

Using WACC Valuation Method and DCF Method to Study Listed Companies -- Taking Netflix, Mango Excellent Media Co., Ltd and Bilibili as Examples

Fei Du*

College Business and Technology, University of North Alabama, Florence, America

*Corresponding author: fdu@una.edu

Abstract. This paper introduces the DCF valuation method and WACC method to the valuation of film and television companies in different countries and makes an approximate valuation of Netflix in the United States, Bilibili in China, and Mango Excellent Media Co., Ltd. This paper also analyzes the different situations of the three companies from the perspective of their different development environments, their characteristics, and their different profit models. Some suggestions on how to value investment in entertainment industry companies this paper proposed, including the different profit models of the three companies, and some data comparison analysis from 2018 to the present. It is hoped that through the study of this paper, some better improvements can be made to the company value assessment method of the film and television industry so that people can further understand the practical process and method of company value assessment of the film and television industry.

Keywords: Film and television companies; Valuation; DCF method; Free cash flow, WACC.

1. Introduction

Since the 20th century, since the invention of television and movies. With the improvement of people's spiritual needs and the rapid development of the film and television industry, various economic behaviors of film and television companies continue to emerge. People are also paying more attention to film and television companies. There are also more scholars valuing companies in the entertainment industry. Film and television companies belong to the entertainment and cultural industry. The physical assets of film and television companies are less, and most of the enterprise assets are intangible assets. This is very risky. Management of entertainment companies is also difficult. The entertainment industry also has a special way of earning profits.

Magni constructed a general model considering different interest rates, introduced new measures of relative value: project ROA, and Project WACC, used the average internal rate of return (AIRR) method, and completed the equity/debt decomposition, allowing one to assess the role of debt in increasing or subtracting shareholder value [1].

Carluccio et al. developed a consolidated balance sheet dataset of several French enterprises to investigate the relationship but this paper on corporate investment and cost of capital constructed an enterprise-level indicator of WACC, used it to consider the industry-specific value of options cost, and evaluated the impact of the cost of capital on productive investment of most unlisted French enterprise groups. Detecting the volatility of a firm's WACC is critical to investing [2]. By calculating the lothis paper WACC, Vashakmadze finally concluded that the high price phenomenon before the financial crisis of Russian companies was normal [3].

Mohamad and Saad used the WACC method to study the impact of capital costs. It is concluded that there is a positive correlation bet this paper between the cost of capital and the enterprise value and profitability of listed companies in Malaysia [4]. Bertini proposes a model for assessing the cost of capital in emerging markets. It calculates this paperighted country risk premium index using stocks in the Brazilian telecommunications sector. Demonstrates that the indices created by the constructed model are consistent with the potential of different types of assets in the telecommunications industry to diversify global investment risk [5]. Nemati proposes a model applied to capital cost forecasting. The conclusion is that there is a negative correlation bet this paper between the going concern of an

enterprise and its cost of capital, and the cost of capital is positively correlated with the economic growth rate [6].

Sjøthun used the DCF model to evaluate sea drill limited, an offshore drilling company and found that the opportunity cost of capital (WACC) was 8%. Considering the high risk of the industry and seadrill's debt structure, he concluded that the strong market prospect was greater than the risk, and it was suggested to purchase the undervalued share of sea drill [7]. Mian studied the defects and misuse of WACC, the interdependence bet this paper cash flow types and WACC, (the assumptions behind WACC and whether these assumptions are realistic, and (alternative methods to obtain the correct net present value (NPV)). Finally, it is concluded that the CEO, management, analysts and other investors who use WACC to make investment decisions need to be fully aware of its pitfalls and misuse [8].

Fernández used the APV, WACC, and Flow to Equity methods to calculate the same data, and the three valuation methods always produced the same results [9]. Garcia conducted WACC, tested and predicted the company's life cycle theory, and concluded that with age, the WACC of a company tends to decline. There is strong support for the proposition that mature firms have significantly lothis paper WACC than new firms. Established firms destroy value by participating in projects with the lothis paper returns in the economy [10].

This paper chooses the discounted free cash flow model, which is often used by investors as an analysis tool, I will use it to evaluate the value of Netflix, Bilibili, and Mango Excellent Media Co., Ltd, then makes slight adjustments according to the different profit models and different development environments of the companies. Finally obtaining relatively objective and reasonable valuation results. In the conclusion and analysis part of the article, according to the idea of investment science, it is concluded how to take the appropriate investment strategy and investment way, how to achieve the best risk-return, to maximize the benefits.

2. Method and Data

2.1 Method

In valuing these three companies, an absolute valuation method was used. In the absolute valuation method, DCF is the mainstream. It refers to the process of calculating the current value per share of the company by discounting the FCFF generated by the company in the future. The ratio used for discounting, commonly known as the discount rate, is the WACC of a business in the DCF formula. The following is a detailed explanation of the formula.

$$WACC=(E/V) \times Re+(D/V) \times Rd \times (1-Tc) \quad (1)$$

Where Re is the cost of equity, Rd presents the cost of debt, E means the market value of the company's equity, D is the market value of the company's debt, $V = E + D$ is the market value of the business, Tc = corporate tax rate.

$$Re=Rf+\text{beta}(Rm-Rf) \quad (2)$$

$$DCF=CF1/(1+r)^1+CF2/(1+r)^2+CF3/(1+r)^3+...+CFn/(1+r)^n \quad (3)$$

2.2 Data-listed companies

Netflix Inc. (NASDAQ: NFLX), founded in 1997 by CEO Reed Hastings and based in Los Gatos, California, initially offered single-rate mail-in DVD rentals in the United States. It began offering subscriptions in 1999 and this paper public on Nasdaq in 2002. It has more than 10 million users. Today, it has 8,600 full-time employees and is the largest streaming service in the world.

Bilibili Inc. was established in 2009 and is headquartered in Shanghai, China. Bilibili Inc is a company principally engaged in Internet-related businesses. The company consists of four business units. Mobile gaming business unit, advertising business unit, e-commerce, and others.

Mango Excellent Media Co., Ltd is a Chinese company mainly engaged in the operation of new media. The company consists of three business units. Mango TV's (TV) Internet video business department produces content products such as variety shows, film and television dramas, movies, animations, and short videos. The new media interactive entertainment content production business department is mainly engaged in the production and operation of film and television dramas, variety shows, and games, as this paper as artist brokerage, music copyright, and game development.

3. Results

After calculation, the following results this paper obtained, and eight tables this paper obtained, which are the DCF forecasts of the three companies from 2022 to 2026, the DCF data of the three companies from 2018 to 2021, and the revenue and growth rates of the three companies, and the 2021 WACC values of the three companies and their associated data.

Table 1. WACC data sheets for three companies

Company	R _d	R _e	D/V	E	D	T _c	WACC
Netflix	4.65%	9.05%	0.16	100.01B	19.1B	9%	8.4%
BiliBili	4.5%	13.9%	0.259	9991.8M	2658M	38%	11.3%
Mango Excellent Media Co., Ltd	5%	9.05%	0.448	57.431B	46.61B	0.65%	9.0%

Table 2. 2018-2021 DCF data sheet for Mango Excellent Media Co., Ltd

Mango Excellent Media Co., Ltd	2018	2019	2020	2021
Revenue	9,660,661	12,500,664	14,005,535	15,355,863
Revenue Growth	-	29.4%	12.04%	9.64%
FCF	6,440,848	10,660,251	9,542,336	12,135,266

Table 3. Mango Excellent Media Co., Ltd 2022-2026 DCF Forecast Data Sheet

Mango Excellent Media Co., Ltd	2022	2023	2024	2025	2026
FCF	12,314,932	13,300,127	14,231,136	15,085,004	15,839,254

Table 4. 2018-2021 DCF data sheet for Bilibili

Bilibili	2018	2019	2020	2021
Revenue	4,128,931	6,777,922	11,998,976	19,383,684
Revenue Growth		64.15%	77.00%	61.00%
FCF	1,796,452	1,701,213	2,598,018	(349,952)

Table 5. Bilibili 2022-2026 DCF Forecast Data Sheet

Bilibili	2022	2023	2024	2025	2026
FCF	6,777,225	10,504,699	15,757,048	22,847,720	31,986,808

Table 6. 2018-2021 DCF data sheet for Netflix

Netflix	2018	2019	2020	2021
Revenue	15,794,341	20,156,447	24,996,056	29,697,844
Revenue Growth	-	27.61%	24.01%	18.81%
FCF	13,821,834	17,824,084	23,839,852	29,336,255

Table 7. Netflix 2022-2026 DCF Forecast Data Sheet

Netflix	2022	2023	2024	2025	2026
FCF	32,791,949	37,710,741	41,481,815	44,800,361	47,488,382

Table 8. DCF Forecast Data Sheet for three companies

Company	Discount Rate (WACC*)	FCF (5 years sum)	Terminal value (2026)	FCF+Terminal value=DCF (2026)
Netflix	8.4%	159,084,119	605,179,808	764,263,927
Bilibili	11.3%	59,614,649	232,409,680	292,024,330
Mango Excellent Media Co., Ltd	9%	54,462,628	176,721,023	231,183,651

Note: *WACC this paperighted Average Cost of Capital is basically equal to the discount rate

4. Discussion

It can be seen from the above analysis that the cash flow of the three companies has been relatively stable since 2018. All three companies had positive sales growth over the past four years. Three have the characteristics of growth companies. The going concern condition is met, so the DCF valuation model can be used for these three companies. But Mango Excellent Media Co., Ltd is growing more slowly. Therefore, as the three companies continue to expand their market, I expect the sales revenue of these three companies to double in five years (2026) compared to 2018.

In 2021, the sales revenue of Mango Excellent Media Co., Ltd increased by 9.64% year-on-year, and it is predicted that it will decrease by 1% every year thereafter until the second half of 2026 to 5%. The revenue growth rate of Netflix in 2021 is 18.81%, and it is predicted that it will decrease by 2% or 3% every year thereafter. The growth rate will be 6% by 2026. The revenue growth rate of Bilibili is 61% in 2021, and it is predicted that it will decrease by 5% every year thereafter and 40% in 2026. besides. According to the current tax rates of Mango Excellent Media Co., Ltd, Netflix, and Bilibili, the average tax rate from 2018 to 2021 can be assumed to be the income tax rate of the company in the next five years. It is assumed that the tax rates of Mango Excellent Media Co., Ltd, Netflix, and Bilibili in the next five years are still 0.1%, 3%, and - 0.46%.

Mango Excellent Media Co., Ltd, Netflix, and Bilibili maintained positive net profit growth rates, with net profit growth rates of 35.5%, 53.37%, and 20.48% in 2021, respectively, against the backdrop of an overall slowdown in Internet growth in the industry. The three companies show high growth. It has a certain investment value. But as the environment changes over the next few years. There may be some errors.

For the calculation of FCF, this paper will use the Gordon sustainable growth model for the valuation of the three companies, the principle of which is to assume that the company's cash flow will grow at a stable growth rate after the forecast period. This paper assumes a sustainable growth rate bet this paper 1% and 3%. An increase of 0.5% per year in perpetuity. Assume a 3% perpetual growth rate through 2026.

Based on the above formula, it can be known that this Pape righted cost of capital WACC of Netflix, Bilibili, and Mango Excellent Media Co., Ltd is 8.4%,11.3%, and 9%. Consider it here as the average discount rate of a firm's free cash flow. Forecast FCF of Netflix, Bilibili, and Mango Excellent Media Co., Ltd. in the next five years are 159 million, 59.61million, and 54.46 million. Based on the above results, the estimated 2026 corporation values of Netflix, Bilibili, and Mango Excellent Media Co., Ltd are 746 million,292 million, and 231 million.

The next step is to compare the different profit models of the three companies, which are all part of the entertainment industry. But their profit models are different. Netflix, which makes most of its money from membership fees, has aggressively expanded internationally, reaching nearly 65 million via these papers worldwide in 2018 and 200 million paying subscribers by 2020. In contrast, Mango Excellent Media Co., Ltd is limited to mainland China. It lacks an international market and makes most of its money from advertising on Mango TV. Although it has many users, no compulsory fees. Membership is relatively small. In 2020, Mango TV's revenue reached 10.03 billion, accounting for 71.42% of the total revenue of Mango Excellent Media Co., Ltd 2020, up from 64.87% in 2019. Bilibili's payments are focused on value-added services and mobile games. Value-added services include big membership, music payment, live tipping, and comics. It's different from the other two

companies. Bilibili saw the largest percentage increase in revenue from 2018. But under new laws issued by the Chinese government in 2020. The gaming industry is going to be in a tougher environment in the next few years. Therefore, its growth rate may show a continuous downward trend in the next five years.

5. Conclusion

This article uses this Pape righted average cost of capital method and DCF valuation method to predict the DCF value and revenue of the three companies of Netflix, bilibili, Mango Excellent Media Co., Ltd, and in the next five years. Without considering changes in other factors in the future, it can be concluded that the revenue growth rate of the three-tier companies in the next five years will continue to be positive, and the FCF will continue to grow. But Mango Excellent Media Co., Ltd's revenue growth rate declined even faster. There are certain investment risks. Netflix and Bili Bili are relatively stable, but bilibili is affected by the Chinese market and government policies. In the next few years, the business model will be adjusted to some extent, and there will be certain risks. Among the three companies, Netflix is the most stable and worth investing in. It has the most stable business model and the most stable profit model. Although this research has concluded a detailed analysis, the conclusions of this research are not perfect. The following issues need further discussion and research. The financial quality of enterprises is also an important factor. If this factor is completely ignored, it cannot be considered that the Valuation studies are very precise. This paper is mainly based on quantitative research, but there are still many deficiencies in the quantitative analysis of some problems and conclusions. For example, in terms of judging the development prospects of the industry, this paperweight on quantitative analysis does not seem to be convincing enough. More observations are needed in the future.

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