LEVERAGE AND PRICING OF U.S. AND CANADIAN LEVERAGED BUYOUTS

by

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PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN FINANCE

In the Master of Science in Finance Program
of the
Faculty
of
Business Administration

SIMON FRASER UNIVERSITY

Fall 2018

Approval

Name:	**Phuong Huynh and Bhupinder Singh**
Degree:	**Master of Science in Finance**
Title of Project:	**Leverage and Pricing of U.S. and Canadian Leveraged Buyouts.**

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Date Approved: December 12th, 2018

Abstract

This paper provides the empirical analysis of leverage and pricing of leveraged buyout (LBO) transactions. We collected sample data of 87 deals that were completed over the period of 1995 to 2013 in United States and Canada. We analysed the LBOs patterns based on industry, geography and time period using key financial multiples reflecting leverage and pricing ratios. We further matched firms following LBOs with comparable public companies as well as pre-buyout position and draw results using regression analysis. Based on the empirical analysis of our sample, the results show that the capital structure of the leverage buyouts is not driven by industry characteristics but there could be links between leverage and pricing of deals based on market-wide factors and fund managers' behaviours.

Keywords: Leveraged buyout; capital structure; private equity; debt.

Acknowledgements

We would like to express our great gratitude to our supervisor Professor Christina Atanasova for providing us valuable feedback and guidance and inspiring us all the way in writing this project. We would also like to thank Professor Victor Song for his valuable feedback.

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1: Introduction

Leveraged buyout (LBO) is a transaction whereby a company is acquired by a specialized investment firm. The assets of the company being acquired are used as a collateral for raising debt and to finance the cost for acquisition. Interest on debt is tax deductible, while dividends are not. Hence, debt, having lower cost of capital, is used as a lever to increase the returns to equity.

The leveraged buyout investment firms are more prominently referred as private equity firms. Most of the times, it is created as a temporary entity, which act in a fiduciary responsibility and generally exit the investment in a short period of 3-7 years. However, these transactions are increasing becoming a significant source of corporate financing.

In February 2018, Financial times reported that Bain, one of the world's biggest advisory firms, said in its global report that the number of "public-to-private" deals, where a private equity group buys a listed company, hit 152 last year, up from 94 in 2016. The all-time high of 196 transactions was hit in 2007, while the record value for such deals was $423bn in 2006. Hence, considering the significance of number and value of transactions, we will be addressing both leverage as well as pricing of leverage buyout in this paper.

We explain how the transactions are structured and leverage, by way of debt, is used to finance the buyout deals. Then, we compare the firms being acquired using

leverage buyout with its comparable firms in public sector based on industry and time period. We reviewed the capital structure of the firms, that are acquired using leverage buyout, over period of pre and post-acquisition.

In order to analyse the financial structure of buyout transactions, we constructed a database of private equity buyout deals during 1995 to 2013. We included only those deals that were closed during this period. There have been studies and journals addressing LBO transaction executed worldwide and, in particularly, Nordic countries. Our paper is geographically focused on LBO deals with headquarter of issuers or target company located only in United States and Canada, thus differentiating it from the work done by other in the past. Moreover, we also extended our finding to recent period.

We initially pulled the data using Capital IQ for all leverage buyout transactions over the target period and geography. We included not only transactions of public company going private, but also independent private companies and corporate divisions buyout, subject to availability of data. Information of private companies are not readily available on public domains, thus restricted the list of such transaction in our sample. Then, we identify them of some of the largest private equity houses based on assets under their management. Details of loans and bonds, used to finance the leverage buyout transaction, are obtained from Thomson Reuters. We end up with a final sample of 87 companies, 68 of which were in U.S. and 19 in Canada. Though U.S. and Europe have significant number of LBO deals, but this practice is quite limited in Canada.

As expected, the sample firms were highly leveraged as result of the buyout transactions. On an average, the debt accounted from two-third (67%) of the deal value and remainder financed through equity. We also observe that the different types of debt

that are used for financing. The bank debt is divided into tranches, having different terms of repayments. Some of this debt is amortizing but majority tends to be a structured as interest payment only with final payment as bullet amount. Debt has multiple layers and classified as senior, subordinate, mezzanine and 2nd lien debt. Many deals also incorporated non-contingent debt, financed by way of revolving facility, to support the business activities of the acquired company at later stage. Though bonds are also issued to finance the transactions, but they were never used as a primary source. Like bank debt, bonds also have different layers of senior and subordinated bonds.

Debt is used to finance the buyout deals and if the firm assets are already collateralised against its existing debt, then the private equity firm will not be in position to leverage out the deal by using these assets of the target firm. Therefore, we compared the pre-buyout financial structure of the target firms that showed a comparatively lower proportion of average debt in capital structure than the public companies.

In our paper, firstly we identify the structure of transactions, then leverage and finally pricing. We review the overall structure of buyout transactions in terms of size of deals over period segregated by geographies. It identifies the extend of debt used to finance the transactions and trend over the period including revenue, profitability and enterprise value of target firm. Then we conduct the cross-sectional variation deal type and included divisional as well as secondary buyout, part from public-to-private transaction. The percentage of club deals is used to identify the proportion of transaction executed by group of private equity firms to fund the equity required for buyout. Then identify major industries in which leverage buyout transaction are observed.

To analyse leverage, various ratios are used including non-contingent debt by enterprise value and total debt by total funds invested. Debt as multiplier of profit is also calculated using Non-contingent debt by EBITDA and total debt by EBITDA. Higher amount indicates the extend of risk that the financiers are willing to take at the time of funding transaction.

Similarly, to analyse pricing, multiplier such as enterprise value by EBITDA and enterprise to sales are derived that indicates the confidence of investor or private equity firm in the deal by way of potential in future growth of firm in the buyout deal.

After we describe the patterns in leverage buyout deals, we move a step ahead to compare it with public deals. To our surprise, there appears to be no relation of leverage as well pricing of LBO with public companies. There was statistically no significant correlation even when the data was dissected on industry and year basis. It indicates that buyouts are driven by entirely different consideration than the choice of leverage in an identical public firm in same industry.

In order to rule out above explanation, we further examine our sample over the period and compare pre-buyout leverage indicators with post-buyout deal. However, we find that there is not a statistically significant relationship between the two either. Another, more menacing interpretation can be that the relationship is driven by the self-centred objective of private equity firms, which always intend to increase the debt portion of the deal during favourable debt market conditions in order to leverage return on their equity.

Axelson, Stromberg, Jenkinson and Weisbach (2007) has written a detailed paper on Leverage and Pricing in Buyout. They considered firm from U.S., Europe and rest of

the world for period from 1985 to 2006. We have considered their paper as a base for reference; however, we intend to analyse the deals restricted to United States and Canada only. Moreover, we extended our research by considering more recent data to analyse more recent trend.

Section 2 of this thesis describes the different ways in which private equity transactions can be structured. The third section explain how data sample is generated. In the next section, we review the relevant theories about factors that could affect leverage. Then we present our results in Section 5. The final section concludes and provides extension for future research.

2: Structuring of private equity transactions

There are different ways in which private equity transaction can be structured. Firstly, the private equity fund finds the target and strike the deals on one to one basis. Such "proprietary" transactions are increasing rare and exist primarily for small deals. Secondly, a private equity fund for the purchase of target company may compete with multiple private equity funds in an auction as conducted by investment bank. Sometimes, a consortium or group of private equity fund combine to form "a club deal" to competes with other groups. Thirdly, in case of public-to-private deals, where a private equity fund participates in an auction to takeover a publicly traded company. The purpose mainly in such case is the management of the selling company to get the highest bid by opening its to private equity companies for review and investigation. There is other form of transaction also whereby the management tries to take over its own company by purchasing it from existing owners. We have not considered the management buyout deals for our analysis.

In order to perform the buyout transaction, most of the times a new company is floated by private equity firm, referred as newco. It is floated as SPV (special purpose vehicle) to perform the transaction. The private equity firm infuse its equity in this firm. After the reasonable period of 3-7 years, the target company is sold off and gain realised in newco is finally handed over to its private equity firm and newco is liquidated. Such a structuring helps to restrict the liability of private equity company to the extent of funds invested in newco and also keeps the track of investment separate from other private equity deals.

A private equity firm may finance the entire buyout from its own equity. It happens primarily for new start up during their initial stage of life. However, in our paper we have dealt only with leverage buyout transactions. In case of LBO, the assets of the target company that is taken over are used as collateral or security to raise debt to finance the buyout deal. Most of the time such deals are funded by syndication loan market through consortium of banks rather than an individual financier. The debt financed is released in several tranches. To make a deal successful, fund managers must be in position to raise debts for acquisitions. Lenders would typically make their loan decisions based on factors such as cash flows and tangible assets of the target firm which is offered as collateral as well as assets under funds' management.

3: Data Sample

To develop our sample, we started with screen building option of Capital IQ with leverage buyout transaction. We noticed that significant number of transactions occurred 1995 to 2015. We filtered it to include only closed transaction and removed failed, incomplete and other type of deals. We further refined it with geography to include deals of firms with headquarters based only at United States and Canada. It provided us with the detail of date of transaction, target company, buyer / private equity fund, seller, transaction classification, some of the basic financial parameters such as revenue, EBITDA, total consideration for last twelve months (LTM) as well as for pre-LBO transaction. The initial size of our data based include more than 900 firms.

Thereafter, we identify some of the largest private equity houses, based on assets under their management, The Blackstone Group, Kohlberg Kravis Roberts (KKR), The Carlyle Group, TPG Capital, Warburg Pincus, Goldman Sachs, Sterling partners. Our objective is to secure the list of transaction that are industry representative, are not too small and are appropriate for comparison with public company base.

We obtain details of debt and bonds used to finance these companies by pulling loan tear sheet of each individual transaction from Thomson Reuter. Our final sample at this stage was seriously restricted due limited availability of debt financing details. Most of the leverage buyout transactions are observed in United Stated or Europe. We extended our parameters and include some additional funds in order to have adequate sample size for Canadian firms. Finally, we ended up with a sizeable sample of 87 companies, 68 of which were in U.S. and 19 in Canada. For getting benchmark data of public companies, we applied similar process using “Compustat” and average it based on

industry and period. We followed Fama and French classification of 48 industries for grouping and analysis of data of LBOs as well as public companies.

4: Literature Review

In this section we review the relevant theories about factors that could affect leverage. Even though these theories of capital structure are to explain financing in public companies, they could apply to buyouts in principle as well. We also discuss reasons that leverage could be chosen differently in buyouts from in public firms.

4.1 Company Characteristics

One of the most common explanation used for leverage is probably the trade-off theory which says that capital structure is chosen in order to offset bankruptcy costs marginally with tax and incentive advantages of debt (Myers, 2001). According to this theory, the capital structure of a firm should be customized accordingly to the assets' characteristics of that firm. For example, firms with high profitability and stable cash flows should have high leverage since they can utilize debt tax shields better and have less financial distress. For companies with more investment opportunities and more intangible assets, level of debt is expected to be low and costs of financial distress are likely to be higher. If LBO buyers and managers of public firms follow the trade-off theory, LBO leverage and the leverage of public firms with similar characteristics should have relation. We will test this idea by relating LBO and public firm leverage to same industry-level factors. The idea is to determine whether leverage at buyouts and public firms are determined by industry characteristics. The trade-off theory is often supplemented with the pecking order theory of Myers and Majlufs (1984), in which information asymmetries lead to higher costs in the issuance of securities, resulting in firms temporarily straying from the optimal leverage target going by the trade-off theory

(Axelson, Stromberg & Weisbach, 2009). Companies that have been more profitable might not need to issue securities to finance investments and might end up with low leverage even though they have higher debt tax shield and get more incentive benefits of debt. This "deviation" in leverage is less likely to be observed in our sample of LBOs since the focus of our paper is on leverage in buyouts at the time of the transaction. Therefore, we also compare buyout leverage to leverage in public firms that have made active leverage decisions recently.

4.2 Market-Timing

A theory by Baker and Wurgler (2002) suggests that mispricing in equity markets can be taken advantage of by managers when issuing securities so that they can issue much more when markets are overpriced than when they are underpriced. In similar principle, the debt markets may become "overheated" leading to investors not receiving the full interest rate matching with the fundamental underlying risk of a firm. Therefore, when the debt markets are overvalued, managers who are aware of this market imperfection should take advantage of it by issuing more debt (Axelson, Stromberg & Weisbach, 2009). This hypothesis is quite consistent with the view of many private equity managers in practice who often argue that private equity funds can make more money by increasing deal leverage in hot credit market conditions to take advantage of the conditions between equity and debt markets. Contrarily, chief financial officers of public companies would be more concerned with maintaining financial flexibility and wary of destress costs in this kind of debt markets (Graham and Harvey, 2001). As buyout companies should be more willing to pay higher deal prices when debt financing is cheaper, the market-timing theory may better apply to leverage in LBOs than company

characteristics suggested by the trade-off theory. While publicly traded firms can utilize the similar pattern, private equity managers are likely to time the debt markets better than the managers of publicly traded firms who are subjected to more scrutiny and concern for higher leverage from shareholders. Moreover, the market-timing theory also suggests that returns for private equity funds should be higher when higher leverage is used to finance deals since private equity funds do not face enough competition to give them incentives to pass on increasing value to target shareholders and may keep more profits (Axelson, Stromberg & Weisbach, 2009).

4.3 Agency Conflicts between GPs and LPs

As leverage choices for publicly traded firms can be explained by agency problems between CEOs and owners, they could also be explained by the potential agency problems between private equity fund managers or general partners (GP) and investors or limited partners (LP) in the fund. Due to the option-like carry contract general partners hold on fund returns, GPs have limited liability and are more prone to overinvestment (Axelson, Stromberg & Weisbach, 2009). They can be more willing to gamble by taking large levered stakes in portfolio firms. A model by Axelson, Strömberg, and Weisbach (2009) suggests that the tendencies of GPs to overinvest are mitigated by capital constraints in which it is required that whenever GPs want to make an investment, they must go to external capital markets and raise debt. When interest rates are low, or liquidity is high in debt markets, GPs can add more debts to finance their deals and invest more aggressively. This increases the value of their bonus and makes them more willing to pay for deal prices that are higher than fundamental value (Axelson, Stromberg & Weisbach, 2009). This agency conflict is similar to the market-timing theory because it

predicts that GPs are driven more by debt market conditions to increase leverage than by the companies' characteristics. However, the agency theory suggests that investors may want to avoid higher leverage as it can lead to lower fund returns on average, which is contrary to what the market-timing theory predicts. It is worth noting that mispricing in debt markets can still occur under the agency theory. The availability of "cheap" credit during certain time can potentially worsen the agency problem by making it easier for GPs to lever at the expense of LPs (Axelson, Stromberg & Weisbach, 2009).

4.4 Discount Rates and Equity Market

The market-timing and agency theories above suggest that debt market conditions drive leverage and pricing multiples in buyouts; the main measurement for these conditions is the high yield spreads in these markets. Nevertheless, the time-series pattern could be observed even without mispricing or agency problems if the market-wide discount rate is time-varying (Axelson, Stromberg & Weisbach, 2009). While pricing multiples will be higher, the high-yield spread in this situation is likely to be lower when overall discount rates are lower. According to a standard trade-off theory, cost of debt would go down and leverage multiples could also become higher because companies should be able to take on more debts at a given level of cash flow and would still be able to meet payment requirements. Regardless, general discount rate movements should have much symmetrical impacts on public firms and LBOs in terms of pricing multiples while the market-timing and agency theories apply mostly only to LBOs. Therefore, pricing and leverage in public firms - could pick up any effect in general discount rate movements. However, public equity markets could also experience mispricing and both equity and debt markets may become overheated at the same time. The market-timing theory relies

much on the relative mispricing of debt and equity markets, so it is important to control the common components of public and debt markets when measuring the impact of credit conditions on the LBO (Axelson, Stromberg & Weisbach, 2009).

5: Results

In this section, we describe the observations from our data sample and the results of our regression analysis.

5.1 Trends in Data Sample

Figure 5.1 represents the overall trends in our data sample. There is a huge spike in 2006 due to the all time high of M&A transactions in general leading up to the financial crisis in 2008. Leverage measured by Debt on EBITDA ratio and pricing measured by enterprise value on EBITDA ratio follow very similar patterns especially from 2002 to 2009, indicating that there could be relation between these two factors. We will further elaborate on this relation in the later section.

Figure 5.1 Market Trends in Data Sample

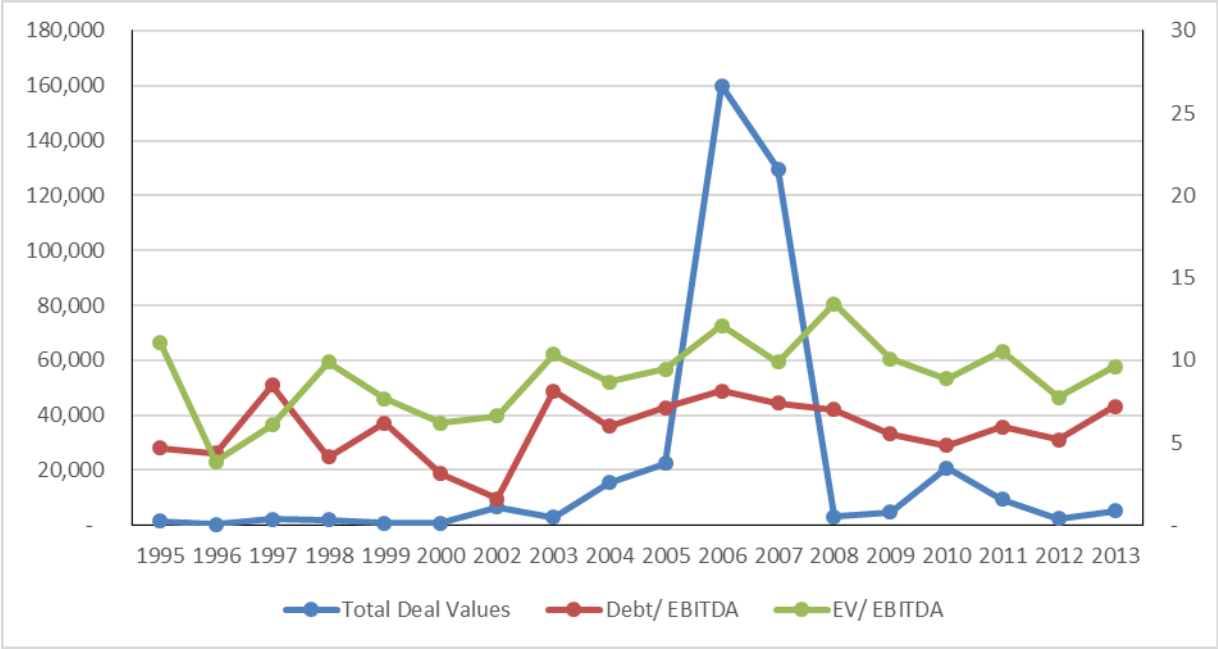


Table 5.1 and table 5.2 report market trends in separate countries, U.S. and Canada, in the longest sequence of years available in our sample with total value of deals, purchase price on EBITDA, the average level of equity funding, senior debt on EBITDA and total debt on EBITDA by years.

Table 5.1 Trends in U.S. Market

United States	Total value of Deals	Pricing	Equity Contribution	Senior Debt / EBITDA	Total Debt / EBITDA
2004	15,345.64	6.39	56%	2.6	6.0
2005	22,373.72	9.97	66%	3.4	4.2
2006	157,941.26	9.93	38%	5.6	8.4
2007	124,323.63	9.37	41%	5.4	7.5
2008	687.69	7.99	50%	4.0	4.7
2009	4,270.99	8.14	51%	4.0	4.6
2010	17,136.17	7.24	62%	3.0	3.7
2011	87,13.41	8.84	36%	5.3	6.5
2012	1,883.38	7.78	45%	4.3	4.9
2013	4,272.82	9.66	41%	5.6	7.2
Average		**8.41**	**49%**	**4.18**	**5.61**

Purchase price multiples which include transaction fees and expenses average around 8.41x EBITDA in the U.S. They increased from 6.39x in 2004 to more than 9.5x in the next three years. This was when fund managers were highly confident in the market and were willing to take advantage of the heating up debt market. When the financial crisis happened in 2008 and had a major impact on U.S. economy, the pricing multiples dropped to 7.99x. They then fluctuated from 8.144x to 7.78x from 2009 to 2013 before experiencing a hike in purchase price multiple to 9.66 in 2013. Could this hike be driven by consistently low interest rate at the time?

Correspondingly, the equity contribution level was at the lowest levels of 38% and 41% in 2006 and 2007. We would like to put the 36% of 2011 equity contribution in

context and re-adjust it to 50% since the sample available in that year was skewed by two extreme individual cases of more than 85% of debt financing. Both leverage multiples also display similar pattern as they reached record high in 2006, 2007 and 2013.

Table 5.2 Trends in Canadian Market

Canada	Total value of Deals	Pricing	Equity Contribution	Senior Debt / EBITDA	Total Debt / EBITDA
2006	2,012	5.8	31%	4.96	5.80
2007	5,243	6.3	35%	4.94	7.23
2008	2,206	11.0	61%	5.84	7.76
2009	324	4.5	42%	4.26	6.50
2010	3,725	7.8	28%	6.92	8.02
2011	656	9.2	67%	3.56	4.50
2012	384	2.7	35%	1.78	5.50
2013	838	7.0	3%	6.72	7.16
Average		**6.80**	**38%**	**4.87**	**6.56**

The Canadian market, however, showed many contradictions. The pricing multiple peaked at 11x in 2008 and went down significantly to 4.5x the year after that (see table 5.2). Contrary to the U.S. sample, the equity contribution in 2008 was at 61%, the second highest in our Canadian sample. The pricing multiples increased to 9.2x in 2011 and dropped to 2.7x in 2012 before picking up again in 2013. Whereas debt financing increased whenever purchase price multiples jumped in the U.S., Canadian private equity funds seemed to prefer financing their deals with lower leverage. Considering how closely Canadian economy is linked to U.S., there seemed to be a time lag in reaction to crisis and significantly enough differences in the relevant characteristics of the two markets. Moreover, it could be that the financing capacity of Canadian private equity funds might be overall less than that of the big funds in the U.S. so Canadian fund managers tend to be more conservative in leveraging their deals.

Table 5.3 shows the distribution of our sample companies according to their transaction types, countries and year. We classify LBOs as public-to-private (if the transaction purpose is to take a public company private), a division of a company, or a secondary transaction where the seller was a private equity company. We also classify buyouts as single or club deals (deals that are sponsored by many private equity funds).

Table 5.3 Distribution of Transaction Types and Countries from 1995 to 2013

Year of LBO announcement	No. of LBOs	Public-to-Private	Divisional Buyout	Secondary Buyout	Club Deal	United States	Canada
1995-1999	8	6	2	0	2	8	0
2000-2003	5	3	1	1	2	5	0
2004	7	3	3	1	4	7	0
2005	5	4	1	0	4	4	1
2006	19	13	6	0	11	17	2
2007	16	10	5	0	5	11	5
2008	4	3	0	1	1	1	3
2009	2	1	1	0	2	1	1
2010	8	5	1	2	4	6	2
2011	7	4	2	1	3	5	2
2012	2	1	1	0	0	1	1
2013	4	3	1	0	2	2	2
Total	87	56	24	6	40	68	19
%	100%	64%	28%	7%	46%	78%	22%

Around 40% of deals in our sample were in 2006 and 2007. The most common transaction purpose is to take public companies private, which makes up 64% of our data; the second most common purpose is to acquire a division or business function of a larger company, which contributes to 28% of the sample. We try to minimise the skew in data towards the number of U.S. targets (78% of sample) but not many deals in Canada have their financing information available to the public.

Table 5.4 represents the distribution of our sample companies according to industries. The industry that has the most transactions is business services mostly due to its wide range of sub-industry classification with 15 transactions. Other industries that

have big presence in our sample are medical equipment (8 deals), retail (8 deals), healthcare, and communication (6 deals). Table 5.5 reports on the funds that have the most deals in our sample which are TPG Capital with 15 buyouts, Blackstone with 13 transactions and KKR with 12 deals.

Table 5.4 Distribution of Sample Industries

Industry	Count	Industry	Count
Aero Aircraft	3	Insurance	1
Autos Automobiles and Trucks	2	Machinery	2
Construction Materials	1	Restaurants, Hotels, Motels	2
Business Services	15	Medical Equipment	8
Electronic Equipment	3	Petroleum and Natural Gas	5
Apparel	1	Personal Services	2
Pharmaceutical Products	2	Real Estate	2
Trading	4	Retail	8
Food Products	1	Steel Works Etc	2
Entertainment	3	Communication	6
Healthcare	6	Transportation	1
Consumer Goods	5	Utilities	2

Table 5.5 Main LBOs Sponsors

TPG Capital	15
The Blackstone Group	13
Kohlberg Kravis Roberts (KKR & Co. Inc.)	12
The Carlyle Group	10
Goldman Sachs Principal Investment Area	8
Warburg Pincus	6
Hellman & Friedman	4

Table 5.6 represents the deals' size. Our sample contains many large deals; the average LBO enterprise value is near $6 billion, while the median is around $2 billion. Divisional buyouts are the largest, averaging slightly over $8.5 billion enterprise value. In contrast, secondaries are the smallest type of deal in our sample, but still average over $2.5 billion in enterprise value.

Table 5.6 Size of LBOs

	Enterprise Value			
	Mean	**Median**	**Min**	**Max**
All LBOs	5,961	2,008	59	51,564
Public-to-Private	5,364	1,986	59	37,773
Divisional Buyout	8,508	3,670	389	51,564
Secondary LBO	2,133	1,729	686	4,234
KW Test / P-value	0.22768			
Single vs Club				
Club deals	8,431	3,057.57	126	51,564
Single-Fund deals	3,920	1,580	59	43,518
Countries				
U.S.	7,296	2,769	235	51,564
Canada	1,066	445	59	4,234
KW Test / P-value	0.00001			
Year range				
1995-1999	5,970			
2000-2004	17,754			
2005-2009	32,022			
2010-2013	7,373			
KW Test / P-value	0.00001			

5.2 Leverage in Data Sample

5.2.1 Capital Structure

In Table 5.7, we present an example of a buyout capital structure using one of the transactions in our sample, the purchase of the EQ Office in 2006. This transaction used a capital structure that was typical for buyouts conducted at that time and, as such, we discuss this financial structure in some detail.

EQ Office was acquired by private equity house Blackstone Real Estate Advisors in 2006 for an enterprise value of $43.518 billion. Blackstone, after the completion of the merger, liquidated Equity Office Properties Trust into a Blackstone affiliate. It is reported that each shareholder of the 5.25% Series B Cumulative Preferred Stock received $50.00 per share in cash plus any then accumulated but unpaid dividends, and each shareholder

of the 7.75% Series G Cumulative Redeemable Preferred Stock received $25 per share in cash plus any then accumulated but unpaid dividends (Blackstone, 2006). The qualified holders of common limited partnership interests were given the option to elect to get preferred units of limited partnership interest in the partnership and their interest were acquired for $48.5 per unit in cash.

Table 5.7 EQ Office

Enterprise value	43,518
Equity	
Amount	12,725
Percentage	29.24%
Debt	
Senior Term Loan	17,496
Mezzanine	13,297
Total	30,793
Percentage	70.76%
Multiples	
EV / EBITDA	19.79
Debt / EV	0.71

The purchase was financed using $12.725 billion of equity (provided by funds advised by The Blackstone Group) and $30.793 billion of debt (underwritten by Goldman, Sachs & Co., Bank of America, and Bear Stearns). The ratio was therefore 71% debt and 29% equity, which is typical for the buyouts in our sample. The debt was structured into senior and subordinated tranches. The facility comprises $17.5 billion in senior term loans and U.S. $13.3 billion of mezzanine loans split in eight tranches. One

tranche, called Senior Term Loans, had a 7-year maturity and was amortizing. In addition to the term loan, the company obtained eight tranches of a mezzanine debt of $1.8 billion.

Table 5.8 Debt Structure for the Data Sample

	ALL LBOS			U.S.		Canada	
		% of Debt Funding	No. of tranches	% of Debt Funding	No. of tranches	% of Debt Funding	No. of tranches
Bank debt	3,572	91%	3.25	88%	3.35	100%	2.89
-Senior	2,574	63%		59%		75%	
-Subordinated	177	2%		2%		5%	
-Revolver and Other Facilities	822	26%		28%		20%	
Bonds	437	9%	1.88	12%	2		
-Senior	320	61%		19%			
-Subordinated	117	39%		12%			
Sample Size	87	87		68		19	

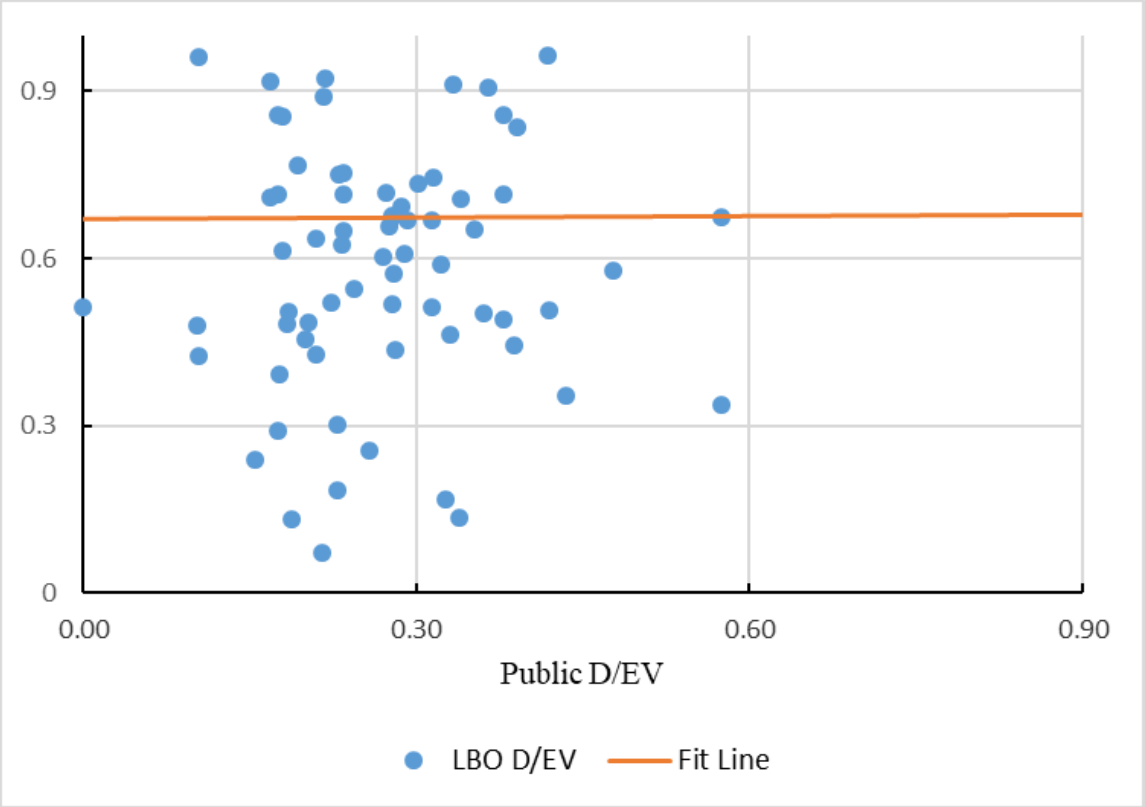
In practice, Term Loan A and the revolving facilities are usually kept on the balance sheet of the originating bank after the transaction, while Term Loans B, C, etc. as well as the subordinated tranches are often securitized or sold to institutional investors, such as hedge funds. Table 5.8 details the debt structure for the whole sample. Bank debts are the main source of deal financing. On average, senior loans fund 63% of total debt, whereas revolver and other facilities fund 26%. The use of subordinated debts is heavily underhanded. Table 5.8 also presents the difference in deal financing between U.S. and Canada.

5.2.2 Relation of LBO Leverage with Pre-LBO Leverage and Public Leverage

To determine whether fund managers referred to the capital structure of the equivalents in matched industries, we first plot our sample deals against their public

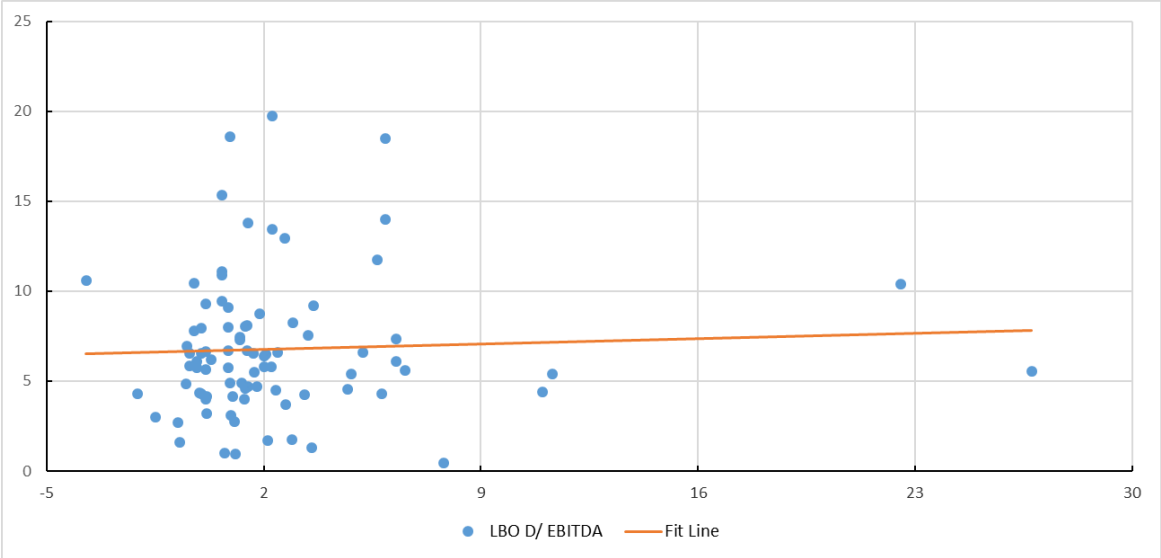
matches in the same industry, year and countries (see figure 5.2 and 5.3). We then run a regression test of LBO leverage on the leverage of the matched public firm industry medians (see results in Appendix A and B).

Figure 5.2 LBOs Versus Public Matched Leverage (Debt/ EV)



Traditionally, leverage is measured as debt over total enterprise value. However, private equity fund managers tend to focus more on debt relative to measures of cash flow. EBITDA is a fairly reasonable and commonly used proxy for cash flow as it removes the effects of capital structure and most industries in our sample do not have intensive capital expenditures. Therefore, we use debt on EBITDA as a second leverage ratio. We see no relation at all between the leverage used in the buyout and the leverage of the public comparable in either regression.

Figure 5.3 LBOs Versus Public Matched Leverage (Debt/ EBITDA)



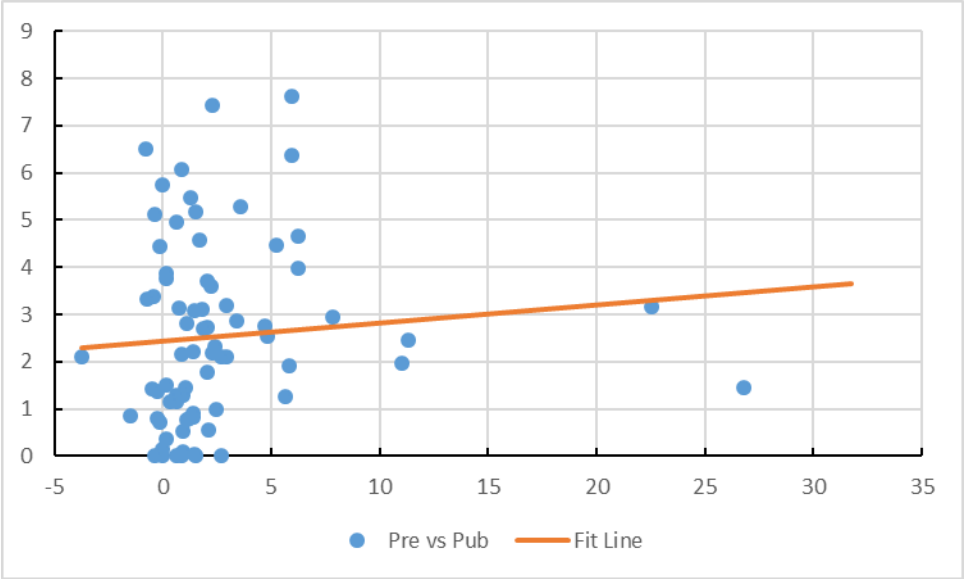
There are two possible reasons for this:

1. The choice of leverage in buyouts is driven by different factors than the choice of leverage in an identical public firm; or

2. Our matching of buyouts to public firms is not accurate.

To rule out reason 2, we examine the smaller sample of our buyouts in which we have obtained information about pre-LBO financials. Figure 5.4 plots buyout leverage against pre-LBO leverage, and again, there is no relationship (see results in Appendix C). However, there is a statistically significant correlation between in the leverage of pre-LBOs and that of their public matches (see results in Appendix D). This leads us to believe that the leverage in buyouts is driven by different factors than the leverage in an identical public firm.

Figure 5.4 Pre-LBOs Versus Public Matched Leverage (Debt/ EV)



5.3 Pricing in Data Sample

Table 5.9 provides evidence on the pricing of the LBO transactions in our sample by measuring enterprise value against EBITDA and revenue. Secondary deals have the highest valuations, relative to EBITDA, with average multiples of around 11.76x while Divisional buyouts have highest valuations, relative to revenue, with average multiples of around 3.26x. Multiples do not vary much by country. However, the 2005-2009 period experienced significantly high valuations at 58.61x for EV on EBITDA and 13.31x for EV on sales.

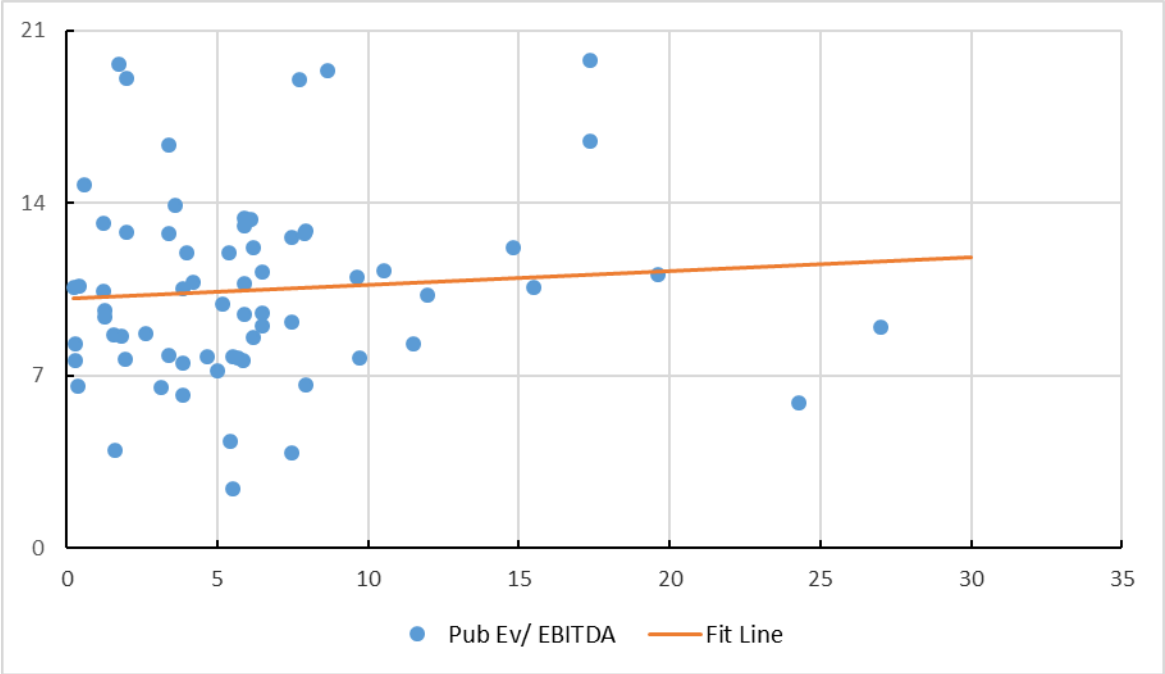
We then go on to examine the relation between pricing multiples in LBOs and in public firms. We simply match the price of a buyout with the median price of a public firm within the same industry, time, and countries (see figure 5.5) and run the regression analysis on LBO and public matched pricing since prevailing price multiples in public

markets are always considerable variables in determining buyout pricing. Surprisingly, there is no relation here either (see results in Appendix E).

Table 5.9 Pricing Multiples of Sample

	EV / EBITDA			EV / Sales		
	Mean	Min	Max	Mean	Min	Max
All LBOs	10.40	2.42	20.48	2.49	0.49	11.44
Public-to-Pvt	10.95	5.78	19.79	3.26	0.49	11.44
Divisional Buyout	10.00	2.42	20.48	2.17	0.50	7.43
Secondary LBO	11.76	5.89	19.01	2.47	0.60	8.48
KW Test / P-value	0.41356			0.15287		
Countries						
United States	10.49	2.42	19.79	2.58	0.49	11.44
Canada	10.09	6.53	20.48	2.18	0.55	7.43
KW Test / P-value	0.63925			0.34293		
Year range						
1995-1999	38.50	33.75	43.25	8.70	4.91	12.49
2000-2004	31.81	19.54	45.16	7.69	3.30	14.46
2005-2009	58.61	40.19	84.77	13.31	4.64	29.73
2010-2013	36.73	29.45	44.44	7.63	3.45	13.41
KW Test / P-value	0.00290			0.56148		

Figure 5.5 LBOs Versus Public Matched Pricing (EV/ EBITDA)



6: Conclusion

Private equity firms have gotten larger and more influential over the world's capital markets. Because equity capital is contributed by limited partners and debt is further used to supplement deal financing, fund managers often claim that the accessibility to the debt markets is an important driver in investment decisions. While this claim contradicts Modigliani Miller theorem which says that capital structure is irrelevant to the value of a company, our sample containing loans details of 87 large recent LBOs suggests that the claim may have some validity. Our trend analysis indicates there could be links between the availability of financing or financial behaviors of private equity firms in the two countries, U.S. and Canada, and private equity firms' investment decisions. However, firms' specific characteristics may not be the determined factor in managers' decisions on deal prices and LBOs' capital structures may require different explanation than those of public companies. Further examination into factors concerning the debt markets are needed to justify the impact that leverage has on the prices of deals.

Appendices

Appendix A - Regression Analysis of LBO and Public Matched Debt/ EBITDA

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.04875112
R Square	0.002376672
Adjusted R Square	-0.009642886
Standard Error	3.885902412
Observations	85

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.985825877	2.985826	0.197734	0.65771379
Residual	83	1253.319717	15.10024		
Total	84	1256.305543			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	6.660050521	0.483591182	13.77207	3.81E-23	5.69820711	7.62189393	5.69820711	7.621893933
Pub Debt / EBITDA	0.043750979	0.0983892	0.444673	0.657714	-0.15194118	0.23944314	-0.151941182	0.23944314

Appendix B - Regression Analysis of LBO and Public Matched Debt/ EV

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.00569112
R Square	3.2389E-05
Adjusted R Square	-0.0123129
Standard Error	0.35380984
Observations	83

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000328424	0.00033	0.00262	0.959275575
Residual	81	10.13969361	0.12518		
Total	82	10.14002203			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.67100112	0.058857859	11.4004	1.6E-18	0.553892442	0.788109798	0.553892442	0.788109798
Pub Debt / EV	0.00873129	0.170463377	0.05122	0.95928	-0.330437357	0.347899944	-0.330437357	0.347899944

Appendix C - Regression Analysis of LBO and Pre-LBO Debt/ EV

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.1287871
R Square	0.01658612
Adjusted R Square	0.00273522
Standard Error	0.16938079
Observations	74

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.034355405	0.0343554	1.19748	0.2775254
Residual	71	2.036979563	0.0286899		
Total	72	2.071334968			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.23957477	0.021434074	11.177286	2.6E-17	0.1968364	0.282313	0.1968364	0.2823131
Pre-LBO D/EV	0.00475699	0.004347089	1.0942924	0.27753	-0.0039109	0.013425	-0.0039109	0.01342484

Appendix D - Regression Analysis of Pre-LBO and Public Matched Debt/ EV

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.251409268
R Square	0.06320662
Adjusted R Square	0.050195601
Standard Error	0.164361836
Observations	74

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.13123607	0.13123607	4.857929957	0.03071703
Residual	72	1.945066549	0.027014813		
Total	73	2.076302619			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.327565127	0.041031046	7.983348275	1.6471E-11	0.245771233	0.409359022	0.245771233	0.409359022
Pub D/EV	-0.120858478	0.054834198	-2.204071223	0.03071703	-0.230168453	-0.011548502	-0.230168453	-0.011548502

Appendix E - Regression Analysis of LBO and Public Matched Pricing (EV/ EBITDA)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.082135021
R Square	0.006746162
Adjusted R Square	-0.008534667
Standard Error	3.819872928
Observations	67

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	6.441806632	6.4418066	0.441479	0.508759913
Residual	65	948.4428973	14.591429		
Total	66	954.8847039			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	10.11730032	0.71063658	14.236954	1.19E-21	8.698061067	11.5365396	8.698061067	11.53653957
Pub EV/ EBITDA	0.056763636	0.085430958	0.6644387	0.50876	-0.11385377	0.22738104	-0.11385377	0.227381041

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