Private Equity Leveraged Buyout Analysis: Evidence from Citrix Transaction

Yingzhou Yang*

Seaver college Pepperdine University Malibu, United States

* Corresponding Author Email: Yingzhou.yang@pepperdine.edu

Abstract. Evaluations of the leveraged buyout and the consideration of debt schedule are critical for private equity funds. Large amounts of debt can create value for a firm but increase the risk simultaneously. This paper describes the result of a specific transaction's valuation based on the adjusted present value, the weighted average cost of capital method, and the equity cash flow valuation methods. The same results are presented by each method, but the interpretation can be quite different. Besides, the value creation to the firm through each variable in different methods and the validation steps are discussed. Furthermore, this paper presents the performance indicators: internal rate of return and cash on cash multiple. These results shed light on demonstrating the impact of tax shield and capital structure on the enterprise value, cost of equity, and cost of capital calculation.

Keywords: Valuation; Leveraged buy-out; Private equity; Tax-shield.

1. Introduction

M&A transaction volume achieves a historic high last year, which breaches 5 trillion for the first time [1]. Contemporarily, plenty of large transactions in the technological sector announced that Google, Apple, Facebook, Amazon, and Microsoft acquired more than 400 firms in the ten years leading up to 2020, predominantly in the technological sector [2]. This sector can be separated into software, Hardware, and Service. This paper will discuss the Cloud-Service and software company "Citrix." Vista and Elliott Management are the private equities that lead to this transaction, where both are funds in the tech-focused firm. The acquisition method used in this case is a leveraged buyout, the most commonly used method in private equity to acquire the target company, emphasizing the maximization of efficiency and value [3].

According to the previous study, the buyout is typically financed with 60%-90% debt, most of the debt always includes a senior and secured loan arranged by a bank [4]. Under current tax law still creates significant tax incentives, which is also known as a tax shield. Nevertheless, after TRA'86, less than half of the acquisition premium can be attributed to tax shield because one can use all tax shields in eight years only when the growth rate is almost triple forecasted [5]. Based on the tax shield in a leveraged buyout, if the debt schedule takes firms' ability to pay into the account, the cost of debt will be lower. If the focus is on the future leverage ratio, the cost of debt will increase [6]. However, another research proves that the improvement of a leveraged buyout is not dependent on tax savings [7]. Besides, it indicates that the introduction of entrepreneurial management of new owner-managers will be the best explanation for firm improvement [7]. In addition, for larger acquisitions and successful acquisitions, management's equity is an important factor in determining the return on a leveraged buyout [8].

The exit decision is the last step of the leveraged buyout, most academic literature has tended to claim that IPOs as the successful exit route, but the secondary buyout still has any attraction for investors, which can provide liquidity to each other [9]. To measure the probability after exiting, IRR is a good indicator to measure the performance of the transaction. As a rule, the more years included in the return calculation, the more robust the IRR calculation becomes [10].

The size and sector of this transaction are the reasons for picking this case in this paper. It is the largest transaction of private equity in this year as well as in the technology sector. Based on this situation, this transaction will be a good guideline contemporarily. In addition, large amount of debt

was used in this transaction, which can easily analyze the tax shield's impact on leveraged buyout. The rest part of the paper is organized as follows. The Sec. II will be the methodology part which explains the valuation method used in this paper. The Sec. III will be the result and discussion part, which interprets the results of this model. Eventually, a brief summary will be given in the Sec. IV.

2. Methodology

2.1. Data

As mentioned earlier, this case will focus on Vista and Elliott Management's buy out Citrix and take it too private. After this transaction, Vista plan to combine Citrix with Tibco which owned by Vista since 2014. Citrix is a public company listed on NASDAQ that provides server, software as a service, and cloud computing technologies. The constructed model will direct use the data from SEC filling. Fig. 1 presents the price trend of Citrix stock price from 2017 to 2022.

2.2. Models

The model used to valuate in this transaction is LBO model, also known as Leveraged buy-out model. Under this model, source and use of cash, as well as debt schedule must be included. Various valuation methods can be used to achieve our goal, evaluating this transaction will be profitable or non-profitable. The paper selects adjust present value (APV) method, weight average cost of capital (WACC) method, and the Equity Valuation method to valuate enterprise value and equity value of firm. APV method formular can be described as

$$V_t^L = V_t^U + PV(TS) \tag{1}$$

Where V_t^L is levered enterprise value, V_t^U is unlevered enterprise value and PV(TS) is the present value of tax shield. The procedure of the calculation can be described as follows:

- First, it required to compute Free cash flow and used unlevered cost of capital to find unlevered enterprise value.
- Second, one needs to compute interest tax shields based on debt schedule and use the debt cost of capital to find the present value of tax shield is required by this method.
- Later, the unlevered enterprise value and present value of tax shields are added to calculate the levered enterprise value is the final step of this method.

The APV method was used to understand the role of tax shields in enterprise value valuation and demonstrate the benefits of high leverage. With pre-determined financing strategy, APV method is easiest method to use. WACC method can be calculated as:

$$V_t^L = \frac{FCF_{t+1} + V_{t+1}^L}{1 + WACC_t} \tag{2}$$

Here, V_t^L is levered enterprise value, V_{t+1}^L is next year's enterprise value, FCF_{t+1} is next year's cash flow and $WACC_t$ is this year's WACC.

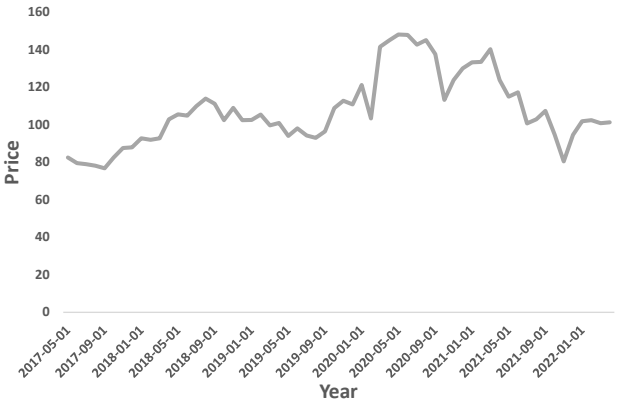

Figure. 1 Historical price data of Citrix

The procedure of the calculation can be described as follows: using this year's WACC to discount next year's cash flow and next year's levered firm value to compute this year's leverage firm value. The WACC method was chosen since this method can clearly show the changing in WACC and cost of equity over time. Equity discounted method formular is given as:

$$V_t = \frac{V_{t+1}+FCFE_{t+1}}{1+Ke_t} \quad (3)$$

where V_t is levered equity value, V_{t+1} is next year's equity value, $FCFE_{t+1}$ is next year's cash flow to equity and Ke_t is this year's cost of equity. The procedure of the calculation can be described as use this year's cost of equity to discount sum of next year's equity value and free cash to equity to compute this year's equity value.

The main advantage of the equity discounted method is that the validation of the previous two methods can be easily applied through this method. The most important part in all methods is calculation of unlevered cost of capital, this rate contributes in unlevered enterprise value, WACC and cost of equity calculation. After performing each method, all methods adopted in this paper will give identical results for each value calculated in the model.

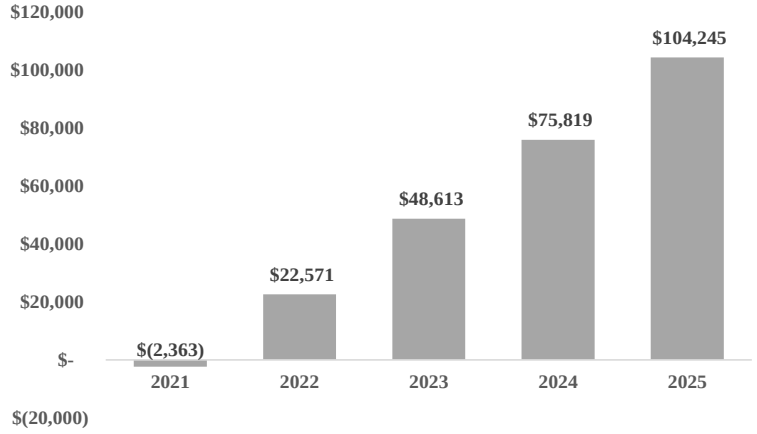

Figure. 2 Projection of Net income under assumption of financial statement's item

2.3. Assumptions

To have this projection results of net income (seen from Fig. 2), the inputs of the model were under experience assumption. The model smoothed out historical data to assume a revenue growth rate which is 5%. Gross margin, research, and development expense margin, sales, marketing, and service expense margin, and amortization of another intangible asset margin are assumed to be 82%, 17%, 37.5%, and 0%, respectively. The assumptions are based on historical data and firm-specific situations. Citrix is a technology company that focuses on servers, software as a service, and cloud computing technologies. Gross margin is relatively higher than other industries due to the way cloud computing and software services companies sell, higher research and development expense since the core value of technology company is innovation, higher sales, marketing, and service expense because of the complex products and lengthy sales cycles. 0% in the assumption of amortization of other intangible assets is not weird, as Citrix's intangible asset to total asset ratio (except goodwill) is only 2%.

The fundamental of the valuation is the assumed exit multiple. In this paper, this indicator was set to 32x. The reason for setting the multiple to 32x is based on the success of the previous leveraged buyout transaction made by Vista. It is reasonable to believe that the company will be better after the transaction.

3. Results & Discussion

The data of debt amount and type of this transaction are directly used from company's disclosure, interest rate and amortization are from the market's fair estimate.

The results are given in Table I, the amortization and interest rate during the projection period, which is critical to the next steps of the model. The amortization is directly deducted from the principal amount and impacts each year's interest payment. As listed in Table. I, only TLB has amortization before maturity; other debts are bullet loans. Interest rates shown in the table are associated with interest expense in the income statement, contributing to tax shield and free cash flow calculation.

Tab. 1 Debt schedule of this transaction

In $000's	Amount	Amortization	Interest rate
Revolver	$ 1,000,000	NA	2.00%
Term loan B(TLB)	$ 7,050,000	2.00%	2.50%
Secured bridge	$ 4,000,000	0.00%	4.25%
Unsecured bridge	$ 3,950,000	0.00%	5.00%

Tab. 2 Unlevered cost of capital

Citrix unlevered beta	0.132
Peers	1.111
Risk free rate (10 Year Treasury note yield)	1.98%
Risk free rate (30 Year Treasury note yield)	2.38%
Market risk premium	5.50%
Unlevered cost of capital	2.71%

Seen from Table. II, Citrix unlevered beta much lower than peer companies. The reason for this phenomenon is that Citrix has increased the dividends payout recently. In 2021, Citrix's dividend payout ratio had achieved 61%. The formular used to estimate the unlevered beta in this model is shown below:

$$\beta_U = \frac{\beta_E}{1+\frac{D}{E}(1-\tau)} \tag{4}$$

where the β_U is unlevered beta, β_E is levered beta, D/E is net debt to equity ratio and τ is tax rate. The levered beta calculated from 5-year stock and market return, risk-free rate and market risk premium is based on market data and professional estimates. As mentioned earlier, the unlevered cost of capital plays a vital role in all three methods. The formular used to calculate the unlevered cost of capital in this model is shown below:

$$r_U = Rf + \beta_U MRP \tag{5}$$

Here, MRP represents for market risk premium. Due to the low unlevered beta, the result shown in Table. II indicates that low unlevered cost of capital.

APV method found strong evidence of the impact of the tax shield on enterprise value as summarized in Table. III. Each year's discounted tax shields directly add to enterprise value. The decreasing trend of tax shields caused by the PVTS is calculated in a cumulative way as:

$$PVTS_t = \frac{PVTS_{t+1}+TS_t}{1+Cost\ of\ Debt} \tag{6}$$

The result of PVTS shown in Table. III takes four loans into consideration, where each loan has an individual's interest payment and interest rate (cost of debt). Sum up four loans PVTS which, based on interest payment and cost rate, will have the total PVTS. As stated earlier, the APV method is the easiest to apply. It does not require the calculation of equity, cost of equity, and cost of debt.

Tab. 3 Valuation result under APV method

In $000's	2020PF	2021	2022	2023	2024	2025
Discounted EPV (without interim tax shields)	$ 21,586,692	$ 21,626,363	$ 21,709,583	$ 21,769,467	$ 21,804,080	
Total PVTS until 2025	$ 522,426.97	$ 424,252.14	$ 323,062.42	$ 218,720.63	$ 111,083.23	
EPV	$ 22,109,119	$ 22,050,615	$ 22,032,646	$ 21,988,188	$ 21,915,163	$ 21,811,366

Tab. 4 Valuation result under WACC method

In $000's	2020PF	2021	2022	2023	2024
Equity value	$ 6,109,119	$ 6,191,615	$ 6,314,646	$ 6,411,188	$ 6,479,163
Leverage	72.4%	71.9%	71.3%	70.8%	70.4%
Cost of equity	0.66%	0.67%	0.69%	0.69%	0.69%
WACC	2.2%	2.2%	2.19%	2.19%	2.18%
EV	$ 22,109,119	$ 22,050,615	$ 22,032,646	$ 21,988,188	$ 21,915,163

The results of enterprise value shown in Table. III and Table. IV are identical as described in methodology part. The reason of this identical is the formulae used in each step. The equity value's formular is shown below:

$$EV = EPV - TDR \tag{7}$$

Here, the EV is equity value, EPV is enterprise value and TDR is total debt remaining.

The result from the APV method can be adopted to get the enterprise value. Each year's total debt remaining can easily be found in a pre-determined debt schedule. This step is the easiest in this model.

The next step to getting the enterprise value is to use the equity value to calculate the leverage ratio and cost of equity. The formular to calculate the cost of equity is shown below:

$$r_E = r_U \frac{D_1^S}{E}(r_U - r_{d,1}) + \frac{D_2^S}{E}(r_U - r_{d,2}) + \frac{D_n^S}{E}(r_U - r_{d,n}) \tag{8}$$

Where the r_E is cost of equity, r_U is unlevered cost of capital, $r_{d,n}$ is cost of corresponding component of debt and D_n^S is the value of D_n net of pre-determined tax shields generated by corresponding component of debt.

The reason for adopting this formular is that this transaction included various debt components. The weight of each component is assigned based on each component's net of tax shields debt to equity ratio. The important insight of this model can be found based on this weight average method, which is the increasing trend of cost of equity in Table. IV. The tax shields of each year are calculated cumulatively, hence the net of tax shields debt increases during the time. It causes the weight assigned to each cost of debt to increase over time. Then, this phenomenon transmits to the cost of equity. After combining the result for each year, the next step, WACC calculation's requirement variables, are met. The formular of WACC is shown below:

$$WACC = \frac{E}{V} r_E + \frac{D_1}{V} r_{D,1}(1-\tau) + \frac{D_2}{V} r_{D,2}(1-\tau) + \frac{D_n}{V} r_{D,n}(1-\tau) \tag{9}$$

Where the r_E is cost of equity, $r_{D,n}$ is cost of corresponding component of debt and E/V, D_n/V are equity to EPV and corresponding debt to EPV.

The same as the calculation of the cost of equity, this formular is extended from one debts formular because the various component of debts is considered. The most exciting find was that WACC moved in the opposite direction to the cost of equity. It is decreasing over time. To explain the reason for the appearance of the phenomena, the weight average method of this formular needs to be reviewed again. Each cost of debt weight is calculated by debt amount divided by enterprise value, based on the debt schedule in Table. I, which shows that term loan B is amortized over time. However, other debt instrument amount keeps constant because it is bullet loan. Due to this change in debt amount, the

weight on the cost of term loan B decreases year to year. Even the cost of equity has an increasing trend in Table. IV, the high leverage ratio causes it contributes less than the cost of debt to WACC.

Tab. 5 Valuation result under equity cash flow valuation method

In $000's	2020PF	2021	2022	2023	2024	2025
FCFE		$ (41,897)	$ (81,589)	$ (53,216)	$ (23,539)	$ 7,508
TV of equity						$ 6,516,366
Cost of equity	0.66%	0.67%	0.69%	0.69%	0.69%	
Equity value	$ 6,109,119	$ 6,191,615	$ 6,314,646	$ 6,411,188	$ 6,479,163	

Tab. 6 Internal rate of return of this transaction

In $000's	2020PF	2021	2022	2023	2024	2025
Cash flow to equity sponsors	($232,622)	($41,897)	($81,589)	($53,216)	($23,539)	$6,523,874
Internal rate of return (IRR)	87%					
Cash return / Multiple of Money	27.18					

The final step of this method is to use the formular mentioned in the methodology part to obtain the enterprise value. Typically, the result of the WACC method has an identical number to the APV method. The APV method directly adds the tax shield on enterprise value rather than the WACC method. It considers the tax shields as a deduction item in discounting rate.

This result of equity in Table. V value is consistent with those of the equity value under the WACC method (listed in Table. IV). It is the simplest way to validate the result of the other two methods. The equity cash flow valuation method directly uses the cost of equity which calculate in the WACC method, to discount the FCFE from cash flow projections. It combines the balance sheet and income statement items. Compared with the WACC methods calculation, it clearly shows where the equity value comes from.

In the leveraged buy-out model, the result that needs to be found in this transaction is the internal rate of return. This indicator can clearly show the profitability of the transaction, which is the objective of building this model. 87% internal rate of return is a relatively high level in the common sense of acquisition. The reason for this high IRR can be attributed to the high leverage being used in this transaction. At the beginning of this acquisition, the sponsor's leverage ratio in this transaction is 98.6%. It means sponsors only contribute 1.4% from self-equity. Another indicator in Table. VI is cash return/multiple of cash. The formular of this indicator is shown below:

$$\mathrm{COCM} = \frac{\sum FCFE_n}{-FCFE_0} \tag{10}$$

where the COCM is cash on cash multiple. The result confirms whether this transaction is profitable or not, but it does not take the discounting into account.

In general, the model is forecasted based on historical data, a lot of uncertainty can exist in the future. One can't say there is a model that can perfectly forecast future scenarios. Additionally, the assumption made in this model may be varied in different cases. Especially, the result can be very different in each model. Another point worth mentioning is the shortcoming of IRR. This indicator uses the IRR as the reinvestment rate rather than the actual return in the calculation. It may overestimate the actual return on the transaction.

4. Conclusion

In summary, this paper investigates the tax shield as well as capital structure impact in leveraged buyout based on three different methods. From the APV methods, the tax deductive resulting from the tax shield was clearly shown in the calculation. The tax saving amount directly adds to enterprise value as a free cash flow to the firm. The capital structure of leveraged buyout's impact on the cost of equity and WACC was stated in terms of the WACC method. According to the analysis of the last

model, the equity cash flow valuation provides the validation mechanism for this model. In addition, the result of the profitability of the transaction was given by IRR. In the future, With the rapid development of financial engineering and artificial intelligence, more accurate assumptions, as well as predictions, will be realized. Manual intervention steps are gradually reduced, and the error rate decreases. Moreover, another performance indicator can accurately estimate the return of transaction rather than IRR may appear. Overall, these results offer a guideline for investors who want to engage in leverage buyout valuation and provide detail about the impacts of variables (e.g., tax shield and capital structure) on the valuation in the LBO model.

References

[1] N. Niket, "Global M&A volumes hit record high in 2021, breach $5 trillion for first time," Reuters, Dec 30, 2021, information on: https://www.reuters.com/markets/us/global-ma-volumes-hit-record-high-2021-breach-5-trillion-first-time-2021-12-31/

[2] A. Pauline, and R. Kesler, "Big tech acquisitions – towards empirical evidence," Journal of European Competition Law & Practice, Vol 12, Issue 6, pp. 471–478, June 2021.

[3] J. C. Easterwood, A. Seth, and R. F. Singer, "The impact of leveraged buyouts on strategic deirection," Sage Journal, Vol 32, Issue 1, pp. 30-43 Oct 1989.

[4] S. N. Kaplan, "Leveraged Buyouts and Priate Equity," Journal of Economic Perspectives, Vol. 23, Issue 1, pp. 121-46, Winter 2009.

[5] G. D. Newbould, R. E. Chatfield, R. F. Anderson, "Leveraged buyouts and tax incentives," Financial Management, Vol. 21, No. 1, Leverage Buyouts Special Issue, pp. 50-57, Spring, 1992.

[6] A. Loeffler, "Tax shields in a lbo," Freie University working paper, No. 2000/02, Apr 2000.

[7] I. Bull, "Financial performance of leveraged buyouts: An empirical analysis", Journal of Business Venturing, Vol 4, Issue 4, pp. 263-279, July 1989.

[8] E. Nikoskelainen, and M. Wright, "The impact of corporate governance mechanisms on value increase in leveraged bu"outs," Jopurnal of Corporate Finance, Vol 13, Issue 4, pp. 511-537, Sep 2007.

[9] T. Jenkinso, and M. Sousa, "What determines the exit decision for leveraged buyouts," Journal of Banking & Finance, Vol 59, pp. 399-408, Oct 2015.

[10] M. Glossop, B. Koertner, "Leveraged buyout transactions," International Private Equity, Apr 2011.