sig. = 0.000]

Regression Equation (C): LIQD = -1.181 + 1.388 LIQDRAT + 0.921 SIZE -  
 0.812 NETWOKAP + 0.587 NLIQD + 0.489 TOTDEBT - 0.696 SHOTDEBT -  
 0.297 INVST + 0.228 ROA - 0.195 RISK - 0.617 INTERST + 0.534 MULTI

	Unstandardized Coefficients		Standardized Coefficients <sup>c</sup>		t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta				Tolerance	VIF
(Constant)	-1.181	0.276			-4.271	0.000		
LIQDRAT	1.388	0.166	0.694		8.342	0.000	0.521	1.918



SIZE	0.921	0.089	0.789	10.342	0.000	0.620	1.613
NETWOKAP	-0.812	0.367	-0.465	-2.210	0.031	0.081	12.285
NLIQD	0.587	0.366	0.381	1.604	0.114	0.064	15.621
TOTDEBT	0.489	0.413	0.089	1.183	0.241	0.635	1.574
SHOTDEBT	-0.696	0.238	-0.307	-2.926	0.005	0.328	3.052
INVST	-0.297	0.165	-0.116	-1.804	0.076	0.878	1.138
ROA	0.228	0.434	0.038	0.526	0.601	0.683	1.463
RISK	-0.195	0.279	-0.049	-0.699	0.487	0.728	1.374
INTERST	-0.617	0.707	-0.060	-0.873	0.386	0.762	1.313
MULTI	0.534	0.125	0.291	4.272	0.000	0.779	1.284

<sup>a</sup> Dependent Variable: LIQD

<sup>b</sup> Independent Variables: LIQDRAT, SIZE, NETWOKAP, NLIQD, TOTDEBT, SHOTDEBT, INVST, ROA, RISK, INTERST, MULTI, and IndDum

<sup>c</sup> 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 16 and tolerance coefficients are greater than 0.064.
- 69.40% ( $R^2 = 0.694$ ) of the variance in the degree of LIQD can be explained by the degree of IndDum, SIZE, INVST, INTERST, ROA, MULTI, TOTDEBT, RISK, LIQDRAT, NETWOKAP, SHOTDEBT, NLIQD in Canada.
- 70.80% ( $R^2 = 0.708$ ) of the variance in the degree of LIQD can be explained by the degree of MULTI, SIZE, INVST, INTERST, TOTDEBT, NETWOKAP, ROA, RISK, LIQDRAT, SHOTDEBT, NLIQD in the Canadian manufacturing industry.
- 78.00% ( $R^2 = 0.780$ ) of the variance in the degree of LIQD can be explained by the degree of MULTI, ROA, SIZE, INVST, TOTDEBT, RISK, INTERST, NETWOKAP, LIQDRAT, SHOTDEBT, NLIQD 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 the corporate liquidity holdings in Canada. This was achieved by collecting data from the Canadian manufacturing and service industries. Findings show that the factors that influence corporate liquidity holdings are different in the manufacturing and service industries.

Overall, regression analysis results show that corporate liquidity holding (dependent variable) is positively related to i) liquidity ratio, firm size, near liquidity, internationalization of firm, and industry, and ii) negatively related to net working capital and short-term debt. Regression analysis results on the Canadian manufacturing industry show that corporate liquidity holding is positively related to liquidity ratio, firm size, and the internationalization of firm. In addition, findings from the Canadian service industry show that corporate liquidity holding is positively related to i) liquidity ratio, firm size, and internationalization of the firm, and ii) negatively related to net working capital, short-term debt, and investment.

The results support the findings of Afza and Adnan [12] in which they found that firm size, cash flow uncertainty, net working capital, and leverage significantly affect cash holdings. The findings of this paper lend some support to the findings of Isshaq and Bokpin [1] in which they found that corporate liquidity is influenced by target liquidity level, size of the firm, return on assets, and net working capital. In addition, authors found i) a positive relationship between investment and corporate liquidity demand, and ii) a negative relationship between near liquidity and liquidity holding. However, the results of this paper show that corporate liquidity holding is positively related to investment and negatively related to near liquidity in Canada. The differences may be due to the different working capital management policies of different companies operating in different countries. In addition, the findings of this paper contradict the findings of Bruinshoofd and

Kool [2] in which they found a positive relationship between net working capital and firms' liquidity holding.

The findings of this paper show positive relationships between target liquidity holdings and the Canadian firms' demand for liquidity; that is, the Canadian firms' desired level of liquidity influences how much liquid assets they hold at a point in time. Consistent with Isshaq and Bokpin [1, p. 193], it suggests that Canadian firms' liquidity levels are adjusted as management learns about the need for liquidity. Liquidity ratio which shows a positive relationship with corporate liquidity holding, measures the firm's ability to meet its short-term financial obligations. Thus, liquidity ratio is a good predictor of a firm's demand for liquidity.

Positive relationships between firm size and its liquidity holding indicates that the size of the firm is a good predictor of the corporate liquidity holdings. Isshaq and Bokpin [1] explain that firms operating with positive net working capital have great liquidity position and can turn themselves around in the shortest possible time. However, a negative relationship between net working capital and corporate liquidity position indicate that Canadian firms do not hold high levels of liquidity position. Near liquidity also exhibits a positive relationship with liquidity holding. Bruinshoofd and Kool [2] observed that firms with higher leverage would have an uncertain future and would thus keep higher liquid balances. Isshaq and Bokpin [1] found a negative but statistically insignificant relationship between leverage and liquidity holdings. The results of this paper show a negative relationship between leverage (short-term debt ratio) and the corporate liquidity holdings. Thus, debt structure portrays a negative relationship with liquidity holdings. Negative relationships between investment and liquidity holdings explains that investments reduce the liquidity position of the firm. The internationalization of the firm leads to higher levels of liquidity holdings because of the international cash inflows and outflows from time to time. The corporate liquidity holdings are different industry-to-industry.

## 5.1 Conclusion

In conclusion, corporate liquidity holding is influenced by liquidity ratio, firm size, net working capital, near liquidity, short-term debt, investment, internationalization of firm, and industry.

## 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.

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