

Optimal Corporate Debt Policy under Growth Opportunities: Evidence from Mongolia

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This paper investigates empirically the optimal debt structure policy in relation to growth opportunities under Myers's theoretical framework using hand-collected data sets of non-financial listed firms in Mongolia for the period from 2012 to 2018 controlling for the effects of variables including tangibility, firm size, liquidity and profitability. The empirical results regarding the debt structure of non-financial listed firms in Mongolia are consistent with Myers's theoretical framework and the trade-off theory where high growth firms prefer to borrow less. The contribution of this study is to provide empirical evidence on optimal debt structure of growth firms in Mongolia, a developing country with comparably smaller capital markets, to find out whether results differ to that of previous studies which were conducted on countries with developing as well as developed capital markets.

Keywords: Capital Structure, Corporate Finance, Debt Policy, Mongolia

1. Introduction

1.1 Problem Statement and Purpose of Study

Capital structure choice is one of the most important decisions faced by firms' management as stated by Degryse, Goeij, & Kappert (2012). As a result, various studies were undertaken since the seminal paper written by Modigliani & Miller (1958). There are two widely used capital structure theories: trade-off theory and pecking order theory. The trade-off theory implies that a company's capital structure decisions involve a trade-off between the tax benefits of debt financing and the costs of financial distress. According to Myers (1977), factors such as capital intensity, operating leverage, and profitability may influence the optimal level of corporate borrowing. However, his main finding was the agency cost associated with the use of debt to finance growth. Results of empirical analysis undertaken by Kim & Sorensen (1986) also states that high-growth firms use less debt. Furthermore; Barclay & Smith (1995), using U.S. samples, empirically found support for Myers's argument. Myers (1977) also noted that agency problem between debt holders and equity holders will be mitigated if firm issues short-term debt rather than long-term debt. Thus; growth firms may be positively associated with short-term borrowings whereas the relation may be negative for long-term borrowings.

Mongolia is a developing country with an underdeveloped stock markets. There are 216 firms listed in the Mongolian Stock Exchange as of 2018. This paper adds to the

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existing literatures by empirically examining the relationship between growth opportunities and capital structure of listed firms in Mongolia under Myers's theoretical framework to aid on finding whether capital structure decisions in developed and developing countries differ for growth firms by controlling for variables including tangibility, liquidity, firm size and profitability. The impact of the variables are measured for total debt ratio, long-term debt ratio, and short-term debt ratio. The results shall be used to determine whether and on what degree they are consistent with Myers's hypothesis as well as previous empirical results that were conducted for firms in various countries.

1.2 Background of Mongolia

Mongolia abandoned its 70-year-old one-party system in order to transition into political and economic reforms and multiparty elections in 1990. Prior to transitioning into democracy, all firms were state-owned. As a result of the transition, Mongolian Stock Exchange ("MSE") was established by the government in January 1991 to privatize state-owned assets. In an attempt to ensure an equal distribution of assets to each of the citizen, the government of Mongolia chose to distribute one blue voucher worth MNT7,000 and one pink voucher worth MNT3,000 to every citizen born before 31 May 1991 which can be used for the purchase of shares of state-owned enterprises.

Initial auction to claim shares using the vouchers begun in 1992 followed by the introduction of secondary market in 1995. Over 1 million people held shares of public listed companies during the initial distribution which is a large number considering the present population of Mongolia at roughly 3.1 million. However; as a result of many small shareholders selling their shares due to lack of knowledge regarding stock markets, few domestic and foreign investors to gained majority of holdings in the remaining listed companies. At present, the concentration of ownership is considerably high for public listed firms in Mongolia. This practice has also led new companies seeking to raise capital through initial public offerings to list only 25% to 30% of their total shares on the stock exchange. Initial public offerings has become an attractive option to raise capital for firms' owners without losing control over the firm since 2017.

Table 1: Mongolia: Trading Volume of Stocks, Government Bonds and Corporate Bonds

Year	Panel A: in MNT millions			Panel B: in USD millions ²		
	Stock	Government bonds	Corporate bonds	Stock	Government bonds	Corporate bonds
2018	210,002	33,500	632	84.94	13.55	0.26
2017	76,449	630,205	3,380	31.33	258.30	1.39
2016	49,047	280,452	-	22.86	130.71	-
2015	30,477	510,340	460	15.47	259.02	0.23
2014	24,242	172,038	-	13.33	94.63	-
2013	97,603	301,505	-	64.05	197.85	-
2012	144,746	1	310	106.49	0.00	0.23
2011	109,111	236,731	4,395	86.22	187.08	3.47
2010	62,873	30,000	-	46.22	22.05	-
2009	23,182	-	-	16.13	-	-
2008	60,349	1,495	502	51.77	1.28	0.43
2007	62,127	39,599	851	53.08	33.83	0.73
2006	12,604	4,462	961	10.68	3.78	0.81
2005	2,547	6,768	2,664	2.11	5.62	2.21
2004	654	12,464	2,777	0.55	10.50	2.34

Source: Mongolian Statistical Information Service

In 1991, total number of 475 firms were listed on the exchange whereas it was decreased to 216 firms as of 2018, where most of the firms were delisted due to very low trading volume in secondary market or non-fulfilling the requirements set by the stock exchange. Out of the total 216 firms, 19 firms are wholly state owned and 12 firms are partially state owned where most of the state-owned firms are Tier 3 firms. Firms listed on MSE are separated into three tiers: Tier 1, Tier 2 and Tier 3 based on two main criteria: (1) the amount of market capitalization and (2) the total trading volume of the

² The exchange rates are converted using the average of monthly exchange rates issued by the Central Bank of Mongolia for respective years.

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firm. Tier 1 firms include the largest firms with highest total trading value whereas Tier 3 firms have low trading value. There were 13 Tier 1 firms, 42 Tier 2 firms, and 161 Tier 3 firms listed on MSE as of 2018. However; 21 firms were subsequently delisted in March 2019 and turned into private firms due to non-fulfilling the requirements set by MSE.

There are only two types of securities traded on MSE: stocks and bonds. There are no centralized derivatives exchange operating in Mongolia and it is not possible to short sell stocks listed in MSE. The total trading volume of stocks was MNT 210 billion (USD 84.94 million) whereas the total trading volume of government bonds and corporate bonds were MNT 33.5 billion (USD 13.55 million) and MNT 0.6 billion (USD 0.26 million), respectively during the year 2018. The total trading volume of stocks grew exponentially during the last few years: from MNT 24.2 billion (USD 13.3 million) in 2014 to MNT 210 billion (USD 84.94 million) in 2018.

Table 2: Mongolia: Market Capitalization of Listed Firms, and Total Assets and Equity of Banks

Year	Panel A: in MNT millions			Panel B: in USD millions		
	Stock market cap.	Total assets of banks	Net equity of banks	Stock market cap.	Total assets of banks	Net equity of banks
2018	2,508,041	29,789,151	3,292,180	1,014.4	12,048.3	1,331.5
2017	2,436,325	25,048,405	3,177,681	998.6	10,266.7	1,302.4
2016	1,474,173	21,808,620	2,958,809	687.1	10,164.7	1,379.1
2015	1,262,498	18,635,072	2,447,323	640.8	9,457.9	1,242.1
2014	1,442,655	19,307,065	2,153,087	793.6	10,620.3	1,184.4
2013	1,670,531	17,802,950	1,400,237	1,096.2	11,682.3	918.8
2012	1,799,899	10,729,165	1,002,109	1,324.2	7,893.6	737.3
2011	2,168,600	8,654,827	688,911	1,713.7	6,839.5	544.4
2010	1,373,946	5,874,429	393,541	1,010.0	4,318.2	289.3
2009	620,706	4,089,955	230,212	431.8	2,845.4	160.2
2008	515,872	3,356,758	340,566	442.5	2,879.3	292.1
2007	717,561	2,858,261	376,386	613.1	2,442.0	321.6
2006	131,179	1,899,378	294,780	111.2	1,609.9	249.9
2005	55,701	1,371,222	207,076	46.2	1,137.9	171.8
2004	29,966	892,317	167,101	25.3	752.0	140.8

Source: Mongolian Statistical Information Service

The total trading volume of government bonds were several times larger than the trading volume of the stock exchange during the last several years except the year 2018. On the other hand, the total trading volume of corporate bonds that were issued through the exchange during the last few years were very low compared to the trading volume of stocks. This shows that the market for corporate bonds is not well developed and firms rarely issue corporate bonds to raise capital which lead firms to seek loans from banks.

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Mongolia has a relatively large banking sector compared to the stock market. The total market capitalization of listed firms as well as total assets and net equity of banks for the last 15 years are shown in *Table 2*. The total stock market capitalization grew exponentially during the last 15 years from USD 25.3 million to over USD 1 billion. The total assets and net equity of 14 commercial banks are relatively high compared to the stock market capitalization which shows that the banking sector of Mongolia is relatively large.

Table 3: Mongolia: GDP Growth, Currency Exchange Rate, and Inflation Rate

Year	Nominal GDP growth	USD 1 = MNT	Annual inflation rate (year-end)
2018	6.9%	2,472.48	8.10%
2017	5.3%	2,439.78	6.40%
2016	1.2%	2,145.53	1.10%
2015	2.4%	1,970.31	1.90%
2014	7.9%	1,817.94	11.00%
2013	11.6%	1,523.93	11.90%
2012	12.3%	1,359.23	14.00%
2011	17.3%	1,265.43	10.20%
2010	6.4%	1,360.38	13.00%
2009	-1.3%	1,437.41	4.20%
2008	8.9%	1,165.82	22%
2007	10.2%	1,170.44	18%
2006	8.6%	1,179.80	6%
2005	7.3%	1,205.08	10%
2004	10.6%	1,186.67	11%
2003	7.0%	1,148.58	5%
2002	4.7%	1,111.17	2%
2001	3.0%	1,097.65	8%
2000	1.1%	1,076.47	8%
1999	3.1%	1,021.81	10%
1998	3.3%	840.10	6%
1997	3.9%	789.73	21%
1996	2.2%	548.77	45%
1995	6.4%	447.63	53%
1994	2.1%	409.25	66%
1993	-3.2%	274.60	183%
1992	-9.3%	40.00	326%
1991	-8.7%	21.48	53%

Source: Mongolian Statistical Information Service & Central Bank of Mongolia

In 1991, Mongolia enacted a new banking law to create a western-style banking system. In accordance with this law, Central Bank of Mongolia acts as the central bank responsible for implementing monetary policy whereas other banks provide commercial banking services. As of 2018, there are 14 commercial banks, and 534 non-bank financial lending institutions (“NBFIs”) operating in Mongolia which shows that the number of institutions that offer loan products are relatively high compared to the

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population and market of Mongolia. These NBFIs offer loans however; they are not allowed to receive any savings or deposits from customers according to the regulation.

The nominal GDP growth rate of Mongolia has been fluctuating from 1.2% to 11.6% during the past 6 years with moderate growth rate of 6.9% per annum in 2018. The economy of Mongolia is heavily dependent on the price of mineral resources such as coal, copper and gold as these mineral resources constitutes majority of exports and government budgets. The economy faced challenges during the last few years due to fall in prices of mineral resources however; it is showing signs of recovery. Inflation rate in Mongolia is relatively high, 8.10% in 2018 and 6.4% in 2017. Domestic currency was heavily depreciated against foreign currencies during the last couple of decades since the country's transition into democracy. For instance, MNT only made a slight gain against U.S. dollar in 2017 out of the last 6 years.

Weighted average bank lending rates were 16.9% p.a for domestic currency loans and 8.8% p.a for foreign currency loans whereas the weighted average bank savings rate was 11.2% p.a for domestic currency savings and 4.5% for foreign currency loans in December 2018. The lending rates of non-bank financial lending institutions are typically 3% to 5% per month since it is relatively easier to acquire loans from these institutions compared to banks due to lower requirements. The rate of 28-week Government Treasury bill was 11.8% p.a whereas the rate of 2-year Government Treasury bond was 13.95% p.a as of October 2017. The high interest rate of borrowing raises the borrowing cost and therefore, it may provide incentives for firms to maintain lower debt level.

In 2013, revised Securities Market Law was passed by the Parliament of Mongolia which was later supplemented by various additional regulations published by the Financial Regulatory Commission of Mongolia. The main purpose of this law and additional regulations was to increase the participation of the stock market, encourage firms to raise capital through equity issuance, and to protect the interests of investors. As it was mentioned previously, ownership concentration of listed firms in MSE are considerably high where retail investors own small percentage of these firms. As a result, business decisions are usually made by the major shareholders without reflecting the interests of smaller shareholders. There have been cases where major shareholders made a decision that were harmful to smaller shareholders such as establishing a private firm to redirect the listed firm's profits, lack of dividends issue, or high executive compensation. In most cases, government authorities failed to take significant measures to protect the interests of smaller shareholders when their rights were violated. In terms of corporate governance, many of the smaller firms lack appropriate board of directors. For instance, board members have conflicts of interest, inadequate independent directors, or their roles are symbolic. Since the revised Securities Market Law, the situation is improving however; there are still many improvements that must be implemented by the regulators.

2. Literature Review and Previous studies

2.1 Capital Structure Theories

This section provides discussion on main capital structure theories. During the past century, various capital structure theories were developed since the seminal paper written by Modigliani & Miller (1958) which stated that value of firm is independent of its capital structure (i.e. in market where there are no taxes, no bankruptcy costs, perfect and complete market) thus; debt and equity are perfect alternatives of each other. However; capital markets are imperfect in real life. In another study by Modigliani & Miller (1963), they have relaxed the no tax assumption and argued that obtaining higher debt would increase the value of the firm since there is tax shield benefit on interest rate payment. However; they also argued that cost of financial distress escalates when firms issue higher debt.

2.1.1. Trade-off Theory

Firms' decisions of capital structure involve a trade-off between tax shield benefits of using debt financing and the financial distress costs as stated by Frank & Goyal(2009). Aside from financial distress, previous literatures highlight that tax benefits declines due to several other reasons. According to Donaldson (1963), managers try to avoid greater debt ratios in order to stabilize their wealth and jobs. Debt signals high business risk as stated by Leland & Pyle (1976) and Ross (1977). Credit rationing is one of the explanation according to Jaffee (1971) and Jaffee & Russell(1976) as banks tend to limit their borrowings to firms as probability of financial distress increases.

Myers (1977) highlights that underinvestment problem plays significant role on explaining why firms do not borrow as much as possible. Underinvestment problem occurs when managers who are acting in the best interest of stockholders do not undertake all projects that maximizes the firm value since some of the values will be transferred to bondholders leaving stockholders with negative return. According to Myers (1977) mature firms with less growth options are able to borrow more compared to growth firms since less growth options lead to less sub-optimal decision. There is no decision or exercise to be made if the firm had already made its investment decisions earlier. On the other hand, growth firms will borrow less because high growth opportunities means that there is high chance of making sub-optimal decisions which leads to lower firm value by not accepting all value generating projects. Costs of acquiring debt or interest rate is also higher since growth firms are less stable compared to non-growth firms. As added by Myers, short-term debt may be better compared to long-term debt since if debt matures before decision to exercise is made, no value is lost.

Aside from underinvestment problem, Titman & Wessels (1988) empirically found a negative relation between leverage and growth opportunities since growth opportunities cannot be collateralized and do not generate current taxable income thus; they lead to lower leverage. In addition, Billett, King, & Mauer (2007) conclude that although growth opportunities negatively affect leverage, debt covenant protection decrease this

negative relationship by mitigating the agency costs of debt associated with high growth firms. Kim & Sorensen (1986) points out that insider-controlled companies might have greater incentives to obtain leverage to finance growth opportunities. The reason is that owners of insider-controlled firms will try to maintain control of the company by issuing greater debt than optimal to maximize corporate values. In this case, debtors are more willing to negotiate and covenants are associated with higher corporate debt levels. It may be due to creditors lending more since they can trust the company's projections and financial statements according to Aggarwal & Kyaw(2009).

Furthermore, Fan, Titman, & Twite (2012) argued that loan maturity of firms in countries with large banking sectors are likely to be shorter since banks prefer to lend short-term debts. They also argued that firms in countries which are considered to have higher political corruption level are likely to use higher total leverage and short-term leverage. Alves & Ferreira (2011) also pointed out that the relationship between corruption levels of countries and level of debt usage by its firms are positive.

2.1.2 Pecking Order Theory

The pecking order theory is considered to be developed by Myers (1984). It states that there is a certain order to finance growth opportunities where firms start by using retained earnings as main source of financing followed by issuing debt. Issuing equity is used only as the last resort since it would send a signal to outside investors that the firm is overvalued due to information asymmetry between investors or outsiders and managers. Investors are likely to think that managers are issuing equity because managers think that the company's share prices are overvalued compared to its intrinsic value. There are also high costs associated with issuing equity financing compared to using internal funds or obtaining debt financing. Since there are certain orders in financing, there is no optimal amount of debt according to the pecking order theory. However; recent empirical results supporting the pecking order theory shows mixed results between countries.

2.2 Results of Previous Studies

Various empirical studies have been undertaken during the past couple of decades examining the relation between leverage and growth opportunities using data sets of firms in developed countries as well as developing countries.

In terms of developed capital markets, Rajan & Zingales (1995) found negative relation between leverage and growth opportunities for G7 countries. Cheng & Wu (2004) found negative and statistically significant relation between total leverage, long-term leverage and short-term leverage and average annual growth for Taiwanese listed firms. Frank & Goyal (2009) and Cheng& Wu (2004) also found similar results for U.S. listed firms. The results of these studies are mainly consistent with Myers's theory, except according to Aggarwal & Kyaw (2009), long-term liability ratio showed positive and statistically significant relation with growth opportunities for European firms including France, Austria, Italy, Sweden, Denmark, Ireland while the no statistically significant relationship was found for another eight European developed countries.

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In terms of developing capital markets, the results seem to be mixed. Chen (2004) found that book value of leverage is positively associated with growth opportunities for Chinese listed firms during 1995-2000. Pham (2017) also found that non-financial Vietnamese listed firms' leverage was positively related to growth opportunities. Handoo & Sharma (2014) tested 870 listed Indian firms for the period from 2001 to 2010 and found that there is a positive association between growth opportunities and debt. In developing stock markets, firms may tend to raise capital through debt over time which accumulates to large amount of debt.

Table 4: Empirical Studies Examining the Impact of Growth Opportunities on Leverage

Panel A: Developed countries			
Author	Period	Country	Results
Rajan & Zingales (1995)	1987–1990	G7 countries	Trade-off theory
	1994-1998	Taiwan	Trade-off theory
Cheng & Wu (2004)	1986-1992	U.S.A	Trade-off theory
Aggarwal & Kyaw (2009)	1990-2003	Western European countries	Pecking order theory
Eriotis, Vasiliou, & Ventoura-Neokosmidi (2007)	1997-2001	Greece	Trade-off theory
Frank & Goyal (2009)	1950-2003	U.S.A	Trade-off theory
Panel B: Developing countries			
Author	Period	Country	Results
Chen (2004)	1995-2000	China	Pecking order theory
Gajurel (2005)	1992-2004	Nepal	Trade-off theory
Awan, Anjum, & Rahim (2010)	1982-1997	Pakistan	Pecking order theory
Espinosa, Maquieira, Vieito, & González (2012)	2000-2007	Chile	Trade-off theory
Handoo & Sharma (2014)	2001-2010	India	Pecking order theory
		Indonesia	Trade-off theory
Mallisa, & Kusuma (2017)	2008-2012	Thailand	Pecking order theory
Pham (2017)	2008-2015	Vietnam	Pecking order theory
Khémiria & Noubbigh (2018)	2006–2016	Sub-Saharan African countries	Trade-off theory

Contrary to the above studies, Gajurel (2005) found that there is a negative relation between leverage and growth opportunities for Nepalese firms whereas Espinosa et al. (2012) found the same results for Chilean firms. Recent study by Khémiria & Noubbigh (2018) also found negative association between growth opportunities and debt for several Sub-Saharan African countries. The capital structure of firms in these countries are in line with the pecking order theory where leverage is preferred over equity.

Overall, debt structure of firms located in developed countries with growth opportunities are mainly in line with Myers's theoretical framework or the trade-off theory where leverage has negative association with growth opportunities. In contrast, there was mixed results for firms located in developing countries which are divided between the

trade-off theory and the pecking order theory. The common characteristics of the developing countries that are consistent with the pecking order theory is that they are categorized as emerging market countries by various sources including IMF and Goldman Sachs and classified under BRICS and N-11. Firms in these countries may undertake high leverage in order to maintain the high growth rate during growing economic periods. The summary of results of previous empirical studies are shown in *Table 4*.

In terms of Mongolia, there have been very few studies undertaken by researchers regarding capital structure policies for Mongolian firms. According to Narmandakh (2014), listed firms in Mongolia use their retained earnings initially. These firms then prefer to use short term leverage followed by equity and finally use long-term debt if external financing is required. However; this empirical study only includes 23 listed firms covering 4 year period; which may not represent all of the listed firms in Mongolia. Furthermore; these 23 firms are likely to be the largest firms that have regularly submitted their financial information to the Mongolian Stock Exchange therefore again, may not represent all of the listed firms in Mongolia. This study deals some of his limitations such as including 7 year period from 2012 to 2018 and increasing number of firms to 105 firms (735 observations) listed in the Mongolian Stock Exchange.

2.3 Hypothesis Development

The purpose of this study is to investigate empirically the optimal debt structure policy in relation to growth opportunities under Myers's theoretical framework using data sets of non-financial listed firms in Mongolia controlling for the effect of variables including tangibility, firm size, liquidity and profitability. Thus; the following hypotheses are developed.

Hypothesis 1:Total leverage and long-term leverage will be negatively associated with firms that have high growth opportunities in order to reduce underinvestment problem. Moreover, short-term liability may be negatively correlated with growth opportunities since the transaction cost for obtaining debts is generally higher for growth firms.

Hypothesis 2:Profitability has **negative** relation with all variations of debt since profitable firms according to the pecking order theory.

Hypothesis 3:State-owned firms will obtain higher leverage to support growth compared to other firms since they are backed by the government therefore, are able to access debt at lower cost or banks would be more willing to lend to state-owned firms.

3. Data, Variables and Methodology

3.1 Data

In total, there were 216 listed firms on Mongolian Stock Exchange as of 31 December 2018. Out of these, 13 firms are Tier 1 firms, 42 firms are Tier 2 firms, and 161 firms are Tier 3 firms. 19 firms are wholly state owned whereas 12 firms are partially state owned. It was not possible to obtain the necessary data of the listed firms for the period prior to

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2012 due to lack of information hence; the annual financial data was collected for the period from 2012 to 2018.

Financial data of the listed firms including financial performance data and financial position data were hand-collected from the financial statements submitted to the official website of Mongolian Stock Exchange (www.mse.mn) by the firms' management. If the financial data was missing for a certain year, it was then replaced by the financial statements submitted to the official website of Ministry of Finance (www.e-balance.mof.gov.mn) that is dedicated to receive annual financial statements of all firms operating in Mongolia. The financial information submitted to Ministry of Finance was indirectly obtained from www.mse.mn since it was not possible to directly obtain data from www.e-balance.mof.gov.mn. Since both of these organizations are government agencies, it is safe to consider that the data obtained are reliable.

The selection criteria is shown in *Table 5*. 10 financial firms were excluded since they have significantly different capital structure compared to other industries due to legal and other requirements. Furthermore; firms that did not generate sales revenue for more than 2 years during the sample period were excluded as well since they can be considered as inactive. As a results, the final sample consists of 105 firms or 735 observations.

Table 5: Sample Selection Criteria

Selection criteria	Number of firms
Total number of listed firms on "MSE" as of 2018.	216
All firms with complete 7 years of data from 2012 to 2018	162
All non-financial firms	152
All active firms	105
Total selected firms	105
Number of observations	735

The sample firms classified by its industry is shown in *Table 6*. Majority of utility firms are state-owned firms. Light manufacture industry mainly includes firms that produce clothing whereas heavy manufacture industry includes firms that produce construction materials such as cement, concrete and iron armature. Food, utility and mining industries comprise most of the firms in our sample.

Table 6: Sample Firms by Industry

Category	Firms
Construction	8
Mining	12
Food	17
Transportation	6
Service	10
Trade	7
Utility	15
Agriculture	4
Real estate	10
Heavy manufacture	8
Light manufacture	8
Total sample	105

3.2 Variables

Dependent variables used in this study are (1) total liability ratio, (2) long-term liability ratio, and (3) short-term liability ratio. (2) Long-term liability consists of long-term debts, deferred tax liabilities, non-current capital leases, convertible debts and other non-current liabilities. (3) Short-term liability consists of account payables, notes payables, current portion of long-term debts, accrued expenses, deferred revenue, taxes payables, and other current liabilities. (1) Total liability is estimated by adding together short-term liability and long-term liability. Every dependent and independent variables were calculated directly from the information found from the financial statements of sample firms. The calculation methods of each dependent variable is shown in *Table 7*.

Table 7: Dependent Variables

Dependent variables	Measurement
Total liability ratio (TLR)	$\frac{\text{total liabilities}}{\text{total assets}}$
Long-term liability ratio (LLR)	$\frac{\text{long-term liabilities}}{\text{total assets}}$
Short-term liability ratio (SLR)	$\frac{\text{short-term liabilities}}{\text{total assets}}$

This section develops variables that have impact on debt policy of firms based on previous studies and provides relevant predictions which assist us in answering our research questions regarding capital structure determinants.

Growth Opportunities

According to Myers (1977) mature firms with less growth options are able to borrow more compared to growth firms since less growth options lead to less sub-optimal decision. There is no decision or exercise to be made if the firm has already made its decisions. Growth firms will borrow less because high growth opportunities means that there is high chance of making sub-optimal decisions which leads to lower firm value by not accepting all positive NPV projects. Costs of acquiring debt or interest rate is also higher since growth firms are less stable compared to non-growth firms. As added by Myers, short-term leverage may be better compared to long-term leverage since if debt matures before decision to exercise is made, no value is lost.

Firms that have greater information asymmetries or high growth firms since bondholders know less about growth opportunities, obtain greater short-term liability due to higher information costs of long-term debts whereas firms that have less growth opportunities do not care about it much since most of the information is known to bondholders because there are less uncertainties according to Barclay & Smith (1995). Furthermore; firms with high growth mean that they have greater fluctuation in earnings or greater risk. These firms that are categorized as risky generally face difficulties in obtaining debt capital since debt capital more expensive as lenders will demand greater interest rate according to Eriotes et al., (2007). As a result, this study predicts negative association between growth opportunities and leverage.

Tangibility

Firms with greater tangible assets tend to have more leverage because tangible assets including property, plant and equipment can be easily valued by outsiders compared to firms that have greater intangibles thus; will be easier to receive loans according to Frank & Goyal (2009). Furthermore; if the firm has more assets that can be collateralized, it can receive debts at low interest rate which also reduces bankruptcy risks.

Moreover, Harc's (2015) empirical study found that firms that have greater long-term assets use greater long-term financing whereas firms that have greater short-term assets rely on using short-term funds for Small and medium sized companies in Croatia. This is consistent with the maturity matching principle where companies tend to equal the amount of short-term assets with liabilities as well as long-term assets with long-term liabilities. Since most tangible assets are long-term, the maturity matching principle would mean that tangibility has stronger positive relation with long-term debt. Due to the large banking sector in Mongolia, collateral is an important factor thus; this study predicts positive association between leverage and tangibility.

Liquidity

Firms with higher liquidity need to hold a relatively high current assets. In order to do maintain high current assets, firms must generate consistently high cash inflows. These liquid assets are then used to finance firms' operating, financing and investment

activities. Thus, these firms do not use much leverage compared to firms that do not generate high cash inflows according to pecking order financing as stated by Erioteset al., (2007). Therefore, this study predicts liquidity is negatively correlated with total and short-term debt.

Firm size

Theoretical research by Myers (1977) and empirical study by Kim & Sorensen (1986) has suggested that firm size may be uncorrelated to leverage. However; Titman and Wessels’s (1988) empirical analysis states that smaller firms use significantly greater short-term leverage compared to larger firms. This is supported by Barclay & Smith (1995) that smaller firms usually borrow from banks whereas larger firms can issue longer-term bonds since they are more reliable. The main reason is that costs of issuing long-term term debts (bonds) are greater for smaller firms leading smaller firms to mostly borrow from banks according to Smith(1977).

In terms of total leverage, larger firms are able to borrow more since they are considered as more reliable. Firms with foreign subsidiaries can also borrow money denominated in foreign currencies to better manage its exposure according to Barclay& Smith (1995). Furthermore; direct bankruptcy costs are high proportion of smaller firms’ value. Moreover, larger firms are considered to be more diversified and less prone to bankruptcy as stated by Warner (1977) and Ang, Chua, & McConnell (1982) thus; they are able to borrow more. This is supported by empirical analysis undertaken by Eriotis et al., (2007) and Frank & Goyal (2009). Due to mixed results of previous literatures, this study predicts ambiguous relation between leverage and firm size.

Profitability

The pecking order theory states that firms initially use retained earnings as financing source. In line with this theory, Titman& Wessels (1988) found that profitable firms have relatively less leverage compared to the market value of their equity because they tend to use their earnings when they need financing. Bennet & Donnely (1993) also found the same result. This is supported by empirical results by Rajan & Zingales (1995) for G7 countries and Booth, Aivazian, Demirguc-Kunt & Maksimovic (2001) for developing countries. Therefore, negative relation between leverage and profitability is predicted. The following table provides the summary of predicted signs of the regression for each variables in relation to leverage under Myers’s theoretical framework.

Table 8: Predicted Signs of the Regression Coefficients under Myers’s Theoretical Framework

Dependent variables	Independent variables				
	Growth	Tangibility	Liquidity	Firm size	Profitability
Total liability ratio	-	+	-	+/-	-
Long-term liability ratio	-	+	+/-	+/-	-
Short-term liability ratio	-	+	-	+/-	-

Summary of calculation methods of independent variables are shown in *Table 9* and the calculations of the independent variables are as follows:

Growth Opportunities: The main independent variables used in this study is growth opportunities. Most firms invest to a greater or lesser degree in growth opportunities and corporate investment lies on a continuum from little investment in growth projects to high investment in growth projects. Several different measurements of growth were used in previous studies such as Titman & Wessels (1988) used capital expenditures over total assets, average annual growth of total assets or research and development over sales to be the proxy for the firms' growth opportunities whereas Cheng & Wu (2004) used average annual growth rate of sales. This study uses average annual growth rate of total assets from 2011 to 2018 as measurement of growth opportunities on the basis of two main reasons. Firstly, total assets figure was obtainable for most of the firms. Secondly, due to economic situation of Mongolia, sales figure of certain firms fluctuated significantly year by year during the sample period thus; it was concluded that using sales figure as proxy would not be very suitable.

$$\text{Growth opportunities} = \frac{\text{total assets in year } t}{\text{total assets in year } t-1} - 1$$

Tangibility: Tangible assets can be used as collateral when obtaining loans thus; making it easier to access debt as well as leading to reduced interest rate. In this study, tangibility is calculated using fixed assets divided by total assets. If a firm do not have any tangible assets during the period, it will be eliminated from our sample.

$$\text{Tangibility} = \frac{\text{fixed assets}}{\text{total assets}}$$

Liquidity is defined as the ratio of current assets to current liabilities. If the firm does not have any current liabilities for the year, it was excluded from the total observation.

$$\text{Liquidity} = \frac{\text{current assets}}{\text{current liabilities}}$$

Firm size is used as a control variable in order to avoid bias regarding the relationship of dependent and independent variables. Firm size was estimated as natural logarithm of total assets in accordance with most of the previous literatures including Chen (2004), Cheng & Wu (2004) and Pham (2017).

$$\text{Firm size} = \ln(\text{total assets})$$

Profitability: The ratio of profit before tax to total assets was used as a proxy for profitability in this study. Aside from this ratio, several studies used other proxies such as EBIT to total assets, operating cash flows to total assets, or profit before tax to total sales. It was not possible to obtain EBIT or operating cash flows figures for most of the sample firms and sales figure fluctuated significantly year by year for some of the firms. Thus; the ratio of profit before tax to total assets was selected to represent profitability.

$$\text{Profitability} = \frac{\text{profit before tax}}{\text{total assets}}$$

Table 9: Independent Variables

Independent variables	Measurement
Growth Opportunities (GROW)	$\frac{\text{total assets in year } t}{\text{total assets in year } t-1} - 1$
Tangibility (TANG)	$\frac{\text{fixed assets}}{\text{total assets}}$
Liquidity (LIQ)	$\frac{\text{current assets}}{\text{current liabilities}}$
Firm size (SIZE)	$\ln(\text{total assets})$
Profitability (PROF)	$\frac{\text{profit before tax}}{\text{total assets}}$

3.3 Research Methodology

This study used S.A.S 9.4 software in analyzing the data. Panel data from the year 2012 to 2018 was used in this study. This study used three common estimation methods for analyzing panel data: (1) pooled OLS model, (2) fixed effects model (FEM) and (3) random effects model (REM). (2) The fixed effects model evaluates the net effect of independent variables on the dependent variable by removing all the effect of time-invariant factors within a firm. (3) The random effects model allows the existence of time-invariant factors and assumes that the variation across firms is random and not correlated to independent variables.

Different regression tests were conducted using OLS model, fixed effects model, and random effects model and for each of the three dependent variables: (1) total liability ratio (TLR), (2) long-term liability ratio (LLR), and (3) short-term liability ratio (SLR). All five independent variables were included in each regression tests. Hausman test was conducted to select the appropriate model between fixed effects model and random effects model. If fixed effects model is selected, no further tests are necessary. However, if random effects model is selected, Breusch-Pagan Lagrange Multiplier test should be conducted to select between OLS model and random effects model. The regression model is as follows:

$$Y_{it} = \alpha + \beta_1 GROW_{it} + \beta_2 TANG_{it} + \beta_3 LIQ_{it} + \beta_4 SIZE_{it} + \beta_5 PROF_{it} + \epsilon_{it}$$

4. Research Results

4.1 Descriptive statistics

Summary statistics of all independent and dependent variables are shown in Panel A whereas mean value of each variables by year are shown in Panel B in *Table 10*. The average total liability ratio is 45.65%, the average long-term liability ratio is 17.52%, and the average short-term liability ratio is 28.03%. The observations are widely dispersed since some firms employ no debt whereas the total equity of some firms are negative leading to TLR, LLR and SLR that are higher than 1.00. Although the average long-term liability ratio of the sample firms are 17.62%, the median firm's long-term liability ratio is only 0.02% which shows that majority of listed firms in Mongolia do not employ long-term debt. Short-term debt seems to be the preferred choice of financing.

The average growth rate of non-financial listed firms in Mongolia is 21.85% whereas the median growth rate is 1.88% which shows that relatively few firms grow at high rate whereas less than half of the firms grew at less than 1.88% per annum. The average tangibility ratio is 55.32% which indicates high tangibility. The reason for the wide dispersion of liquidity ratio is that some firms have very low current assets compared to their current liability whereas some firms have very low current liability compared to their current assets. Overall, the median liquidity ratio of 1.34 shows that non-financial listed firms in Mongolia have adequate current assets to pay-off their short-term liabilities.

The average total liability ratio, long-term liability ratio, and short-term liability ratio stayed relatively stable during the 7 year period.

Table 10: Descriptive Statistics

Notes: **TLR** is calculated as total liability divided by total assets; **LLR** is calculated as long-term liability divided by total assets; **SLR** is calculated as short-term liability divided by total assets; **GROW** is the percentage change in total assets from year t to year t-1; **TANG** is the ratio of fixed assets to total assets; **LIQ** is the ratio of current assets to current liabilities; **SIZE** is the natural logarithm of total assets; **PROF** is the ratio of profit before tax to total assets; ***Significant at 0.01; **Significant at 0.05; *Significant at 0.1;

Panel A: Descriptive statistics of each variable						
<i>Variable</i>	<i>N</i>	<i>Minimum</i>	<i>Mean</i>	<i>Median</i>	<i>Std Dev</i>	<i>Maximum</i>
<i>TLR</i>	735	0.0007	0.4565	0.3784	0.4330	4.8014
<i>LLR</i>	735	0	0.1762	0.0002	0.3684	4.3730
<i>SLR</i>	735	0.0007	0.2803	0.1921	0.2595	1.6972
<i>GROW</i>	735	(0.8938)	0.2185	0.0188	1.1529	21.4674
<i>TANG</i>	735	0.0054	0.5532	0.5718	0.2764	1.0000
<i>LIQ</i>	735	0.0009	8.3475	1.3438	33.0056	532.1987
<i>SIZE</i>	735	10.5902	15.6436	15.6308	2.0249	20.5271
<i>PROF</i>	735	(1.9329)	0.0097	0.0047	0.1401	0.7315

Panel B: Mean value of each variable by year.								
<i>Variable</i>	<i>N</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>
<i>TLR</i>	105	0.4770	0.4737	0.4871	0.4272	0.4412	0.4469	0.4425
<i>LLR</i>	105	0.1864	0.1856	0.1895	0.1677	0.1715	0.1752	0.1575
<i>SLR</i>	105	0.2905	0.2882	0.2976	0.2595	0.2697	0.2717	0.2850
<i>GROW</i>	105	0.1666	0.7215	0.1969	0.1708	0.0364	0.1027	0.1347
<i>TANG</i>	105	0.5783	0.5468	0.5577	0.5487	0.5417	0.5415	0.5577
<i>LIQ</i>	105	5.6263	5.9507	9.9407	12.4829	5.4176	13.8149	5.1997
<i>SIZE</i>	105	15.2769	15.5259	15.6233	15.7134	15.7222	15.7825	15.8608
<i>PROF</i>	105	0.0118	0.0182	0.0049	0.0044	0.0110	0.0002	0.0177

As for growth opportunities, the year 2013 had seen the largest average growth of total assets at 72.15% whereas the lowest average growth of total assets was observed in 2016. Although the economy performed comparatively well before 2013 compared to latter years, the extremely high growth in 2013 is mainly due to the few firms having extremely high growth in total assets. If we excluded the top four firms with the highest growth rate in 2013, the average growth rate of total assets in 2013 would have been 26.20%. As for the year 2016, the economic situation of Mongolia was at its bottom which may have led to low growth rate of 3.64%. Profitability of firms stayed relatively stable over the years ranging from 0.02% to 1.82%.

Table 11: Pearson Correlation Coefficients

Notes: **TLR** is calculated as total liability divided by total assets; **LLR** is calculated as long-term liability divided by total assets; **SLR** is calculated as short-term liability divided by total assets; **GROW** is the percentage change in total assets from year t to year t-1; **TANG** is the ratio of fixed assets to total assets; **LIQ** is the ratio of current assets to current liabilities; **SIZE** is the natural logarithm of total assets; **PROF** is the ratio of profit before tax to total assets; ***Significant at 0.01; **Significant at 0.05; *Significant at 0.1;

Variable	TLR	LLR	SLR	GROW	TANG	LIQ	SIZE	PROF
TLR	1							
LLR	0.80***	1						
SLR	0.53**	-0.08**	1					
GROW	0.03	0.07*	-0.04	1				
TANG	-0.19***	-0.05	-0.24***	-0.08	1			
LIQ	-0.08**	0.07*	-0.23***	0.12	-0.13	1		
SIZE	0.04	0.16***	-0.15***	0.05	-0.09	0.00	1	
PROF	-0.42***	-0.38***	-0.16***	0.02	-0.13	0.03	0.08	1

Pearson correlation analysis is shown in *Table 11* which is used to describe the correlation of each variables. The correlation analysis shows the direction that any two variables vary together, the strength of correlation (correlation coefficient, denoted by r), and the level of statistical significance can be interpreted. Most of the correlation coefficients are considerably low and therefore; acceptable. It is obvious that TLR will be highly correlated with LLR and SLR since TLR is the sum of LLR and SLR. Excluding the correlation between the dependent variables, the largest correlation is between TLR and PROF as well as LLR and PROF, -0.42 and -0.38 respectively. Since correlation coefficients of explanatory variables are between -0.70 to 0.70, there is no serious multicollinearity issue.

4.2 Regression Results

The results from the initial correlation analysis helps us in describing the preliminary relationship between the independent variables and the dependent variables. This section tries to explain the results of the regressions models to test the hypotheses described in Section 2 in detail by examining the effect of growth opportunities in firm's total liabilities, long-term liabilities and short-term liabilities as explained by a function of growth rate of total assets by controlling the effect of tangibility, size, liquidity and profitability. The OLS model results are shown in *Table 13*, fixed effects model results are shown in *Table 14* and random effects model results are shown in *Table 15*.

Hausman test was conducted to select between fixed effects model and random effects model. If the Prob > Chi2 is less than 0.05, the fixed effects model is selected whereas if the Prob > Chi2 is greater than 0.05, random effects model is selected. Chi2 of all the models are less than 0.05 therefore; the results of fixed effects model is chosen for all regression models. Since fixed effects model was chosen for all regressions, no further test is necessary to select between random effects model and OLS model.

Table 12: Results of Hausman test

Notes: **TLR** is calculated as total liability divided by total assets; **LLR** is calculated as long-term liability divided by total assets; **SLR** is calculated as short-term liability divided by total assets; **Panel A:** total sample of 735 observations; **Panel B:** restricted sample consisting of 574 observations excluding wholly and partially government-owned firms.

Panel A: Total Sample Statistics (n=735)			
	TLR	LLR	SLR
Chi2	39.71	109.62	17.32
Prob > Chi2	0.0001	0.0001	0.0039
Selected model	FEM	FEM	FEM
Panel B: Restricted Sample Statistics (n=574)			
	TLR	LLR	SLR
Chi2	189.91	524.29	16.91
Prob > Chi2	0.0001	0.0001	0.0047
Selected model	FEM	FEM	FEM

Table 13: Results of OLS model

Notes: **Total liability ratio** is calculated as total liability divided by total assets; **Long-term liability ratio** is calculated as long-term liability divided by total assets; **Short-term liability ratio** is calculated as short-term liability divided by total assets; **GROW** is the percentage change in total assets from year t to year t-1; **TANG** is the ratio of fixed assets to total assets; **LIQ** is the ratio of current assets to current liabilities; **SIZE** is the natural logarithm of total assets; **PROF** is the ratio of profit before tax to total assets; ***Significant at 0.01; **Significant at 0.05; *Significant at 0.1; t-statistics are shown in brackets under estimated values of the regression coefficients; **Panel A:** total sample of 735 observations; **Panel B:** restricted sample consisting of 574 observations excluding wholly and partially government-owned firms.

Panel A: Total Sample Statistics (n=735)										
	DEPENDEN T VARIABLES	N	CONSTAN T	GROW	TANG	LIQ	SIZE	PROF	Adj. R2	F
1	Total liability ratio	735	0.5172*** [4.49]	0.0121 [1.00]	-0.3926*** [-7.63]	-0.0014*** [-3.22]	0.0114* [1.65]	-1.3977*** [-13.92]	0.2424	47.98** *
2	Long-term liability ratio	735	-0.2816*** [-2.78]	0.0179* [1.66]	-0.1001** [-2.21]	0.0007* [1.8]	0.0329*** [5.39]	-1.0670*** [-12.07]	0.1889	35.18***
3	Short-term liability ratio	735	0.7988*** [11.15]	-0.0057 [-0.76]	-0.2925*** [-9.14]	-0.0021*** [-7.73]	0.0214*** [-4.97]	0.3308*** [-5.30]	0.1839	34.08***
Panel B: Restricted Sample Statistics (n=574)										
	DEPENDEN T VARIABLES	N	CONSTAN T	GROW	TANG	LIQ	SIZE	PROF	Adj. R2	F
4	Total liability ratio	574	0.2744** [2.01]	0.0143 [1.22]	-0.3842*** [-6.97]	-0.0011*** [-2.75]	0.0265*** [3.20]	-1.5025*** [-14.76]	0.3242	55.98***
5	Long-term liability ratio	574	-0.3683** [-3.19]	0.0208** [2.11]	-0.1278*** [-2.74]	0.0008** [2.42]	0.0383*** [5.44]	-1.1611*** [-13.46]	0.2776	45.03***
6	Short-term liability ratio	574	0.6428*** [6.66]	-0.0066 [-0.79]	-0.2563*** [-6.57]	-0.0020*** [-6.78]	-0.0118** [-2.00]	0.3414*** [-4.73]	0.1486	21.00***

Table 14: Results of Fixed Effects Model

Notes: **Total liability ratio** is calculated as total liability divided by total assets; **Long-term liability ratio** is calculated as long-term liability divided by total assets; **Short-term liability ratio** is calculated as short-term liability divided by total assets; **GROW** is the percentage change in total assets from year t to year t-1; **TANG** is the ratio of fixed assets to total assets; **LIQ** is the ratio of current assets to current liabilities; **SIZE** is the natural logarithm of total assets; **PROF** is the ratio of profit before tax to total assets; ***Significant at 0.01; **Significant at 0.05; *Significant at 0.1; t-statistics are shown in brackets under estimated values of the regression coefficients; **Panel A:** total sample of 735 observations; **Panel B:** restricted sample consisting of 574 observations excluding wholly and partially government-owned firms.

Panel A: Total Sample Statistics (n=735)										
	DEPENDENT VARIABLES	N	CONSTANT	GROW	TANG	LIQ	SIZE	PROF	R2	F
(1)	Total liability ratio	735	1.1937*** [2.74]	-0.0234*** [-3.57]	-0.1983*** [-3.41]	-0.0005* [-1.88]	-0.0342 [-1.57]	0.7849*** [-11.23]	0.8579	24.17***
(2)	Long-term liability ratio	735	1.5993*** [4.78]	0.0136*** [-2.7]	0.0377 [0.84]	0.0009*** [4.69]	0.0703*** [-4.2]	0.5973*** [-11.14]	0.8846	33.65***
(3)	Short-term liability ratio	735	-0.4057* [-1.08]	-0.0098* [-1.73]	0.2360*** [-4.69]	0.0014*** [-6.35]	0.0361* [1.91]	0.1877*** [-3.11]	0.7049	9.83***
Panel B: Restricted Sample Statistics (n=574)										
	DEPENDENT VARIABLES	N	CONSTANT	GROW	TANG	LIQ	SIZE	PROF	R2	F
(4)	Total liability ratio	574	0.6065* [1.79]	-0.0277*** [-3.94]	-0.1891*** [-2.80]	-0.0004 [-1.48]	-0.0032 [-0.13]	0.8930*** [-11.48]	0.8424	17.97***
(5)	Long-term liability ratio	574	0.7438*** [2.91]	0.0156*** [-2.94]	0.0301 [0.59]	0.0010*** [4.78]	0.0665*** [-3.48]	0.6812*** [-11.59]	0.8661	24.04***
(6)	Short-term liability ratio	574	-0.1374 [-0.46]	0.0121** [-1.97]	0.2192*** [-3.72]	0.0013*** [-5.82]	0.0633*** [2.87]	0.2118*** [-3.12]	0.6983	9.94***

Table 15: Results of Random-Effects Model

Notes: **Total liability ratio** is calculated as total liability divided by total assets; **Long-term liability ratio** is calculated as long-term liability divided by total assets; **Short-term liability ratio** is calculated as short-term liability divided by total assets; **GROW** is the percentage change in total assets from year t to year t-1; **TANG** is the ratio of fixed assets to total assets; **LIQ** is the ratio of current assets to current liabilities; **SIZE** is the natural logarithm of total assets; **PROF** is the ratio of profit before tax to total assets; ***Significant at 0.01; **Significant at 0.05; *Significant at 0.1; t-statistics are shown in brackets under estimated values of the regression coefficients; **Panel A:** total sample of 735 observations; **Panel B:** restricted sample consisting of 574 observations excluding wholly and partially government-owned firms.

Panel A: Total Sample Statistics (n=735)									
	DEPENDENT VARIABLES	N	CONSTANT	GROW	TANG	LIQ	SIZE	PROF	R2
(1)	Total liability ratio	735	0.7886*** [3.72]	-0.0211*** [-3.33]	-0.2162*** [-4.06]	-0.0006** [-2.31]	-0.0125 [-0.96]	-0.8387*** [-12.23]	0.2149
(2)	Long-term liability ratio	735	0.4670*** [2.67]	-0.0142*** [-2.93]	0.0438 [1.04]	0.0008*** [4.25]	-0.0200* [-1.87]	-0.6392*** [-11.98]	0.2081
(3)	Short-term liability ratio	735	0.6380*** [4.76]	-0.0051 [-0.95]	-0.2659*** [-6.43]	-0.0014*** [-6.84]	-0.0125 [-1.53]	-0.1983*** [-3.47]	0.1176
Panel B: Restricted Sample Statistics (n=574)									
	DEPENDENT VARIABLES	N	CONSTANT	GROW	TANG	LIQ	SIZE	PROF	R2
(1)	Total liability ratio	574	0.4182* [1.71]	-0.0244*** [-3.56]	-0.2225*** [-3.64]	-0.0005* [-1.85]	0.0114 [0.74]	-0.9556*** [-12.56]	0.2591
(2)	Long-term liability ratio	574	0.3704* [1.88]	-0.0152*** [-2.95]	0.0258 [0.54]	0.0009*** [4.31]	-0.0154 [-1.25]	-0.7231*** [-12.34]	0.2533
(3)	Short-term liability ratio	574	0.4032** [2.30]	-0.0067 [-1.14]	-0.2446*** [-4.94]	-0.0014*** [-6.18]	0.0032 [0.29]	-0.2182*** [-3.37]	0.1152

4.1.1. Regression Results of Panel A

Growth opportunities (GROW) is the main independent variable used in this study. According to Myers (1977), firms with higher growth opportunities tend to use less debt than firms that have lower growth opportunities in terms of total debt, long-term debt and short-term debt in order to minimize underinvestment problem. The results of this study is in line with Myers's suggestion and hypothesis 1 since growth opportunities have negative relation with all variations of debt levels for models (1) to (3). Growth firms listed in Mongolian Stock Exchange may borrow less because high growth opportunities means that there is high chance of making sub-optimal decisions which leads to lower firm value by not accepting all positive net present value projects. Costs of acquiring debt or interest rate is also higher since growth firms are less stable compared to non-growth firms. Moreover, due to less developed capital markets, higher ownership concentration and lower investor protection, firms do not generally issue dividends even when they have excess cash. Therefore, when they encounter high growth opportunities, they may use their internal funds to finance growth rather than undertaking loans. Furthermore, if we look at the coefficients in models (1) to (3), firms are likely to issue higher short-term debt compared to long-term debt when there are growth opportunities since underinvestment problem is reduced if firms issue short-term debt which is also consistent with Myers's theoretical framework.

Tangibility (TANG) has negative relation with total liability and short-term liability at statistically significant level whereas the positive relationship with long-term liability was not statistically significant. It was expected that firms with large amount of tangible assets tend to borrow more since they can use these assets as collateral according to the pecking order theory as stated by Titman & Wessels (1988). However, the results suggest otherwise. This may be due to maturity matching principle where firms will try to match their maturity of debt with the tangibility of assets Booth et al., (2001). Firms will finance short-term assets with short-term liability and long-term assets with long-term liability which justifies the negative relationship between tangibility and short-term liability and positive relationship between tangibility and long-term liability.

Liquidity (LIQ) is negatively associated with total liability and short-term liability whereas it has positive relationship with long-term liability at statistically significant level. The results of models (1) and (3) are in accordance with the pecking order theory where liquid firms tend to use less debt in their capital structure. They are able to finance their operation through liquid internal funds. As for model (2), liquidity is positively associated with long-term liability. Firms that have high liquidity is partially due to lower short-term liabilities. If firms have lower short-term liabilities, they are likely to have higher long-term liabilities compared to other firms thus, there is a positive relationship between liquidity and long-term debts. Even though the results are significant, the liquidity coefficients are extremely small for all models.

Firm size (SIZE) is negatively associated with long-term liability whereas positively associated with short-term liability at statistically significant level. No statistically significant relationship was found between firm size and total liability. Larger firms have more short-term liability whereas smaller firms have more long-term liability. Since

larger firms are generally considered to be stable and have less bankruptcy risk, they are able to obtain short-term loans easily if they wish at lower interest rate which may be the reason for higher short-term loans. Smaller firms are considered to be riskier therefore; banks will be less reluctant to lend to them or they may have difficulties obtaining loan easily. Since it is difficult for them to obtain loans, they may go for long-term borrowings if they have opportunities to obtain loans.

Profitability (PROF) is negatively associated with total liability, long-term liability and short-term liability at statistically significant level for non-financial listed firms in Mongolia which is consistent with the pecking order theory and hypothesis 2. Profitable firms initially finance their operation through internal funds rather than debt or equity since there are high transaction costs involved when obtaining debt or equity financings. This finding supports the results of researches including Myers & Majluf (1984), and Titman & Wessels (1988).

4.2.2 Regression Results of Panel B

Growth Opportunities: As for the negative relation between growth opportunities and leverage, the results stay similar using restricted samples in models (4) to (6) compared to models (1) to (3). However, the negative coefficients between growth opportunities and leverage are larger using the restricted sample compared to the total sample. It shows that non-state-owned firms use lower leverage overall to finance growth compared to state-owned firms which is in line with hypothesis 3. The reason might be that state-owned firms are backed by the government therefore, are able to access debt at lower cost or banks would be more willing to lend to state-owned firms.

Control Variables: As for tangibility and firm size, the results are same for the restricted sample in models (4) to (6). As for profitability, the negative relationship with all variations of leverage stays the same however, the coefficients are seem to be stronger. As for liquidity in the restricted sample, although the coefficient signs are same with models (1) to (3), the significance of relationship is lost for total leverage in model (4). This shows that the negative relationship between liquidity and total leverage was mainly applicable to state-owned firms. Overall, the results of control variables in models (4) to (6) are relatively similar to that of models (1) to (3).

4.3 Robustness test

This section used one period lagged explanatory variables since some of the previous studies including Deesomsak, Paudyal, & Pescetto (2004) used lagged explanatory variables. Regression was conducted using OLS, REM, and FEM. As a result of Hausman test, FEM was selected for all models. Since explanatory variables are lagged, observations for the year 2018 was eliminated from both total and restricted samples leading to fewer observations.

Table 16: Using Lagged Explanatory Variables - Fixed Effects Model

Notes: **Total liability ratio** is calculated as total liability divided by total assets; **Long-term liability ratio** is calculated as long-term liability divided by total assets; **Short-term liability ratio** is calculated as short-term liability divided by total assets; **GROW** is the percentage change in total assets from year t to year t-1; **TANG** is the ratio of fixed assets to total assets; **LIQ** is the ratio of current assets to current liabilities; **SIZE** is the natural logarithm of total assets; **PROF** is the ratio of profit before tax to total assets; ***Significant at 0.01; **Significant at 0.05; *Significant at 0.1; t-statistics are shown in brackets under estimated values of the regression coefficients; **Panel A:** total sample of 630 observations; **Panel B:** restricted sample consisting of 492 observations excluding wholly and partially government-owned firms.

Panel A: Total Sample Statistics (n=630)									
	DEPENDENT VARIABLES	CONSTANT	GROW	TANG	LIQ	SIZE	PROF	R2	F
(1)	Total liability ratio	-0.2057 [-0.41]	-0.0177*** [-2.67]	-0.1062 [-1.57]	-0.0007*** [-2.73]	0.0334 [1.32]	0.2216*** [3.11]	0.8547	23.77***
(2)	Long-term liability ratio	0.0817 [0.25]	-0.0119*** [-2.75]	-0.0227 [-0.51]	0.0003** [2.00]	0.0096 [0.58]	0.0691 [1.48]	0.9105	42.16***
(3)	Short-term liability ratio	-0.2874 [-0.68]	-0.0058 [-1.03]	-0.0835 [-1.46]	-0.001*** [-4.78]	0.0238 [1.12]	0.1526*** [2.54]	0.7345	10.36***
Panel B: Restricted Sample Statistics (n=492)									
	DEPENDENT VARIABLES	CONSTANT	GROW	TANG	LIQ	SIZE	PROF	R2	F
(4)	Total liability ratio	-0.1713 [-0.43]	-0.0202*** [-2.77]	-0.0699 [-0.86]	-0.0007*** [-2.60]	0.0615** [2.06]	0.2793*** [3.43]	0.8229	17.20***
(5)	Long-term liability ratio	-0.2187 [-0.82]	-0.0126*** [-2.61]	-0.0245 [-0.46]	0.0003* [1.81]	0.0173 [0.88]	0.0858 [1.60]	0.8744	25.92***
(6)	Short-term liability ratio	0.0474 [0.14]	-0.0076 [-1.25]	-0.0453 [-0.66]	-0.0011*** [-4.50]	0.0441* [1.76]	0.1936*** [2.82]	0.7217	10.17***

For regression models (1) to (6) in *Table 16*, growth opportunities are negatively associated with all variations of leverage which is similar to our main regression results. The main difference is that the negative relation between short-term liability ratio and growth opportunities is not statistically significant. This unclear relationship is in line with Myers's theoretical framework that short-term debt may not lead to underinvestment problem.

4.4 Comparison of the Results with Other Studies

As it was mentioned previously, various empirical results have been undertaken to examine the debt structure of firms in different countries. Cheng & Wu (2004) found negative relationship between average annual growth rate and leverage for firms in Taiwan and U.S. whereas Aggarwal & Kyaw (2009) found that growth opportunities are negatively associated with leverage in 8 western European countries which are in line with Myers's suggestions. Furthermore, Gajurel (2005) and Espinosa et al. (2012) found negative relationship between growth opportunities and leverage for Nepalese firms and Chilean firms, respectively.

The results of this empirical study suggests that non-financial listed firms in Mongolia have higher leverage which is consistent with Myers's theoretical framework. The results are similar to that of most of the developed countries as well as developing countries including Nepal, Chile, Indonesia and Sub-Saharan African countries. For developed countries, stock markets are highly developed thus; firms have better opportunities to raise capital through equity financing. For emerging market countries including China, India, Thailand, Pakistan or Vietnam, firms may undertake high leverage in order to maintain the high growth rate during growing economic periods. They may have limited opportunities to raise capital through equity and internal capital may not be sufficient to finance their operation or growth.

As for Mongolia, higher ownership concentration and lower investor protection in addition to less developed markets provide opportunities for insiders or managers to not issue dividends even when they have excess cash. Furthermore, the interest rate of borrowing is relatively high in Mongolia which increases bankruptcy risk if firms obtain large amount of debts. Therefore, when firms encounter high growth opportunities, they may use their internal funds to finance growth rather than undertaking loans.

5. Conclusion

This study investigates empirically the optimal corporate debt policy of non-financial listed firms in Mongolia in relation to growth opportunities, under Myers's theory, over the period 2012 to 2018. The total sample consisted of 105 firms or 735 observations whereas the restricted sample which excludes government-owned firms, consisted of 82 firms or 574 observations. Fixed effects model was selected as the most suitable model after conducting Hausman test. This regression model focuses on the main variable: growth opportunities by controlling the effect of tangibility, firm size, liquidity and profitability.

The results indicate that debt structure of non-financial listed firms in Mongolia in relation to growth opportunities is consistent with Myers's theoretical framework and the trade-off theory. Growth opportunities was negatively associated with total debt, long-term debt as well as short-term debt where negative relationship is stronger for long-term debt. Furthermore, other explanatory variables including tangibility, liquidity, firm size and profitability had significant impact on majority of the models. Finally, it was found that state-owned listed firms undertake higher loans compared to other listed firms in Mongolia.

The empirical results that are presented in this study are still at preliminary stage. The following issues need to be justified to support these findings.

First of all, due to unavailability of data, 105 firms were selected in our sample which may not fully represent the capital structure decisions of all non-financial listed firms in Mongolia which is 216. Moreover, this study used growth rate of total assets as proxy for growth opportunities for listed firms in Mongolia due to unavailability of firms' market values. It may have been better to use market-to-book value for measurement of growth opportunities which have been widely used in previous empirical studies. Finally, control

variables such as volatility, insider ownership, and management's behavior have not been included into the model which may influence firms' capital structure decisions.

Future researches should consider collecting more extensive data covering longer periods. Furthermore, using market-to-book value as proxy for growth opportunities may provide better explanation on capital structure decisions of listed firms in Mongolia. Examining firms by each industry may also provide better insights.

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