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MASTER THESIS

Valuation of User-based Internet Companies – Main growth and Value Drivers

Author: Toghrul Mammadov

Supervisor: Tomáš Krabec

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Declaration of Authorship

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Signature

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Toghrul Mammadov

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Abstract

This thesis examines the value that each subscriber brings to an internet company. The practical part will cover the analysis of Netflix because it is a growing business operating in an industry that heavily depends on subscribers. The main tool which is going to be used is Microsoft Excel – to construct a complete financial model of the company by first using the "old economy" approach, which is done through a classic discounted cash flow model to derive the present value of the projected cash flows of the company discounted by an appropriate discount rate (cost of capital), and then the "new economy" approach, by valuing the existing users, plus potential users. The result of this project is to compare both models in order to make reasonable assumptions about the main growth and value drivers. The age of the internet and data is having a larger and larger impact on modern companies and their business models. Therefore, by comparing the final models, the thesis aims at achieving two important goals - 1) Uncovering the reasons behind today's valuations of modern internet companies. 2) Improving the accuracy of forecasting key financial metrics of a modern company by breaking the metrics down to its users.

Keywords: Value, Financial Modeling, Discounted Cash Flow, Discount Rate, User-based Valuation, Subscriber Renewal Rate, Subscriber Lifetime

Supervisor: Tomáš Krabec

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ACRONYMS

CAPEX----------Capital Expenditures

CAPM----------Capital Asset Pricing Model

CF ----------Cash Flow

D&A----------Depreciation and Amortization

DCF ----------Discounted Cash Flow

DPO----------Days Payables Outstanding

DSO----------Days Sales Outstanding

EBIT----------Earnings Before Interest and Taxes

EBITDA ----------Earnings Before Interest, Taxes, Depreciation and Amortization

EV----------Enterprise Value

GDP ----------Gross Domestic Product

IPO----------Initial Public Offering

M&A ----------Mergers and Acquisitions

NOPAT----------Net Operating Profit After Tax

PP&E----------Property, Plant and Equipment

PV ----------Present Value

ROA ----------Return on Assets

ROE----------Return on Equity

ROIC ----------Return on Invested Capital

UFCF----------Unlevered Free Cash Flow

1. INTRODUCTION

Since the last technology crisis (the Dot Com Boom), there have been growing negative sentiments and misconceptions around the market value of the internet companies and other companies that are highly dependent on users and subscribers. As companies become more globalized and technologically advanced, their future financials and market values are becoming more volatile and harder to predict, hence their high betas. Therefore, adjusting the valuation method that is commonly used, to the current user and data driven business environment, is going to substantially improve the accuracy of the financial projections of those companies. (Forbes, n.d.)

Generally speaking, the type of valuation method to deploy usually depends on the type of asset class that is being valued, such as an equity, debt in the form of bonds, or piece of property, derivative instruments, currencies, commodities etc. The valuation method deployed may also depend on the type of investor. Typically, there are two main types of investors – growth and value. A growth investor picks companies that have huge growth potentials, such as technology and internet companies and/or startups, and value investors pick companies that are mature, have stable cash flows, and a competitive advantage in terms of size and market share. As Warren Buffett likes to call them – companies that have a moat around them. And since this thesis is about internet companies, the type of investor to be associated with the principles outlined within this thesis is the growth investor.

A word that will commonly be used in this thesis is "valuation", and this is a word which has one meaning, which is an estimation of something's worth. Below there is a table which shows how valuation is defined by different authors, while the core meaning stays the same.

Table 1. Definitions of Valuation

Author	**Definition of valuation**
Aswath Damodaran – a professor at Stern School of Business, NYU and the author of a book called Investment Valuation	Estimating an asset, based upon its characteristics in terms of cash flows, growth and risk.

Arthur Zeikel et al. – authors of Investment Analysis and Portfolio Management	The purpose of valuation is to develop guidelines for judging whether the prevailing price of an asset is unsustainably high or low, or whether the price is just about right.
Warren Buffett – an investor and a philanthropist, one of the greatest minds in the world of investing	Predicting the cash that the company would give you between now and the judgement day, discounted at a proper rate.

The most common valuation method is the Discounted Cash Flow valuation method, or the DCF. This method is mostly used in valuing mature businesses operating in noncyclical industries with stable cash flows and stable capital expenditures. Internet companies, on the other hand, may operate in cyclical industries with unstable cash flows (sometimes negative cash flows). But this does not mean that DCF cannot be used for those companies as well. DCF is a flexible tool that can be adjusted to appropriately value those companies, and that is what this thesis covers. (Koller, Goedhart, & Wessels, Measuring and Managing the Value of Companies, 2010) (Bailey, Myers, & Marcus, 2014)

This thesis examines the value that each user/subscriber brings to an internet company. The practical part covers the analysis of Netflix, because it's a growing business operating in an industry that heavily depends on subscribers. The practical part of this thesis is divided into two parts. The first part includes a complete financial model of Netflix by first using the "old economy" approach, constructed through a classic discounted cash flow model to derive the present value of the projected cash flows discounted by an appropriate discount rate, and the second part includes the "new economy" approach, which is the valuation of the existing and potential users. The result of this project is to compare both models to make reasonable assumptions on the accuracy of forecasts. By Comparing the final models, the thesis aims at uncovering the issues and important points related to value that the "old economy" approach might have missed when forecasting the financials. This thesis also aims at partially answering the question of why most internet companies, including Netflix have high market values, even though they sometimes operate with negative cash flows.

2. THEORETICAL PART

What is value? There is a saying that price is what you pay, and value is what you get. And in finance value is defined as the defining dimension of measurement in a market economy. People invest in the expectation that when they sell, the value of each investment will have grown by a sufficient amount above its cost to compensate them for the risk they took. This is true for all types of investments, be they bonds, derivatives, bank accounts, or company shares. Indeed, in a market economy, a company's ability to create value for its shareholders and the amount of value it creates are the chief measures by which it is judged (Koller, Goedhart, & Wessels, Valuation, Measure and Managing the Value of Companies, 1990).

Every asset, financial as well as real, has a value. The key to successfully investing in and managing these assets lies in understanding not only what the value is but also the sources of the value. Any asset can be valued, but some assets are easier to value than others and the details of valuation will vary from case to case. Thus, the valuation of a share of a real estate property will require different information and follow a different format than the valuation of a publicly traded stock. What is surprising, however, is not the differences in valuation techniques across assets, but the degree of similarity in basic principles. There is undeniably uncertainty associated with valuation. Often that uncertainty comes from the asset being valued, though the valuation model may add to that uncertainty (Damodaran, Investment Valuation, 2006)

The value of a company is what is created by investing capital to generate future cash flows at rates of return that exceed their cost of capital. The faster they can grow and deploy more capital at attractive rates of return, the more value they create (Koller, Goedhart, & Wessels, Measuring and Managing the Value of Companies, 2010).

The main value drivers of a company are growth and return on invested capital relative to the cost of capital. The logic of creating value for the owners of the Companies is very simple: investing cash now to generate more cash in the future. To assess the value created, the difference between cash inflows and investment made should be estimated. In addition to that there will be needed adjustment considering the time value of money and riskiness of future cash flows. ROIC and revenue growth together determine how revenues are converted to cash flows. That means the amount of value a company creates is governed ultimately by its ROIC, revenue growth, and of course its ability to sustain both over time (Koller, Goedhart, & Wessels, Measuring and Managing the Value of Companies, 2010).

2.1 Review of valuation approaches

In order to perform the research for this thesis, some basic terms are clarified. It is crucial to know the meaning of valuation and its methods and also to understand the data that will be gathered about the company for the practical part.

"Valuation is the process of estimating market prices, the process of determining the value of a business enterprise or ownership interest therein and a series of analytical procedures with the purpose of giving an assessment of what a defined interest in an asset is likely to realize if sold on the open market or its value to the occupying business." (C-TB Ho, C-K Liao, H-T Kim, 2011)

2.1.1 Asset-based approach

The asset-based approach is defined in the International Glossary of Business Valuation Terms as "a general way of determining a value indication of a business, business ownership interest, or security using one or more methods based on the value of the assets net of liabilities." Any asset-based approach involves an analysis of the economic worth of a company's tangible and intangible, recorded and unrecorded assets in excess of its outstanding liabilities. This method is almost the same as the method described below, the book value method.

2.1.2 Book value method

This method is based on the financial accounting concept that owners' equity is determined by subtracting the book value of a company's liabilities from the book value of its assets. This valuation method is typically used when acquiring a very small company, and also for companies that have significant tangible assets such as inventory, property, plant & equipment, receivables etc. and it's also used for companies that typically have very low profits and growth. And the reason why it would make sense to use the book value method when valuing these types of companies is that those companies usually just rely on their assets and not their growth or profitability potential to generate value.

2.1.3 Adjusted net asset method

The above-mentioned methods are adjustable for different situations. The Adjusted net asset method is used to value a business based on the difference between the fair market value of the business assets and its liabilities. Depending on the particular purpose or circumstances underlying the valuation, this method sometimes uses the replacement or liquidation value of the company assets less the liabilities. Under this method the analyst adjusts the book value of the assets to fair market value (generally measured as replacement or liquidation value) and then reduces the total adjusted value of assets by the fair market value of all recorded and unrecorded liabilities. (NACVA, 2012)

2.1.4 Income based Approach

The Discounted Cash Flow Method is an income-based approach to valuation that is based upon the theory that the value of a business is equal to the present value of its projected future benefits that are reflected as either cash flows, earnings or profits (including the present value of its terminal value) (Minotti, 2015).

Simply put, it is built upon expected future cash flows and discount rates. (Damodaran, Investment valuation: Tools and Techniques for Determining the Value of Any Asset, Second Edition, 2002).

2.1.5 The Capitalization of Cash Flow Method

The Capitalization of Cash Flow Method is most often used when a company is expected to have a relatively stable level of margins and growth in the future- it effectively takes a single benefit stream and assumes that it grows at a steady rate to perpetuity. In other words, when valuing mature companies with modest future growth expectations, this method is typically applied (Minotti, 2015).

2.1.6 Guideline Transaction Method

The Guideline Transaction Method values a business based on pricing multiples derived from the sale of companies that are similar to the subject company. The Guideline Public Company Method values a business based on trading multiples derived from publicly traded companies that are similar to the subject company. These methods are used to

value a company based on the pricing multiples observed for similar companies that were sold or are publicly-traded (Minotti, 2015). There are some advantages and disadvantages for each approach which are discussed in the table below.

All in all, all the above-mentioned methods can be summarized into three main groups of valuation methods, and those are the asset-based approach, income-based approach and the market value approach, as shown in the table below (C-TB Ho, C-K Liao, H-T Kim, 2011).

Table 2. Advantages and Disadvantages of Different Valuation Methods

Valuation Approach	**Advantages**	**Disadvantages**
Asset-based Approach	It looks at the underlying of a company's assets that other approaches do not do.	It is relevant when a significant portion of the assets can be liquidated readily. Therefore, for small, high-tech Initial Public Offerings (IPOs), this method has little relevance since it does not consider growth opportunities.
Income-based Approach	This approach is developed with firmer theoretical footing.	Future cash flows and an appropriate discount rate are not always easy to estimate and are subject to many objective and subjective factors such as economy, industry and company financials.
Market-value Approach	This approach is easier and quicker to use than other approaches and the higher the number of comparable companies, the better the valuation will be	The result can be unreliable when other comparable companies are under- or over-valued.

2.2 Discounted Cash Flow Model (DCF)

Stated by Rosenbaum and Pearl (2013) Discounted Cash Flow model (further only DCF) belongs to the most essential valuation methods (models) which is largely used by academics, corporate officers, investment bankers and other individual investors and finance professionals. Likewise, it has a broad scope of using, involving different forms of investment decisions, IPOs, restructurings or M&A deals. Pinto, Henry, Robinson, & Stowe (2010) claim that DCF model perceives intrinsic value of an asset or a security as the sum of its projected future cash flows. Rosenbaum and Pearl (2013) further continue that the model says that value of a company, division or simple any other asset can be obtained from the present value of its estimated future free cash flows. Defined by Koller, Goedhart and Wessels (2010) DCF model discounts all free cash flow, which is cash accessible to all investors. As we already know under "all investors" we perceive equity investors, debt investors or any other type of investors holding non-equity interests. Subsequently, the cash is discounted by weighted average cost of capital, the cost of capital for all investors in order to derive present value of all free cash flow of a company or amount that company/asset is worth today.

2.3 Empirical Studies on Valuing Tech Companies

Different empirical studies that have been conducted in the past on a matter of valuing high-growth tech companies have used various methods to obtain fundamental values of companies. Athanassakos (2007) sees tech companies as subjects which are not evaluated differently in comparison to companies evaluated by traditional valuation methods and standards, although there is a need to further develop these methods in order to make specifically valuation of tech companies feasible, which is why the thesis topic is relevant. He further claims that established valuation methods understate value of the company in two important areas. First of all, when extent of a risk changes over the period and second, when flexibility matters to an investment decision. Goedhart, Koller and Wessels (2015) find some well-established valuation principles like DCF work fine, even for valuing high-growth tech companies. On the other hand, Rajgopal, Kotha and Venkatachalam (2000) consider web traffic (subscribers) as crucial non-financial evidence of market values of tech companies. In their study they find that unique monthly subscribers to a tech companies' websites describe a significant part of the cross-sectional variation in equity values of tech companies.

(Klobucnik, 2012) consider in their study practical application of previously developed model for evaluation of fast-growing innovative tech companies. They find that model shows that it is on average comparable to the classical model of sales multiple with advantage in valuing small and non-listed companies. (Wong, 2013) proposes multi-stage valuation method as an alternative to classical models when valuing tech companies. He uses this model solely on the basis of real option valuation method and value tech company at every definable stage of its life. (Baek, 2008) estimate fundamental value of a high growing tech company by linking two different option-based valuation methods, the corporate debt valuation method developed by Merton and method developed by Schwartz and Moon.

2.4 Nature of the high-growth internet and tech company industry

What makes this industry attractive is its huge growth potential in both private and public firms. With this huge growth potential comes significant amount of risk and uncertainty which makes this sector extremely challenging but also interesting to analyze. For example, as we witnessed during the Dot Com Boom (the financial crisis in the technology sector during the years of 2001-2002), the losses were amplified by their high growth and risk nature. The impact was felt in other industries as well, such as banking. For example, Morgan Stanley, which is known as one of the main investment banks that has a strong presence in the technology sector, also felt the pressure of the financial crisis because investors were treating its stock like a technology stock. Therefore, the share price of Morgan Stanley plunged by over 70% from a peak of around $85 per share to $25 per share.

Another reason why this industry is very attractive is because it tends to outperform other industries such as manufacturing or consumer staples. The chart below shows the development of growth companies compared to value companies since 1989. As you can see, especially after the year of 2015, the gap between growth and value index has been widening, indicating that growth stocks are once again outperforming the rest of the companies.

Figure 1. Performance gap of growth and value stocks, reflected in MSCI indices

2.5 The role of economic and industry analysis in valuation

2.5.1 Economic analysis

Before conducting a valuation on any company, it is crucial to understand both the economic environment that the company operates in and its industry condition and/or characteristics. This type of research and analysis is crucial because usually companies don't have control over this. The economy and industry are a type of risk which companies cannot diversify. Therefore, as you will see further in the thesis, this type of risk will be reflected when constructing a discount rate for the valuations.

Economic research or analysis helps us understand the risk that a company is facing. The analysis is conducted by examining several economic indicators, such as inflation, interest rates, exchange rates, resources available, technological changes, mortgage rates, unemployment, population and/or income growth and so on. For example, when there is a risk of increasing inflation, interest rates increase to curb that growth, and when interest rates increase, the cost of borrowing increases, thus it becomes more expensive for companies to finance their projects and make investments which usually tends to decrease the value of a company, but some firms perform better during rising interest rates, such as banks and other financial institutions, since their income depends on at what rate they can lend money.

Exchange rates are also important especially for companies that are multinational exporters or importers. Major movements in exchange rates may have substantial

consequences for those multinational companies' profit or loss accounts. The availability of resources, such as natural resources is an important factor as well in an economy, especially for companies that are in the commodities business or companies that do business with other commodities companies as their main clients or customers. Examples of that are large energy companies like ExxonMobil or Glencore. There are also companies that are involved in transportation business where they transport workers to resource sites.

One of the biggest factors that can impact an economy, or an industry are technological changes. There is a term called Creative Destruction that is used to describe the extinction of industries due to innovation and technological advancements (Schumpeter, 1942). For example, when Ford's new engineering techniques innovated the manufacturing industry and at the same time it left many people jobless. There are also countless examples of other companies that have either went extinct, changed their business models, or got acquired by other companies due to technological advancements.

All the above-mentioned indicators and many more are factors that can change either in a positive way or a negative way, any company operating today. The key to economic research or analysis is to recognize trends and patterns. For example, by looking at past movements in interest or inflation rates for the last ten to twenty years, one can forecast the future movements.

2.5.2 Industry analysis

Another risk which should be addressed before valuing any company is the risk related to the industry that the company operates in. Industry analysis is also a way of analyzing the competitors of a company. By thoroughly analyzing an industry, one can understand how big the industry is, who are the main players, what are the barriers to entry, who are the clients or customers in this industry, in general how competitive the industry is, what are the prospects for growth and profitability, how risky the industry itself is, what are the main economic traits of this industry, what are the main drivers within this industry, how attractive the industry is, and most importantly, where is the industry headed.

One of the most efficient tools that is commonly used for industry analysis is called Porter's Five Forces. This is a tool that was developed by Michael E. Porter, who is a professor at Harvard Business School, when he wrote a book called "Competitive Strategy: Techniques for Analyzing Industries and Competitors" in the year of 1980. This

model not only analyses the structure of an industry, but it also analyses the strategy of a corporation. By applying this tool, one can also create a strategy to successfully and efficiently navigate through an industry and achieve competitive advantage (Porter, 1980).

Porter's Five Forces are industry competition, potential of new entrants into the industry, customer power, supplier power, and threat of substitute products. The first force, industry competition refers to how big the competition is in terms of the number and sizes of companies that operate within the same industry. Crucial to know because the larger the number and size of the companies are, the lower the power of your company will be. And conversely, when there are only a few companies operating within an industry, then the more power your company will have, which will also facilitate your potential to earn a competitive advantage.

The second force is regarding new entrants. In other words, how easy it is for an outsider to start a company within your industry and take away market share from you. Typically, the more complex or advanced the company's products are, the harder it will be for someone to join the industry. This force is also measured by how long it takes and how much it costs a company to enter this industry. The higher the time and costs, the better for your firm. One great advantage for a firm that operates within high barriers of entry is that they typically have pricing power as well, which allows them to charge higher prices on their products and services and thus increase their sales. They can also use this to their advantage to negotiates better deals with their customers or suppliers, which leads us to the third force, which is the supplier power.

Supplier power is typically related to how high a supplier can charge for the products or services that are used by your company. The lower the number of suppliers available, the more power they will have over you in terms of pricing and negotiations. And the opposite is true for a high level of suppliers. The same rules apply to the fourth force which is the power of your customers. Basically, the lower your customer base is, the more power they will have over your company in terms of pricing and negotiations. This force also depends on your customer renewal and retention rate, which is thoroughly discussed in the practical part of this thesis. When it's easier for a company to replace a leaving customer with a new one at a rate slower than acquiring new customers, the better for your company's competitive advantage.

The last force is threat of substitute products and/or services. Companies that offer unique products or services are in a better competitive position in an industry, which comes with

numerous other benefits, such as growth potential in revenue and profits, increased market share and an overall financial health. This uniqueness can be both tangible and intangible. For example, a special machine or tool that is created by your company only, or a software program which is only provided by your company.

By finding answers to the above-mentioned points in both economic and industry research, the valuation can be conducted in a way that fits and/or represents all the necessary characteristics to fully reflect the economy and the industry that the company operates in. By doing so, one can also come up with strategies to use those characteristics for their own benefit, in order to achieve a higher competitive advantage. Also, by conducting economic and industry analysis before building a valuation model, you can also know in advance crucial things such as what type of discount rate to use or what should be the future growth rate assumptions for this company's revenues, costs, profits and cash flows.

2.6 Assessing a company's financial condition by applying main profitability and liquidity ratios

When it comes to profitability of the company, there is one key ratio that is commonly applied within the corporate finance industry, and that is the profit margin. A profit margin of a company tells us how profitable a company is in terms of how much they make in total revenue and how much do they spend in total costs in order to obtain that revenue. Usually, when we apply this ratio to only one company, it becomes pointless, but when we compare that ratio of the company to the average ratio of the industry that the company operates in, or to a group of companies that operate within a similar size and business model, that is when the ratio starts making sense. The basic rule of the Profit Margin ratio is that the higher it is, the better, especially when compared to the industry or peer group.

As defined by Kimberly Amadeo from "The Balance" – "a profit margin is a ratio of a firm's profit divided by its total revenue. It's always shown as a percentage, and it tells you how the company uses its income. A higher ratio will indicate that the firm is making a lot of profit for every unit of revenue, and a low will tell you the opposite." (Amadeo, The Profit Margin, 2018)

Profit Margin:

$$\boldsymbol{Profit\ Margin\ =\ Gross\ Profit\ \div\ Total\ Revenue}$$

In order to more accurately understand a company's profitability, the profit margin is usually followed by two more ratios – Return on Assets (ROA), and Return on Equity (ROE). The ROA basically shows how efficiently a company uses its assets in order to earn income. It is calculated by taking the total assets of a company and dividing it by the net income. (Albrecht, 2005). The ROE, on the other hand, shows how effectively does the company use its shareholders' investments, or equity, in order to generate returns, and it's calculated by taking the total equity, and dividing it by net income (Kennon, 2018).

Return on Assets:

$$\boldsymbol{ROA\ =\ Total\ Assets\ \div\ Net\ Income}$$

Return on Equity:

$$\boldsymbol{ROE\ =\ Total\ Equity\ \div\ Net\ Income}$$

One key ratio that is used in order to assess any company's profitability is the Return on Invested Capital Ratio, or ROIC. This ratio is calculated by taking the net operating profit after tax (NOPAT), which is calculated by taking the earnings before interest and tax and multiplying it by 1 minus the tax rate, and dividing that by the total debt and equity, which represent the invested capital. A good gauge for using the ROIC is to compare it to the cost of capital. Usually, if the ROIC ratio is at least 2% higher than the cost of capital, then it means that the company is creating value, and if it is 2% lower than the cost of capital, then it means that the company is destroying value.

Return on Invested Capital:

$$\boldsymbol{ROIC\ =\ NOPAT\ \div\ Invested\ Capital}$$

By using the above four profitability ratios, one can adequately understand where a company's profitability stands compared to the industry and/or its peer group.

A company with good profitability is one thing, but what about its liquidity? A company can be profitable for a long period of time, but if the liquidity is in a poor condition due

to substantial amount of debt, or its inability to efficiently use its assets, then the company could potentially go bankrupt in serious events like financial crisis for instance. Therefore, its crucial to check how liquid a company is by using two key ratios. The first ratio is the current ratio. This ratio measures a firm's ability to pay its current liabilities. By dividing a company's current assets by current liabilities, and then comparing the result to the industry average can tell an investor a couple of things. If the ratio is higher than the industry average, it means that the company is efficiently using its assets, and it can repay its short-term liabilities in case of emergency. If it is below the industry average, it indicates that the company is in a riskier position. Another form of this ratio is the quick ratio, and the only difference is that the quick ratio excludes inventory from current assets. The reason why sometimes it is better to use the quick ratio to assess how the company's liquidity would look like if it did not manage to sell its inventory. This ratio is commonly used within industries that are high in capital expenditures and inventory levels, such as manufacturing companies. Since Netflix barely has inventory, the current ratio makes more sense to use. (Myers, 2012)

Current ratio:

$$\boldsymbol{Current\ Ratio\ =\ Current\ Assets\ \div\ Current\ Liabilities}$$

Quick Ratio:

$$\boldsymbol{Quick\ Ratio\ =\ (Current\ Assets\ -\ Inventory)\ \div\ Current\ Liabilities}$$

Another important liquidity ratio which may be used in order to improve the accuracy of one's assumptions, is the Working Capital Ratio. This ratio tells us how efficiently a company can cover its short-term liabilities using only its short-term assets.

Working Capital Ratio:

$$\boldsymbol{Working\ Capital\ Ratio\ =\ Current\ Assets\ \div\ Current\ Liabilities}$$

One ratio which could be useful in assessing the liquidity of a company is the Interest Coverage Ratio. This ratio indicates how many times can a company cover its interest expense given their current operating income, or earnings before interest and taxes (EBIT). It is calculated by dividing the EBIT by the interest expense, as shown in the formula below.

Interest Coverage Ratio:

$$\boldsymbol{Interest\ Coverage\ Ratio\ =\ EBIT\ \div\ Interest\ Expense}$$

We value businesses for various reasons, such as for liquidation, merger or an acquisition, or simply for making an investment decision as a shareholder and so on. This thesis includes a quantitative study where the target case company is valued by firstly using traditional DCF approach where we discount company's future free cash flow by appropriate cost of capital and secondly using user-based adjusted DCF model which we describe in more details later on. These procedures allow us to analyze usefulness of both valuation methods applied particularly in this case and likewise objectively assess which model suits better for valuing our target internet company. In the following chapter, we provide a more detailed description of a DCF valuation model.

Last two ratios that are going to be used in this thesis for the practical part are the debt to equity and the debt to EBITDA (earnings before interest, taxes, depreciation and amortization), again related to a company's liquidity. The first ratio specifically tells us how levered a company is, usually a healthy leverage is indicated by a ratio of around 1and 1.5, because usually investors don't want to invest in companies with huge amount of debt, but some level of debt is typically a good sign, because it could indicate that the company is using that debt for future growth and investments.

Debt to Equity:

$$\boldsymbol{D/E\ =\ Total\ Debt\ \div\ Total\ Equity}$$

The second ratio, debt to EBITDA is also related to how leveraged a company is, and to also determine whether a company can successfully meet its financial obligations given their current operating income. Typically, the lower the ratio is, the better, but just like in the previous explanation, a very low level of debt could also indicate negative things. For example, it could indicate that the company has no plans for growth and investment, and that they're not taking advantage of market opportunities.

Debt to EBITDA:

$$\boldsymbol{Debt\ to\ EBITDA\ =\ Total\ debt\ \div\ EBITDA}$$

2.7 Traditional DCF valuation

2.7.1 DCF formula and variables

Basic DCF model is represented by the following formula (from Hitchner, 2011, elaborated by us):

Present Value formula:

$$\boldsymbol{PV} = \sum_{\boldsymbol{i=1}}^{\boldsymbol{n}} \frac{\boldsymbol{CF^n}}{\boldsymbol{(1+r)^n}}$$

PV stands for Present value which is today's value of future expected cash flows in period n. n represents the latest period for which economic income is projected to be received. In case that economic income is expected to continue to infinity (perpetuity) it can be equal to infinity. CF stands for the amount of expected cash flow in n period in the future. R (r) is discount rate, also known as the cost of capital or expected rate of return. This return is attainable by investors in the market for different investments with comparable risks. In other words, discount rate explains also opportunity cost of the second-best option on the market.

One of the most important factors in valuing a business using DCF model is to determine a forecast period to project the free cash flows of the firm. There are a couple of questions we need to answer first before choosing a proper length of forecast period, or in other words, how many years into the future do we need to forecast the financials (free cash flows) of the company. First question to ask is what's the company's competitive position, and the second question is how old the company is. The projection period of a company typically ranges from 2 to 10 years.

The older the company is with slow and stable growth then the shorter the projection period must be, such as 2 or 5 years. And the younger the company is with strong growth potential then the more into the future we must project the financials. We must project the financials until the point where we assume that the company's revenue or cash flows are going to stabilize. (Kaplan, 1995)

The projection period for the financials of a company, depends on the maturity of the company. The younger the company is, the farther the projection period must be typically from 10-30 years in order to show that the company is going out from its growth phase

and reaching its stable mature phase. Typically, a mature company with at least 10-15 years of life, will only require an average projection (forecast) period of 5 years for valuation. Note that the longer the projection period is, the more exposed it will be to uncertainty in its future financials, simply because the future is unknown or uncertain and we only make assumptions. (Damodaran, Investment Valuation, 2012)

In the classic DCF model, a projection period of 5 years for the following reasons. Netflix is a reasonably high-growth/mature company operating since 1997 and given the uncertainty we face when forecasting the financials in a consolidated form, it's safer to forecast for 5 years, and not go beyond that. In the subscriber-based valuation model the projection period is 10 years, and the explanation is provided in the chapter of subscriber-based valuation.

2.7.2 Discount Rate

As mentioned above, for the classic DCF method, we're going to use the Weighted Average Cost of Capital as the discount rate, which includes both the cost of equity and debt. To calculate the cost of equity, we are going to use the Capital Asset Pricing Model (CAPM), which is a formula that consists of the following inputs: the risk-free rate, Beta, and the equity risk premium. Following we present CAPM formula and description of its variables in more details.

Capital Asset Pricing Model:

$$\boldsymbol{CAPM = risk\ free\ rate + (Beta \times Equity\ risk\ premium)}$$

2.7.3 Risk-free rate

This is the minimum rate that investors/shareholders require on their investment. For this rate, we typically choose the yield on the safest and the most liquid security, such as a 10-year government bond (Damodaran 1999). The risk-free rate used for the practical part represents the yield on a 10-year US government bond, because it's the safest and the most liquid security in the US.

2.7.4 Beta

This measures the volatility of the company's stock by comparing it to the overall market return in an economy. It's calculated by dividing the covariance of the company's stock and the market by the variance of the market. A beta equal to 1 indicates the stock's volatility is equal to the market's, over 1 indicates that the stock is more volatile than the market, and less than 1 means that the stock is less volatile than the market (Weil 1989). Beta was described perfectly by the author of the Wisdom of Finance, Mihir Desai – "Think of low beta as a friend who's always with you during bad and good times, and think of high beta as a friend who's only there with you when you're doing well", he meant that if the stock of a company is more volatile than the market (above 1), and if the market declines, then the stock of the company will decline more than the market, and the opposite is true for a low beta (below 1). We don't have to necessarily calculate the beta of a stock manually, as there are already many financial sources that provide the betas for almost all securities existing in a market.

The beta used for the practical part is 1.8, which is taken from financial statistics source and this high beta indicates that Netflix's stock is more volatile than the whole market in the US, therefore it's more exposed to systemic risk. (Yahoo Finance, NFLX)

2.7.5 Equity Risk Premium

Lastly, this input indicates the excess return that the market provides over the risk-free rate. Therefore, it's calculated by subtracting the risk-free rate from the market rate of return (Jagannathan et al. 2011). According to recent studies done by different financial institutions, such as KPMG, the equity risk premium in the US is 5.5%, and that's the rate used for the practical part.

After calculating the cost of equity of the company, we can now proceed with calculating the cost of debt. More precisely, the after-tax cost of debt, because of the tax benefits that come with borrowing money. It's simpler to calculate the cost of debt, compared to the cost of equity. All we must do is to divide the total annual interest payments on interest bearing liabilities by the total debt of the company, and then we multiply it by (1 – tax rate) to adjust it for tax shields.

Weighted Average Cost of Capital – now that we know how to obtain all the inputs for estimating the cost of capital, we can proceed by using the following formula:

Weighted Average Cost of Capital:

$$\boldsymbol{WACC = cost\ of\ equity \times weight\ of\ equity} + \boldsymbol{cost\ of\ debt \times weight\ of\ debt} \times (\mathbf{1} - \boldsymbol{tax\ rate})$$

The result which we will get from the WACC formula above will serve as the discount rate when using the classic DCF model to value the business. The weights of equity and debt shown in the formula above are simply the respective fraction of each from their sum (Fama et al. 1997).

The cost of equity represents the result obtained from CAPM, and the cost of debt is obtained by simply dividing interest expense by the total amount of debt. WACC is obtained using the current market values of debt and equity because the assumptions used in valuation are supposed to derive a value of a company that appropriate to the current market values of its debt and equity. That's why, when calculating either the weight of debt or equity, we usually take the market capitalization of the company, and not the book value (Rosenbaum, Investment Banking, 2009).

2.7.6 Terminal value

Terminal value or continuing value represents all the future cash flows of the company. When valuing a business in a going concern assumption, we assume that the company will never cease its operations. It's calculated using the following formula:

Terminal Value (Continuing Value) formula:

$$\boldsymbol{Terminal\ value} = (\boldsymbol{Last\ projected\ cash\ flow} \times (\mathbf{1} + \boldsymbol{growth\ rate}))/ ((\boldsymbol{discount\ rate - growth\ rate}))$$

Terminal growth rate – terminal growth rate is usually selected on the basis of long-term growth rate of industry in which particular company operates in. In general, it tends to be from 2% - 4%, and it should not exceed the nominal GDP growth rate of an economy, because if a perpetuity growth rate exceeds the maximum growth rate of an economy, then this indicates that the company is going to be worth more than the global economy, which does not sound realistic (Rosenbaum, Investment Banking, 2013).

2.8 Subscriber-based Valuation

One great advantage of a Discounted Cash Flow Valuation model (DCF) is that it's a tool that is very flexible. We can use the model to value any company, operating in any industry, as long as it generates cash flow. We can even value just a unit, branch or a product of a business by discounting the cash flows generated by an appropriate discount rate. Given this information, we can also value a business by valuing its subscribers.

The subscriber-based valuation begins by gathering important data first. Such as the current and prior year's number of subscribers, key financial indicators, like total revenue and revenue per subscriber, operating expenses and costs and how they're allocated for existing and future subscribers, total cash and cash equivalents, total debt, and key metrics, like the corporate tax rate, inflation rate, the risk-free rate, perpetuity or terminal growth rate and # of shares outstanding for the last fiscal year. (The Rise Of User-Based Valuation In Tech, n.d.)

2.8.1 Netflix data for valuation FY2017

When gathering the data above, it's crucial to appropriately allocate the above-mentioned costs and expenses. The part of costs and expenses which represent marketing and the production of new content is allocated for attracting new subscribers. Technology & development, and production of new content is also allocated to maintaining the existing subscribers, and the rest of operating expenses and costs, which include general & administrative expenses, and depreciation & amortization are costs and expenses that are only associated with the company itself, therefore they also represent a value drag of corporate expenses, and we will use that data to derive the total market value of Netflix in the practical part.

2.8.2 Data on existing and new subscribers for valuation

This is the part where we also gather data (listed in bullet points below), but this time we gather the ones that aren't included in the classic DCF, and this is also the type of data that makes the second valuation model more accurate and realistic.

- Subscriber lifetime in years – this data also represents customer loyalty. The higher this number is, the higher the value of the existing subscribers will be. Also

known as subscriber stickiness. According to some statistics published by the UK, a person spends 10 years of watching TV on average. For Netflix we use 8 years, because after all, the subscriptions aren't free, and it's a service that can be cancelled easily during an economic downturn. (Independent News Media UK)

- Subscriber renewal rate – this rate is calculated by subtracting the difference between current and prior year's number of subscribers from the current number of subscribers, and dividing the result obtained by the prior year's number of subscribers. In the cash of Netflix, the rate is 100%, meaning that Netflix does not lose subscribers. It's a goal of every similar company to reach 100% renewal rate.

- Revenue/subscriber growth rate y-o-y–this is calculated by taking the current year's number divided by the prior year's and subtracting one. We will use this data when calculating the value per subscriber.

- % of operating expenses and costs associated with servicing existing subscribers – we will use this data to calculate the operating expenses/costs per existing subscriber.

- Cost of acquiring subscribers – this data is obtained by multiplying the % of operating expenses and costs associated with new subscribers by total operating expenses and costs, divided by the difference between current and prior year's number of subscribers. We will use this data when valuing future subscribers.

- Subscriber growth rate for the first 5 years – this growth rate will be used in our projections when valuing the future subscribers. Netflix grows its subscriber base by an average rate of 25% y-o-y.

- Subscriber growth rate for the next 5 years – and for the next 5 years in our projection, we will assume that the growth in subscriber base will slow down and stabilize at around 15%. (Aswath, 2018)& (Magretta, 2002)

2.8.3 Valuation of existing subscribers

By gathering the important financial and operating data above, we proceed by first valuing the existing subscribers by using the following function on Excel first –

$$\boldsymbol{Value\ per\ existing\ subscriber\ using\ Excel} - \text{“} = IF(r = gr;\ p \times (Revenue/subscriber \times l - Operating\ expenses/subscriber \times (1 + go) \times (1 - (1 + go)\text{^}\ l\ /(1 + r)\text{^}\ l)/(r - go)) \times (1 - t) + (1 - p) \times (Revenue/subscriber \times (l\ /4) - Operating\ expenses/subscriber \times (1 + go) \times (1 - (1 + go)\text{^}(l\ /4)/(1 + r)\text{^}(l\ /4))/(r - go)) \times (1 - t); (p \times Revenue/subscriber \times (1 + gr) \times (1 - (1 + gr)\text{^}\ l\ /(1 + r)\text{^}\ l)/(r - gr) - p \times Operating\ expenses/subscriber \times (1 + go) \times (1 - (1 + go)\text{^}\ l\ /(1 + r)\text{^}\ l)/(r - go)) \times (1 - t) + (((1 - p) \times Revenue/subscriber \times (1 + gr) \times (1 - (1 + gr)\text{^}(l\ /4)/(1 + r)\text{^}(l\ /4))/(r - gr) - (1 - p) \times Operating\ expenses/subscriber \times (1 + go) \times (1 - (1 + go)\text{^}(l\ /4)/(1 + r)\text{^}(l\ /4))/(r - go)) \times (1 - t)))\text{”}$$

Formula indicators:

Discount rate – r

Growth rate in revenue – gr

Growth rate in Operating expenses - go

Full life probability – p

Subscriber lifetime – l

Corporate tax rate – t

This function above results in value per existing subscriber, and to obtain the total value of all existing subscribers we simply multiply the result obtained by the number of subscribers for the last fiscal year. The value per subscriber will also serve as an important component of obtaining the value of future subscribers.

2.8.4 Valuation of future subscribers

Once we know how much it costs for a company to acquire a subscriber, we can now find the value per future subscriber by subtracting that cost from the value per current subscriber.

This valuation is similar to the classic DCF in the sense that it also includes both estimating the terminal value and present value by using the same discount rate and the perpetuity growth rate that was used in the classic DCF model. Once we know by how much and how far into the future the number of subscribers will grow (depending on the projection period), and once we also project the value per future subscriber growing y-o-y with the inflation rate, we can then calculate the total value added by the new subscribers by using the following formula for each projected year. (Damodaran) –

$$\boldsymbol{Value\ added\ by\ new\ subscribers\ =}$$
$$\boldsymbol{Number\ of\ new\ subscribers\ added\ \times\ Value\ per\ new\ subscriber}$$

The formula for terminal or continuing value of future subscribers is slightly adjusted, compared to the one used in classic DCF. Here we take the last projected number of subscribers, multiply it by the perpetuity growth rate and we multiply that by the last projected value per new subscriber and we multiply that by 1 + the inflation rate and then we divide all that by the discount rate minus the perpetuity growth rate, as shown in the formula below:

$$\boldsymbol{Terminal\ value\ of\ future\ subscribers\ =}$$
$$\boldsymbol{(last\ projected\ number\ of\ subscribers\ \times\ perpetuity\ growth\ rate\ \times}$$
$$\boldsymbol{last\ projected\ value\ per\ new\ subscriber\ \times\ (1\ +\ inflation\ rate)\ /}$$
$$\boldsymbol{(discount\ rate\ -\ perpetuity\ growth\ rate)}$$

Once we calculate the terminal value, we should find the PV of the projected values added by new subscribers + the PV of terminal value, and we derive the total value added by new subscribers. In other words, we obtain the total market value of all future subscribers.

2.8.5 Value drag of operating expenses and costs on company

As mentioned in the beginning of the project. The value of an internet company is obtained by adding the value of existing subscribers or users to the value of future subscribers or users, but from that we have to subtract all the costs and expenses associated with servicing the company itself, and not for maintaining or attracting subscribers. Also known as a value drag of corporate expenses.

By following a similar procedure as done in valuation of future subscribers, by estimating the terminal value of those expenses and costs adjusting for after-tax and calculating the PV, we obtain the total value drag of operating expenses and costs on the company.

At last, in order to obtain the total market value of the company, we must add the value of current subscribers to the value of future subscribers and we subtract the value drag of operating expenses and costs on the company and we add cash and cash equivalents and total debt to obtain the total enterprise value, and to derive the equity value, we can subtract total debt, and by the dividing that amount by the number of shares outstanding we get the equity value per share. (Damodaran, User and Subscriber Economics)

3. PRACTICAL PART

3.1 Company description

For the practical part I chose to value the world's leading internet television company called Netflix. The company was incorporated in 1997, and as of 31st of December 2017 it operates in over 190 countries, and currently it has over 117 million subscribers. Netflix provides TV shows and movies, including documentaries, feature films and original series. In the US, Netflix delivers DVDs to the homes of its subscribers. Netflix also has approximately 5,500 employees and their total revenue for the fiscal year of 2017 was $11.7 billion.

The main goal of the company is to substantially increase its subscriber base both domestically and internationally, while strengthening its profit margins. Achieving this goal comes with several challenges, and the biggest of them is that Netflix is forced to keep on delivering new and better-quality content in order to attract and maintain its subscriber base.

3.2 Company segments

The business of Netflix is divided into 3 separate segments: Domestic streaming, International streaming and Domestic DVD (in US). The main revenue within the domestic streaming segment comes from monthly membership fees in the US, and the international segment's main revenue stream is from monthly fees related to international memberships. The domestic DVD segment, on the other hand, derives its revenue stream from online memberships related to DVD-by-mail only.

Table 3. Business Performance by Segment

USD in millions (except for # of memberships – in thousands)	**Domestic streaming**	**International streaming**	**Domestic DVD**	**Consolidated business performance**

Total memberships at end of period	54,750	62,832	3,383	-
Revenues	$6,153	$5,089	$450	$ 11,692
Cost of revenues	$ 3,319	$ 4,138	$ 202	$ 7,660
Marketing	$ 553	$ 724	-	$ 1,278
Contribution profit	$ 2,280	$ 226	$ 247	$ 2,755
Profit margin	37 %	4.4 %	54.9 %	23.6 %

As shown in the table above, the company's international streaming segment has the largest membership base, and the lowest profit margin due to higher costs in comparison to revenues generated. Those costs cover amortization and other expenses related to licensing, production and acquisition of streaming content, and also represents expenses for territory rights, hence the higher costs in the international streaming segment. The consolidated number of memberships is uncertain, because some of the domestic members are also DVD subscribers, therefore we assume a total membership base of around 117 million.

3.3 Economic and industry analysis of Netflix

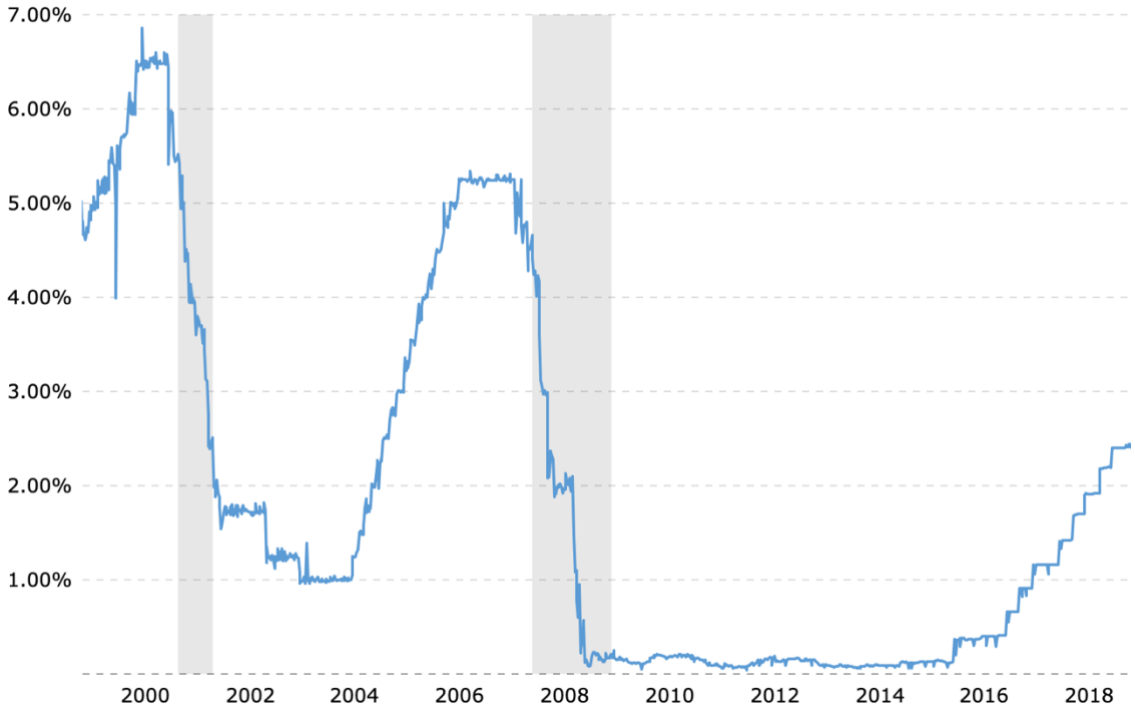
As outlined in the theoretical part, it is crucial to understand the company's economic and industry background before starting with building the valuation model. Netflix operates in both a positive economy or economies and in a positive and a growing industry.

3.3.1 Economic analysis of Netflix

Netflix is a US company, and it is available all over the world except for China, Crimea, North Korea and Syria and that's because of US government restrictions on American companies. As mentioned above in the chapter of company segments, half of the total revenue that Netflix generates comes from their domestic market, the US. And the rest comes from the rest of the world, which includes other major economies of Europe, Asia and Africa.

Given their strong and growing presence in the US. It would make more sense to have a deeper economic analysis of the US economy, and then to briefly go through the rest of the economies. One key indicator which is important for Netflix is the interest rate in the US. It's crucial because Netflix, as part of its business model and strategy, has a substantial amount of debt in their balance sheet, and they will keep on borrowing more to fuel their high growth. Therefore, the current low interest rate environment in the US helps Netflix achieve its goals. The chart below shows how the US interest rate has developed since the last financial crisis in 2008 (FOMC, 2019).

Figure 2. US interest rate movements for 20 years



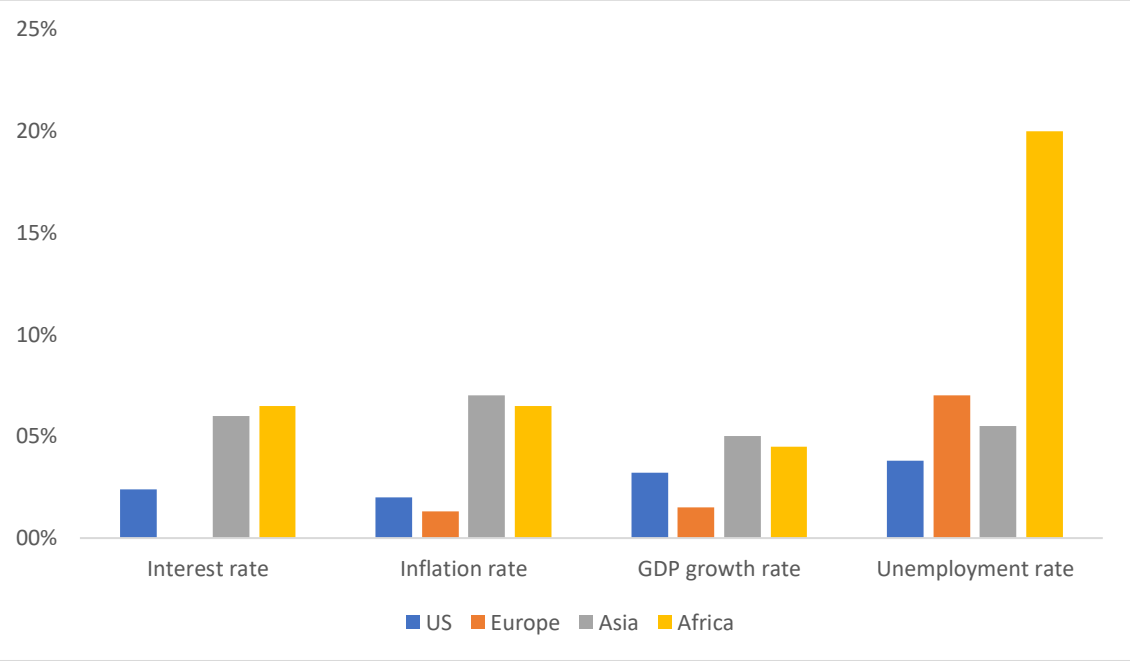
As shown in the chart above, the current interest rate in the United States is 2.40% which is still cheap compared to other developing or emerging market economies where Netflix operates in. One area which beats this rate is Europe, where they have interest rates that are close to 0%. For example, Germany's short-term interest rate is at -0.60%, which is reflected on Germany's two-year government bond yield.

The shaded areas in the chart represent the two recent crises – the Dot Com Boom that happened around the year 2000 and 2001, and the last financial crisis that happened in 2008. As you can see, right after every crisis, the interest rates were lowered in order to boost lending to businesses and spur economic growth. Many companies, including

Netflix, benefited from low interest rates, by getting cheaper financing deals, thus lowering their cost of capital. As mentioned in the theoretical part, the lower the cost of capital, or discount rate is, the higher the value of a company.

However, GDP growth rate in the US was 3.2% and it's expected to be positive for the next couple of years. There is risk for the economy slowing down, and that's why the interest rates are expected to remain low to promote growth in the economy. The unemployment rate stood at its lowest rate at 3.8% for April 2019, and the inflation rate is at a healthy level of 2%. As shown in the chart below (Amadeo, US Economy Fast Facts and Summary, 2019).

Figure 3. Key economic indicators in the US



The economic indicators above are favorable for the future of Netflix. With a low unemployment rate, a growing economy and cheap financing helps Netflix acquire and retain subscribers. Customers are economically able and confident in using the services of Netflix.

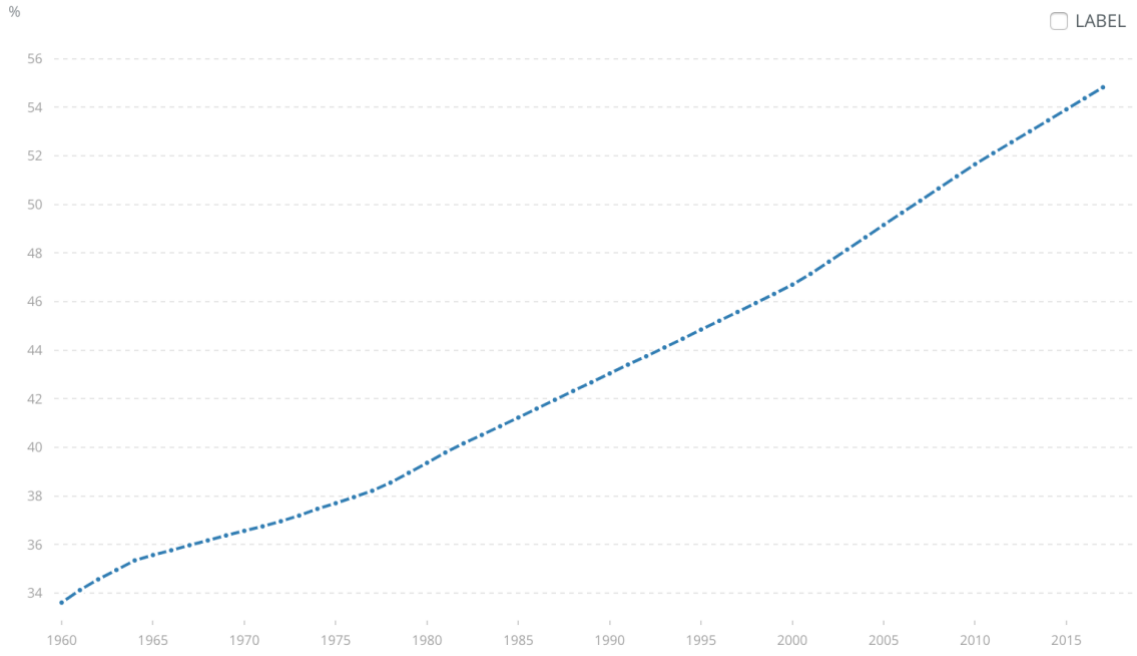
In Europe, the economic condition is positive as well but not better than in the US. With the GDP growth averaging 1.5% year-over-year, the unemployment rate averaging almost 7%, and the inflation rate is at 1.3% (Eurostat, 2019). Nevertheless, the interest rates are much more favorable at 0%. Of course, interest rates for corporations are usually

some basis points higher than that, depending on their creditworthiness or rating. For example, the lowest rate that Netflix pays on one of its bonds is around 3.6%.

In Asia and Africa, the economy grows by a higher rate year-over-year as shown in the chart above. However, the continents suffer from high inflation and unemployment rates. For example, Africa's unemployment rate averaged 20% and inflation for both regions is over 7%.

One key economic issue which should also be considered for Netflix is the rising level of urban population, which is good for Netflix. With the urban population all around the world expected to grow by almost 2% until the year 2020, and then 1.6% until 2025 and 1.4% until 2030, and the current urban population being over 50% of total world population as of 2017. This means that more and more people could potentially subscribe to Netflix. The urban population growth is shown in the chart below (WORLDBANK, 2018).

Figure 4. Urban population growth as a % of total world population



3.3.2 Industry analysis of Netflix

Netflix operates in the online video streaming and media industry that includes companies like Hulu, HBO Go, Amazon Prime, YouTube (owned by Google), with other companies like Apple and Disney planning to enter. The general business model of the industry is

pretty basic, where revenue and profits are derived from subscribers, by providing on-demand video content available for all devices including laptops, smart phones, TVs, personal computers, tablets etc. It is also a growing industry which is expected to go beyond $100 billion by 2025 in terms of revenue, hence many large technology companies are planning to enter.

As mentioned in the theoretical part, it would be appropriate to apply Porter's Five Forces, in order to analyze the industry that Netflix operates in. Therefore, we can start by going through the first force - competition in the industry.

3.3.3 Porter's Five Forces model for Netflix's industry analysis

1) As mentioned earlier, Netflix competes with private companies mostly, but it is facing a potential risk of other larger public companies joining the industry such as Apple and Disney. Recently in March 2019, Apple announced their online streaming services which is financed by one of the most prestigious banks in the world, Goldman Sachs. Apple will spend billions of dollars in creating a streaming service that will be connected to all their devices including Apple TV, iPhones, MacBooks, and iPads. Online streaming service providers aren't the only ones that Netflix is competing against. Cable TV plays a huge role as well, especially among the older generation, which Netflix hasn't yet fully attracted. Nevertheless, Netflix is number one in its industry, because it controls over 90% of the domestic market in the US and is also priced at a premium compared to its competitors which gives it a pricing power, but what all online streaming companies have in common is that they are slowly replacing the cable TV industry.
2) What about the potential threat of new entrants? The main factor that makes it difficult for other companies to enter the industry is the costs associated with distribution rights. It's also getting more and more expensive for the companies to hire actors and actresses especially when producing own content, which is also something that is posing a great challenge to cinema industries such as Hollywood etc. A classic example or a proof of this is the example mentioned earlier about Apple spending billions of dollars to enter the industry.
3) The third force, which is the power of suppliers, is more or less related to potential threat of new entrants. As mentioned above, the main suppliers in this industry are basically the contractors such as the actors and actresses from Hollywood or

Bollywood etc. As more and more companies are entering the industry, the costs of contracts are increasing as well. Thus, it's getting more expensive to acquire a contractor, but I would say that it's also getting harder to find one, because great actors and actresses aren't made every day.

4) The fourth force, which is the bargaining power of customers, is the part that poses a risk to Netflix and other streaming companies. The risk is that since the switching costs are very low, meaning that there are no long-term contracts with subscribers usually, a subscriber can easily switch to a different platform, thus it become harder for a streaming company to retain a subscriber. Nevertheless, Netflix has a subscriber renewal rate of 100%, meaning that they do not lose subscribers. When a subscriber leaves the platform, it gets replaced immediately by a new one. Subscriber renewal rate is thoroughly discussed in the chapter about valuation of subscribers.
5) Lastly, the threat of substitute products/services. The only thing which should concern this force for the industry is that subscribers are opting out to platforms that are free, known as video pirates. Given the developed age of technology and internet, it's almost always possible to find any video content for free nowadays. We also see a rising seasonality within this industry. For example, during spring or summer, more people are choosing not to stream videos but to socialize instead, such as going to cinemas.

By analyzing the Porter's Five Forces, we can see that even though it's an expensive, a growing, and a risky industry, Netflix, nevertheless, is in the top of its industry. This fact is proven in the following chapter which gives a more thorough analysis of Netflix's competition.

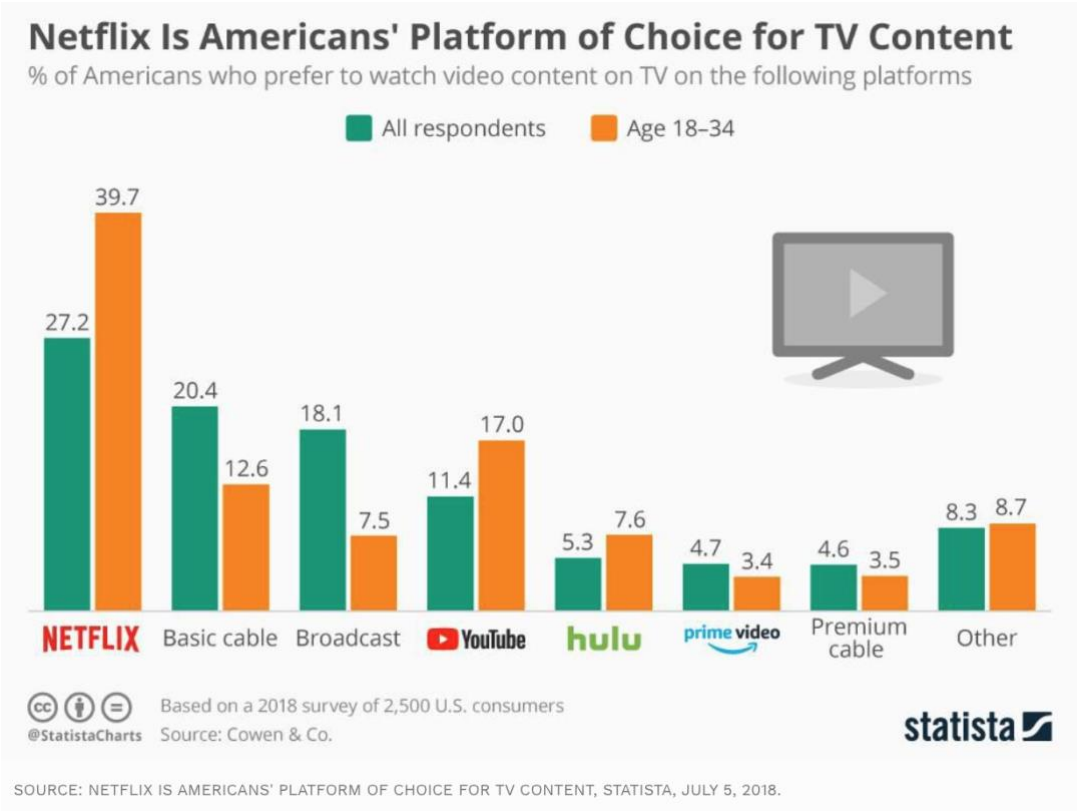
3.4 Competition

The industry that Netflix operates in is highly competitive and volatile, that's why Netflix has a beta of 1.8 which is explained in the valuation part of this project. Netflix competes against other similar companies, some of which aren't public, such as Hulu, HBO Go, but also larger public companies like Amazon's Instant Video. It would also be appropriate to financially compare Netflix to other large tech companies, such as Alphabet (which is Google) and Apple, due to similar balance sheets in terms of size and structure.

The industry itself is going through rapid and profound changes. For example, we see many people moving from classic cable TV platforms to internet-based platforms, because it's cheaper, quicker, less maintenance and also, it's compatible. When you are a Netflix subscriber for instance, you can use one account with multiple devices, and you can also share one account with your friends and/or family members.

And speaking from the demographics point of view, the online streaming industry is becoming more and more popular among younger generation. Therefore, this is posing a huge challenge to classic industries like the cable TV – that's why within this industry we see advertising playing a more significant role in terms of generating revenue.

Figure 5. Netflix Attractiveness Compared to its Competitors

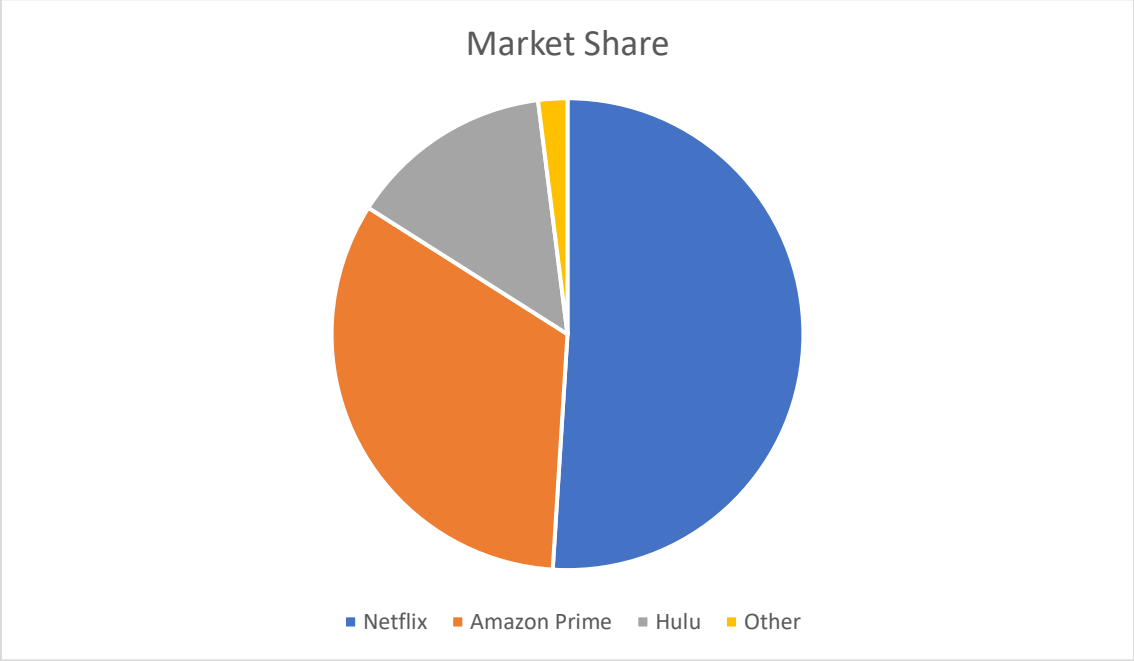


SOURCE: NETFLIX IS AMERICANS' PLATFORM OF CHOICE FOR TV CONTENT, STATISTA, JULY 5, 2018.

Overall, Netflix is in a much better advantage compared to its competitors as shown in the table above from Statista. As you can see, In America alone, majority of people prefer watching video content on Netflix, especially the people that are within the 18-34 age group. One explanation could be that Americans are adapting to technology much faster compared to others. And also, if we look at demographics, and if we compare America to Europe, we can see that in America there are more younger people and less older people, compared to Europe. And because of that, Netflix by far has the largest market share in

the video streaming industry, which stand at 51% as shown in the pie chart below, followed by Amazon Prime and Hulu. The statistics of the pie chart are taken from CNBC's research department.

Figure 6. Netflix Market Share According to CNBC Research as of 2017

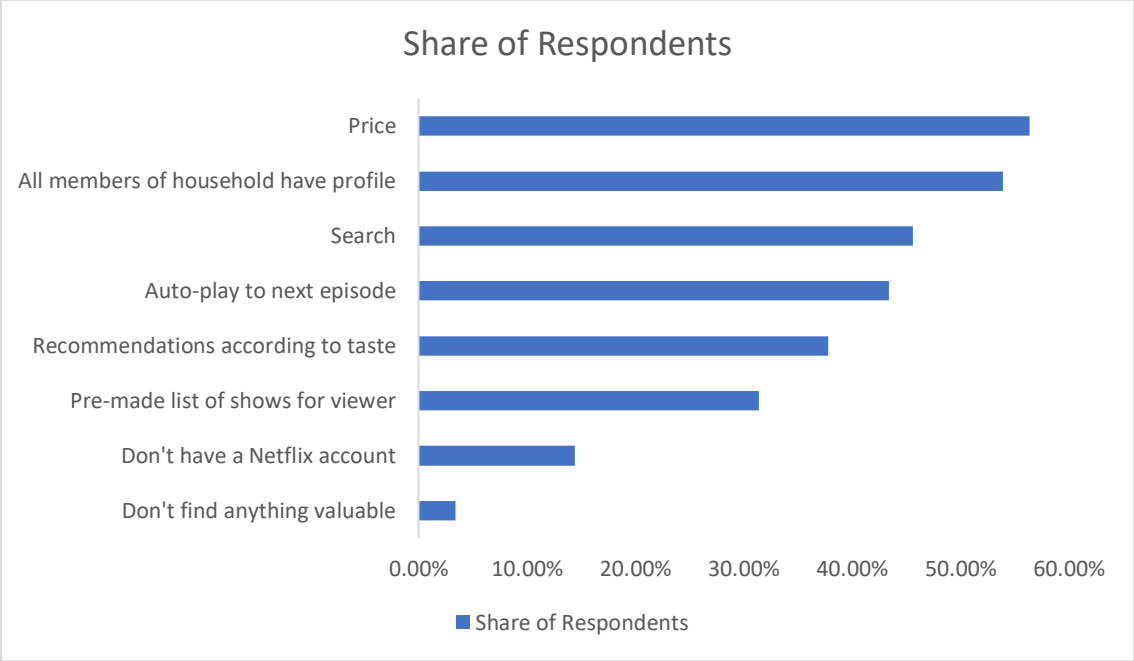


A couple of years from now, the market share of Netflix may reduce due to the emergence of new competitor such as Disney and Apple. For example, in March 2019 Apple announced their own streaming service which is expected to launch in over 100 countries. With $2 billion already invested in producing own content, they are directly going to compete with Netflix. Also, in 2017 Disney announced that they will produce their own content as well, which is expected to start by the end of 2019. And this is a huge risk for Netflix, because once Disney starts its own streaming service, the company will also stop doing business with Netflix, in a sense that it will no longer license its content to Netflix. All the above-mentioned events are expected to reduce the market share of Netflix in terms of subscribers and revenues.

However, one key advantage that Netflix has in order to survive and thrive through the competition is their pricing power, which many other companies lack, especially in the streaming industry. Since Netflix was created back in 1997, it managed to do four price hikes for its US-based customers, and they are expected to increases their prices again for the fifth time, from $7.99 to $8.99 for basic members, from $10.99 to $12.99 for popular-

tier members, and from $13.99 to $15.99 for premium members, all based in the US. The reason why they are increasing their membership prices is to cover their costs while increasing total revenue. And the reason why they are able to do that is because Netflix is still a cheaper alternative compared to other streaming services, including cable TV in the US which can cost at least $100 per subscription, hence the pricing power. Now the question is – is this pricing power (price hikes) justified? Well, according to research conducted in 2017, over 56% of respondents to survey have stated that the main reason why they use Netflix is because of its cheap price compared to other platforms, and that all members of a household may use a subscription. The results of the research are shown in the chart below.

Figure 7. Research on the Most Appealing Feature of Netflix According to Respondents



3.5 Key notes on main value drivers of Netflix

Before moving on to the valuation of Netflix using the two methods, it's important to understand some key aspects, such as the main drivers of revenue/profits, costs/expenses, some key points from assets and liabilities etc. So, starting from the revenues, as mentioned before, the main revenue stream is derived from monthly subscription fees, with the largest portion coming from the Domestic streaming segment of the business. The subscribers of Netflix are charged in advance of the start of using the services.

A bulk of Netflix's cost of revenues consists of Depreciation & Amortization of its assets, including streaming content (software) and property, plant & equipment, which made up 83% of total revenues for the fiscal year of 2017, and also costs associated with territory rights.

The operating expenses of Netflix include expenses associated with marketing, technology and development, and general and administrative, which was 27.3% of total revenues in the fiscal year of 2017. Marketing primarily consists of advertising expenses and some payments made to partners of Netflix, such as Consumer Electronics, internet service providers, multichannel video programming distributions or MVPDs and mobile operators. The advertising expenses also include digital and television advertising, thus the total advertising expenses made up over 85% of marketing expenses in the fiscal year of 2017. Technology and development expenses are mainly related to improvement costs on their service offerings (over 93% of total T&D in FY2017).

Cash and cash equivalents, and short-term investments made up only 14.8% of total assets. Netflix invests in instruments with maturities of 90 days or less, which are classified as cash equivalents. Netflix also has investments in forms of money market funds, government and corporate debt securities, certificates of deposit and agency securities, with the first two being the largest portion – 24% of total cash equivalents and short-term investments for the FY2017.

The greatest portion of total assets of Netflix is Property, Plant & Equipment, which was 56.2% of total assets for the FY2017. And it includes IT/software-related assets, furniture and fixtures, which have a useful life of 3 years, building with a useful life of 30 years, leasehold improvements – over life of lease, DVD operations equipment – 5 years, and a corporate aircraft with a useful life of 8 years. Last but not least, it's also important to examine the long-term debt of Netflix in order to assess the company's liquidity, riskiness and cost of debt, which will be an integral part to calculating the weighted average cost of capital.

Table 4. Netflix's Outstanding Long-term Debt and their Fair Values as of FY16-17 in USD

	Principal amount at par	**Issuance date**	**Maturity**	**Interest due dates**	**Fair value as of 31.12.2017**	**Fair value as of 31.12.2016**

4.875% senior notes	1,600	October 2017	April 2028	April 15 and October 15	1,571	-
3.625% senior notes (1)	1,561	May 2017	May 2027	May 15 and November 15	1,575	-
4.375% senior notes	1,000	October 2016	November 2026	May 15 and November 15	983	975
5.50% senior notes	700	February 2015	February 2022	April 15 and October 15	739	758
5.875% senior notes	800	February 2015	February 2025	April 15 and October 15	856	868
5.750% senior notes	400	February 2014	March 2024	March 1 and September 1	427	431
5.375% senior notes	500	February 2013	February 2021	February 1 and August 1	530	539

As shown in the table above, Netflix's annual interest expenses range from 3.6% up to 5.8%, with the lowest maturity being 7 years and highest being 11 years. By looking at this table, we can also conclude that the credit rating of Netflix is getting better year-over-year, with the lowest interest rates imposed on bonds that were issued in 2017, and the highest rates paid for bonds issued in 2013.

3.6 Key profitability and liquidity ratios of Netflix compared to the industry

Before moving on to the valuation of Netflix, it's also crucial to understand how the company's financial condition is compared to its competitors and the industry, in terms of profitability and liquidity, in order to get a clearer picture of the company we are valuing.

3.6.1 Profitability of Netflix

Netflix's profitability is reflected using five crucial ratios, and those are the profit margin, adjust profit margin to reflect depreciation and amortization, return on assets, return on equity and the return on invested capital.

Figure 8. Profitability ratios of Netflix

Profitability ratios	
Profit margin	86,4%
Adj. profit margin	32,2%
ROA	1,5%
ROE	8,2%
ROIC	4,1%

The first profit margin ratio, which excludes depreciation and amortization, indicates a very high level at over 86%. This figure excludes depreciation and amortization because over 70% of Netflix's Cost of Revenue is D&A, and since it's a capitalized cost which gets added back to their cash flow, it would make sense to exclude it when looking at profitability. But since majority of the companies that operate within similar industries include D&A as part of their costs of revenue, it would also make sense to look at their profit margin including D&A, and for Netflix this figure is 32.2%. In order to interpret these numbers, we have to compare them to industry averages. For this reason, we'll choose several industries that are comparable to the industry that Netflix operates in. The list of industries, their profit margin and the average are shown in the picture below.

Figure 9. Profit margins per industry

Profit Margin per Industry	
Software (entertainment)	67%
Entertainment	42%
Cable TV	61%
Broadcasting	53%
Average	**56%**

As shown above in the figure, Netflix's profit margin, if excluding D&A, is way above the industry average, overlapping by 30%. Comparing the adjusted profit margin, which in this case would be lower than the industry average, would only indicate that Netflix is spending a lot, compared to the industry, in generating revenue.

Figure 10. ROE per industry

ROE per Industry	
Software (entertainment)	15%
Entertainment	22%
Cable TV	36%
Broadcasting	82%
Average	**39%**

Return on Equity on the other hand is lower compared to the industries listed in the figure above, where Netflix has 8.2%. The main explanation to this is that due to high level of costs associated with revenues, which includes over 70% of D&A, drastically impacts the bottom line, which is Net Income. That's why for the last couple of years, including the fiscal years of 2015 and 2016, the net income was negative at $161 million, and $86 million respectively, but during their last reported fiscal year of 2017, their net income was positive, but only at $294 million, hence their low Return on Equity.

The average Return on Assets ratio for the Broadcasting Media & Cable TV Industry is 7%, which is much higher than Netflix's ROA which is at 1.5%. Again, the reason is that Netflix has a very low net income due to high costs.

Figure 11. ROIC per industry

ROIC per industry	
Software (entertainment)	19%
Entertainment	26%
Cable TV	14%
Broadcasting	24%
Average	**21%**

Netflix's ROIC is 4.1%, which is low compared to the industry average of 21%. The reason is that, even though Netflix generates very high revenues by an average growth rate of 30% year-over-year, they still have a very high amount of financial liabilities which stands at $7.4 billion as of fiscal year 2017. As noticed, their ROIC is also lower

than their cost of capital, which should indicate that Netflix is destroying value. This is a misleading information, because Netflix is in its high-growth stage, which requires large amount of debt. All in all, it is part of Netflix's main strategy to accumulate debt, and invest in growth, that is achieved through acquiring subscribers and developing content by using that debt.

3.6.2 Liquidity of Netflix

Examining the current ratio of Netflix, we can see that it is not in a positive state, because, again, Netflix has a substantial amount of debt, which they use as part of their strategy to continue growing. Therefore, a rate of 0.5 is acceptable in the case of Netflix. However, typically a current ratio that is below 1 indicates a red flag, because it states that the assets are lower than liabilities. And a ratio above 1 states the opposite.

Figure 12. Liquidity ratios of Netflix

Liquidity Ratios	
Current ratio	0,5
Interest Coverage ratio	2,4
Debt/EBITDA	1,1
Debt/Equity	2,1

However, despite having a low current ratio. Netflix has a healthy interest coverage ratio, which indicates that they can cover their interest expenses by at least 2 times, given their current level of operating profit (EBIT). The higher this ratio is, the better usually.

Also, despite having a substantial amount of debt in their balance sheets. Netflix can sufficiently pay off its liabilities due to their high level of operating income (EBITDA). However, the debt to equity ratio shows that Netflix is leveraged, again supporting the fact that it is part of their strategy to be over-leveraged.

3.7 Valuation of Netflix using the classic DCF method

After understanding the industry and business that Netflix operates in, we can now value it using the Microsoft Excel tool. The first phase in building a valuation model is to make basic assumptions on the financial statements, in order to project them for the next 5 years. Starting with the Income Statement, we assume that the total revenues of the business are expected to grow by 33%, 34%, 35%, 34% and 33% from FY2018-2022

respectively. The assumptions are based on the fact that historical growth has averaged at least 30% y-o-y and we assume that after surpassing $30 billion in total revenue from FY2020, it will start to stabilize in the last two years in our projection period.

For the purpose of valuation, we've decided to exclude depreciation & amortization from the total costs of revenues and to project it separately in order to calculate the free cash flows later on. The total cost of revenues has been declining as a percentage of total revenues historically, therefore we assume a similar behavior in the projected period, but the operating expenses remain stable at an average rate 27% of total revenues. All these affects are shown in the picture below.

Figure 13. Income statement key line item projections

$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
Revenues	6 780	8 831	11 693	15 551	20 839	28 132	37 697	50 137
y-o-y growth %	-	30,3%	32,4%	33%	34%	35%	34%	33%
Case 1				33%	34%	35%	34%	33%
Case 2								
Case 3								
Other revenues	-	-	-	-	-	-	-	-
y-o-y growth %	0%	0%	0%	0%	0%	0%	0%	0%
Case 1				0%	0%	0%	0%	0%
Case 2								
Case 3								
Cost of goods sold	(1 328)	(1 378)	(1 594)	(1 711)	(1 875)	(2 251)	(2 450)	(2 758)
% of revenues	-20%	-16%	-14%	-11%	-9%	-8%	-7%	-6%
Case 1				-11%	-9%	-8%	-7%	-6%
Case 2								
Case 3								
Operating expenses	(1 882)	(2 421)	(3 194)	(4 199)	(5 626)	(7 596)	(10 178)	(13 537)
% of revenues	-28%	-27%	-27%	-27%	-27%	-27%	-27%	-27%
Case 1				-27,0%	-27,0%	-27,0%	-27,0%	-27,0%
Case 2								
Case 3								

Since we're analyzing depreciation & amortization separately for the purpose of valuation, we're assuming an average rate of 54% of total revenues for the next 5 years, based on historical figures. The interest expenses on the other hand are unpredictable, because even though they pay an average rate of 3.7% y-o-y, the total interest expenses may be different, and we don't have available information on their future borrowings, therefore we assume that their interest expense will grow by an average rate of 10% y-o-y. Extraordinary items/other income and expense is remained flat at 0% for the next 5 years, simply because we don't know their future investments in securities and they're significantly lower as a % of revenues, therefore we assume that this figure will not have a substantial impact on the value of the company. And finally, the last assumption which we're making on the income statement are the tax rates, which are going to be equal to

the current corporate tax rates in the US at 21%. The effects are shown in the picture below.

Figure 14. Income statement key line item projections

$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
D&A	(3 547)	(4 925)	(6 330)	(8 398)	(11 253)	(15 191)	(20 357)	(27 074)
% of revenues	-52%	-56%	-54%	-54%	-54%	-54%	-54%	-54%
Case 1				-54%	-54%	-54%	-54%	-54%
Case 2								
Case 3								
Interest expenses	(133)	(150)	(238)	(262)	(288)	(317)	(349)	(384)
y-o-y growth %	-	13,1%	58,7%	10%	10%	10%	10%	10%
Case 1				10%	10%	10%	10%	10%
Case 2								
Case 3								
Extraordinary items	(31)	31	(115)	-	-	-	-	-
% of revenues	0%	0%	-1%	0%	0%	0%	0%	0%
Case 1				0%	0%	0%	0%	0%
Case 2								
Case 3								
Taxes	(19)	(74)	74					
% of EBT	14%	593%	33%	-21%	-21%	-21%	-21%	-21%
Case 1				-21%	-21%	-21%	-21%	-21%
Case 2								
Case 3								

The balance sheet assumptions are made using a similar logic – by examining the historical performance. Netflix does not have receivables and inventory, but it has the following asset and liability items: payables, PP&E, and other assets/liabilities. To project the payables of Netflix, we used a method called Days Payables Outstanding, in other words, after how many days does Netflix pay its suppliers etc. The average DPO was 77.2 days, thus we used it for the projection period. Property, plant and equipment for the purpose of valuation also includes Netflix's long-term content assets, which makes up 97% of total PP&E. Property, Plant and Equipment is projected to remain at an average rate of 80.9% of total revenues for the next 5 years. Other assets for projection purposes includes both other current and other non-current assets, and other liabilities includes current content liabilities, non-current content liabilities, and other non-current liabilities. Other assets and other liabilities are expected to remain at an average historical rate of 8.1% and 70.6% of total revenues respectively, for the next 5 years. All effects are shown in the picture below.

Figure 15. Balance sheet key line item projections

$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
Trade receivable	-	-	-	-	-	-	-	-
Days receivables (DSO)	-	-	-	-	-	-	-	-
Inventory	-	-	-	-	-	-	-	-
Days inventory (DIO)	-	-	-	-	-	-	-	-
Trade payable	253	313	360	367	402	483	525	591
Days payables (DPO)	*68,7*	*81,7*	*81,2*	*77,2*	*77,2*	*77,2*	*77,2*	*77,2*
PP&E	4 486	7 525	10 690	12 587	16 867	22 770	30 512	40 580
as a % of revenues	*66,2%*	*85,2%*	*91,4%*	*80,9%*	*80,9%*	*80,9%*	*80,9%*	*80,9%*
Other assets	500	602	1 189	1 262	1 692	2 284	3 060	4 070
as a % of revenues	*7,4%*	*6,8%*	*10,2%*	*8,1%*	*8,1%*	*8,1%*	*8,1%*	*8,1%*
Other liabilities	4 867	6 589	7 638	10 976	14 707	19 855	26 606	35 385
as a % of revenues	*71,8%*	*74,6%*	*65,3%*	*70,6%*	*70,6%*	*70,6%*	*70,6%*	*70,6%*

Once making the critical assumptions on the income statement and the balance sheet, we can use it to construct the cash flow statement in order to link the 3 financial statements together. The 3 pictures below show the full construction of the income statement, balance sheet and the cash flow statement with both historical and projected figures.

Figure 16. Income statement, historical and forecasted numbers

$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
Revenues	6 780	8 831	11 693	15 551	20 839	28 132	37 697	50 137
Other revenues	-	-	-	-	-	-	-	-
Total Revenues	**6 780**	**8 831**	**11 693**	15 551	20 839	28 132	37 697	50 137
Cost of goods sold	(1 328)	(1 378)	(1 594)	(1 711)	(1 875)	(2 251)	(2 450)	(2 758)
Gross Margin	**5 452**	**7 453**	**10 098**	13 841	18 963	25 882	35 247	47 380
Operating expenses	(1 882)	(2 421)	(3 194)	(4 199)	(5 626)	(7 596)	(10 178)	(13 537)
EBITDA	**3 570**	**5 032**	**6 904**	9 642	13 337	18 286	25 069	33 843
D&A	(3 547)	(4 925)	(6 330)	(8 398)	(11 253)	(15 191)	(20 357)	(27 074)
EBIT	**23**	**107**	**574**	1 244	2 084	3 095	4 712	6 769
Interest expenses	(133)	(150)	(238)	(262)	(288)	(317)	(349)	(384)
Extraordinary items	(31)	31	(115)	-	-	-	-	-
EBT	**(141)**	**(12)**	**220**	982	1 796	2 778	4 363	6 385
Taxes	(19)	(74)	74	(206)	(377)	(583)	(916)	(1 341)
Tax rate	14%	593%	33%	-21%	-21%	-21%	-21%	-21%
Net Income	**(161)**	**(86)**	**294**	**776**	**1 419**	**2 194**	**3 447**	**5 044**

As shown in the income statement picture above, by showing depreciation & amortization separately, we were also able to show EBITDA (earnings before interest, taxes, depreciation and amortization). EBITDA is a crucial factor when comparing similar companies across similar industries, by using different multiples, such as EV/EBITDA multiple, also known as simply the EBITDA multiple. Netflix has a multiple of 17, which means that it takes Netflix 17 years of operating profit to cover its enterprise value. Enterprise value is the total value of the company if it were to be acquired, that's why it's

calculated as market cap – cash + debt. Our Income Statement projections show that the bottom line, which is the net income will grow by 164% in 2018, and then it will stabilize to 82.8%, 54.7%, 57% and 46% respectively for the next 4 years.

Figure 17. Balance sheet, historical and forecasted numbers

$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
Intangible assets	2 906	3 726	4 311	4 311	4 311	4 311	4 311	4 311
PP&E	4 486	7 525	10 690	12 587	16 867	22 770	30 512	40 580
Financial assets	501	266	-	-	-	-	-	-
Inventory	-	-	-	-	-	-	-	-
Trade receivable	-	-	-	-	-	-	-	-
Other assets	500	602	1 189	1 262	1 692	2 284	3 060	4 070
Cash and equivalents	1 809	1 468	2 823	4 973	5 450	6 377	8 099	10 911
Total Assets	**10 203**	**13 587**	**19 013**	**23 133**	**28 319**	**35 741**	**45 982**	**59 872**
Trade payable	253	313	360	367	402	483	525	591
Other liabilities	4 867	6 589	7 638	10 976	14 707	19 855	26 606	35 385
Financial liabilities	2 858	4 005	7 433	7 433	7 433	7 433	7 433	7 433
Shareholders' equity	2 223	2 680	3 582	4 358	5 776	7 971	11 418	16 462
Total Liabilities & Equities	**10 203**	**13 587**	**19 013**	**23 133**	**28 319**	**35 741**	**45 982**	**59 872**
Check	-	-	-	-	-	-	-	-

The cash represents Opening Cash + Net Cash Flow, taken from the Cash Flow Statement. Other assumptions include flat intangible assets, and no additional debt to be acquired by the company, since this information is not publicly available.

Figure 18. Cash flow statement, historical and forecasted numbers

$ in millions		FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
EBIT	P&L	107	574	1 244	2 084	3 095	4 712	6 769
Operating taxes	P&L	633	192	(261)	(438)	(650)	(990)	(1 421)
Operating tax rate		593%	33%	-21%	-21%	-21%	-21%	-21%
NOPAT		**740**	**765**	**983**	**1 646**	**2 445**	**3 723**	**5 347**
Add-back D&A	P&L	4 925	6 330	8 398	11 253	15 191	20 357	27 074
Gross Cash Flow		**5 665**	**7 096**	**9 381**	**12 899**	**17 636**	**24 079**	**32 421**
Inventory	BS	-	-	-	-	-	-	-
Trade receivables	BS	-	-	-	-	-	-	-
Trade payables	BS	59	47	7	35	80	43	66
Investments in working capital		**59**	**47**	**7**	**35**	**80**	**43**	**66**
Investments in other assets/liabilities	BS	**1 619**	**463**	**3 264**	**3 303**	**4 556**	**5 974**	**7 770**
Capex	BS	**(7 964)**	**(9 496)**	**(10 294)**	**(15 532)**	**(21 095)**	**(28 098)**	**(37 143)**
Other investments	BS	**(585)**	**(318)**	-	-	-	-	-
Extraordinary items	P&L	**31**	**(115)**	-	-	-	-	-
UFCF		**(1 174)**	**(2 325)**	**2 357**	**705**	**1 177**	**1 998**	**3 114**
Interest expenses	P&L	(150)	(238)	(262)	(288)	(317)	(349)	(384)
Delta Oper taxes vs. Taxes	P&L	(707)	(118,1)	55	61	67	73	81
Delta Financial liabilities	BS	1 147	3 428	-	-	-	-	-
Delta Equity incl. dividends	BS, P&L	543	608	-	-	-	-	-
Net Cash Flow		**(342)**	**1 355**	**2 150**	**477**	**927**	**1 722**	**2 811**
Opening cash		1 809	1 468	2 823	4 973	5 450	6 377	8 099
Closing cash		1 468	2 823	4 973	5 450	6 377	8 099	10 911
Check		1 468	2 822,8	4 973	5 450	6 377	8 099	10 911
		-	-	-	-	-	-	-

Our positive assumptions to the income statement and balance sheet result in positive free cash flow for the company, and it's calculated by taking the Net Operating Profit After

Tax, or NOPAT, adding back D&A (Depreciation & Amortization), and subtracting investments in working capital, in assets/liabilities, other investments and Capital Expenditures, or CAPEX. The Net Cash Flow is directly linked to the cash in the Balance Sheet.

Once we have all the financial statements linked together and projected for the next 5 years, we can now proceed with the Discounted Cash Flow valuation. We're going to value Netflix using the Unlevered Free Cash Flow of the company, because UFCF (Unlevered Free Cash Flow) represents the cash that is left for equity and bondholders after spending on investments and capital expenditures. But before discounting the UFCF of Netflix, we need to come up with an appropriate discount rate.

3.7.1 Discount rate

Discount rate is estimated using the Weighted Average Cost of Capital (WACC) formula, which consists of both Cost of Equity (CAPM) and the After-tax Cost of Debt. The picture below shows the inputs for estimating the Cost of Equity.

Figure 19. Capital asset pricing model of Netflix

CAPM	12,9%
risk-free rate	3,05%
beta	1,8
market risk premium	5,5%

The risk-free rate of 3.05% represents the yield on a 10-year US government bond. The beta of 1.8 represents the volatility of Netflix's stock compared to the market return, it's a high beta which means that it's more volatile than the market. The beta can be found in different financial sources on the internet, and the market risk premium is calculated by subtracting the risk-free rate from the market rate of return, so 8.5% - 3.05% = 5.45% (5.5%). And now we can calculate the Cost of Equity (CAPM) using the following formula and inputs:

$$CAPM = 3.05\% + 1.8\,X\,5.5\% = 12.9\%$$

The Weighted Average Cost of Capital is estimated using the following inputs, once we've estimated the Cost of Equity.

Figure 20. Weighted Average Cost of Capital of Netflix

WACC	12,3%
weight of equity	0,9
cost of equity	12,9%
weight of debt	0,1
cost of debt	3,7%

Therefore, $(0.9\ X\ 12.9\%) + (0.1\ x\ 3.7\%)\ X\ (1 - 21\%) = 12.3\%$. The total Cost of Capital (WACC) is 12.3%. And now we're ready to discount the UFCF of Netflix to derive the present value of cash flows, the terminal value, and thus we can estimate the enterprise and equity value.

Figure 21. Unlevered free cash flow, historical and forecasted for Netflix, including PV

				1,0	2,0	3,0	4,0	5,0
$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
UFCF				2 357	705	1 177	1 998	3 114
Discount factor (WACC)				0,89	0,79	0,71	0,63	0,56
PV of UFCF				**2 099**	**559**	**831**	**1 256**	**1 744**

The present value of UFCF is equal to UFCF multiplied by the discount factor.

Figure 22. Enterprise and Equity value of Netflix

			DCF Valuation	
PV of Cash flows	6 489	$	23%	of Enterprise value
Continuing value	38 515	$		
PV of Continuing value	21 563	$	77%	of Enterprise value
Enterprise value	**28 051**	**$**		
-Financial liabilities	(7 433)	$		
+Cash	2 823	$		
Equity value	**23 441**	**$**		
Equity value per share	**53,8**	**$**		

To calculate the continuing value (terminal value), we assume a perpetuity growth rate of 3.9%, which is the rate at which the global GDP is expected to grow at y-o-y. By adding the present value of unlevered free cash flows to the present value of terminal value we calculate the enterprise value of Netflix. To derive the equity value of Netflix, we subtract financial liabilities and add back cash equivalents and short-term investments, and we

derive the equity value or the market cap. And if you want to know the equity value per share, simply divide the number by the number of shares outstanding, and you'll get $53.8. per share. Our model tells us that the Netflix stock price is supposed to be $53.8, but the current price of its stock is $261, a different of 79.4%.

3.5 Conclusion on classic DCF valuation of Netflix

The result of this model shows that the current market value of the company is highly overvalued by over 79%. Even after making strong/optimistic assumptions, such as future revenue growth of at least 30% y-o-y and a terminal growth rate of 3.9% (which is the rate at which the current global economy is projected to grow at). The model's pessimistic results can be backed by the following assumptions: Considering the current global/US economic outlook, it's safe to say that the market is indeed overvalued, and given the tech/internet sector's high beta, an overvalued market poses a greater threat to those companies, like Netflix.

We also expect the economy to slow down in the near future due to a tightening in the labor market in developed economies, such as the US, and we also see rising interest rates due to increasing inflation. All these assumptions are also priced in the current yield of a 10-year US gov. bond which has crossed 3%, again, indicating that the interest rates are expected to increase in the future.

So basically, a risk-free rate of over 3%, an expected market rate of return of at least 8% and a beta of above 1.8, translates to Netflix being highly volatile, in other words, a 12.9% of cost of equity (CAPM). Netflix also has a substantial amount of outstanding long-term debt at $6.5 billion, where they pay an average interest of 3.7%. With highest interest being 5.8%, which Netflix is currently paying on a 10-year bond they issued in 2015. Hence, the Ba3 credit rating of Netflix by Moody's (a credit rating agency). In general, the corporate debt market, especially in the US, is getting more riskier, which is why the insurance costs against debt failure are also increasing. All these assumptions about the equity and debt result in a WACC of 12.3%.

To conclude, the model's result indicates that Netflix is currently overvalued by the market due to its high volatility and uncertainty compared to the general market. Below you can see a sensitivity analysis showing how the enterprise value of Netflix would look like under different discount rate and terminal growth assumptions, which also tells us

that the market thinks that Netflix has a discount rate below 10% and a terminal growth rate above 3%.

Figure 23. Discount and growth rate sensitivity analysis

		WACC			
		4%	10%	16%	20%
g	1%	94 408	28 609	15 880	12 003
	2%	138 776	31 563	16 699	12 442
	3%	271 880	35 361	17 644	12 933
	4%	2 667 746	39 845	18 628	13 427

3.5.1 Altman Z score – probability of bankruptcy

The result of the classic discounted cash flow model suggests that the current market value is highly overvalued. Key financial ratios of Netflix tell us that the company is not profitable, and some liquidity ratios suggest that Netflix is too leveraged. Is the company actually in a negative territory? We can answer this question by applying a model that was introduced to the world of finance by Edward Altman in 1968, called Altman Z Score. This is a model that is used to predict a financial distress in a company that could potentially happen within two years if the company continues to operate in a current poor condition. This model only has an accuracy probability of over 80% (Altman, 1968). Note that one major disadvantage to using this model could be that it is mostly used for companies that operate within the industrials and/or manufacturing sectors, but the type of model which is going to be used is the one for non-manufacturing companies.

In order to build the model, it is crucial to gather key information that will be used in the model, such as the working capital, retained earnings, total assets, earnings before interest and taxes, book value of equity, and total liabilities. Note! – since the model is meant to represent the current state, the numbers used here are as of the beginning of May 2019, therefore it includes the latest published financials for the fiscal year of 2018.

Figure 24. Altman Z Score model inputs, ratios and final result

Key model inputs	
Working capital	3 207
Retained earnings	2 942
Total assets	25 974
EBIT	1 605
Book value of equity	5 238
Total liabilities	20 735
Altman Z Score Result =	**1,86**

Key model ratios	
A	0,12
B	0,11
C	0,06
D	0,25

As of May 2019, Netflix has a working capital of $3.2 billion, retained earnings of $2.9 billion, total assets of $25.9 billion, EBIT of $1.6 billion, book value of equity of $5.3 billion and total liabilities of $20.7 billion. The four ratios on the left are derived by using the key model inputs mentioned above. The ratio "A" measures the proportion of total assets that are liquid, which is a crucial line to have in case of emergency situations like crisis. Ratio "B" assesses the cumulative profitability of the company, ratio "C" tells us more about the profitability of the company if we disregard leverage and taxes, and the last ratio "C" examines the level of equity in regard to total liabilities.

After gathering key model inputs and calculating the ratios, we can build the model by using the following formula.

Altman Z Score model:

$$\boldsymbol{Altman\ Z\ Score} = (\mathbf{6.56} \times \boldsymbol{A}) + (\mathbf{3.26} \times \boldsymbol{B}) + (\mathbf{6.72} \times \boldsymbol{C}) + (\mathbf{1.05} \times \boldsymbol{D})$$

There are several different types of this model which are categorized by their application method. For example, there's an Altman Z Score model that is used for manufacturing companies only, another type of model is used for emerging markets only, or developing markets only. Netflix is a non-manufacturing company that was established in a developed economy or country. Therefore, the type of Altman Z Score model which is used for this thesis and company is the one that is applied for non-manufacturing companies that are operating in developed markets.

Finally, what does the result of 1.86 tell us? Well, if the value is greater than 2.6, it means that the company is in a safe zone, with no probability of bankruptcy. If the value is between 2.6 and 1.1, it means that there is only a very low probability of bankruptcy, and

if the result is below 1.1, it would indicate that there is a high level of bankruptcy, or in other words, if the company continues to operate in the same condition for in two years, then it will likely go bankrupt.

In our case, Netflix's result is 1.86, which indicates that Netflix is in a zone with only a very low probability of bankruptcy, or financial distress. The reason that Netflix is not in the safe zone is due its large risk related to financial liabilities, which again is part of their main business strategy for growth and value.

3.6 Subscriber-based Valuation of Netflix

We used a classic DCF model to value Netflix, and the model shows that the current market value of Netflix is overvalued by over 79%. If that's the case, then why is Netflix still an attractive company to invest into with a rising stock price? what did the traditional model miss? The subscriber-based model will answer these questions. As mentioned previously in the Methodology of this project, we start the subscriber-based model by gathering key financial and operating data on Netflix. We then compare the data per year and we make reasonable assumptions while gathering the useful data for valuation, as shown in the picture below.

Figure 25. Key data for Netflix subscriber valuation

Netflix data for valuation FY2017	
Current # of subscribers	118
Prior year's # of subs.	94
Difference between new & prior # of sub.	24
Total revenue	11 693
Current revenue/subscriber	99,4
Prior year's revenue/subscriber	94,1
Total opex + costs	-10 854
Operating income	839
Total cash and cash equivalents	2 823
Total debt	6 499
% of opex associated with new subs.	26%
% of opex that are spent on company	50%
% of opex spent on current users	24%
Corporate tax rate	21%
Inflation rate	2,9%
Risk-free rate	3,05%
# of shares outstanding	436
Perpetuity growth rate	3,9%

Netflix grows its subscriber base by an average rate of 25% y-o-y, and with a total revenue of almost $12 billion in FY17, its revenue was $99.4 per subscriber for that same fiscal

year, which is an increase of 5.6% from the previous year's revenue of $94.1 per subscriber.

The total operating expenses of Netflix includes marketing, technology and development, and general and administrative expenses. The costs include amortization of its software and property, plant & equipment and content production and territory rights. In total they make up $10.8 billion, of which 24% is associated with maintaining its current subscriber base, 26% is associated with attracting new subscribers, and 50% are corporate expenses. The rest of the metrics, such as the tax rate, inflation, risk-free rate, growth rate, cash etc. are basic metrics that are going to support this valuation.

Figure 26. Key data on existing and new subscriber of Netflix

Data on existing subs.		Data on new subs.	
subscriber lifetime (years)	8	Cost of acquiring subs.	118,64
subscriber renewal rate	100%	Subscriber growth rate for first 5 years	25%
Revenue/subscriber growth rate	5,6%	Subscriber growth rate for next 5 years	15%
Services costs as % of revenues	24%		

As shown on picture 12, we're preparing for the valuation, and we'll need to use some data which the classic DCF model lacks, and those are subscriber lifetime of Netflix, which is 8 years, the subscriber renewal rate – 100%, cost of acquiring new subscribers for Netflix, and key growth rates regarding revenues and subscriber base.

Figure 27. Valuation of current subscribers

Value of current subscribers	
Revenue	99,44
Opex	23,87
Operating income	75,58
Operating income after tax	59,71
y-o-y growth rate in revenue/subscriber	5,6%
y-o-y growth rate in opex/subscriber	2,45%
Discount rate (cost of capital)	12,30%
Subscriber lifetime	8
Full life probability	100,0%
Value/subscriber	379,69
Total value of all current subscribers	**44 645**

Note that the cost of capital (discount rate) used in this model is the same as the one used in the traditional method. Picture 14 above shows that after using important financial information on subscribers, such as the lifetime and renewal rate, we use the long Excel function described in methodology, and derive a value per subscriber of around $380 for Netflix. Multiplying that amount by the total amount of subscribers for the last fiscal year of 2017, results in a total of $44.6 billion of total value of all current subscribers of Netflix.

Figure 28. Valuation of future subscribers

Value of future subscribers											
Acquisition cost of subscribers	118,64										
Value/new subscriber	261,05										
Period	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Total subscribers	118	147	191	250	327	428	507	595	698	818	959
New subscribers	0	29	44	59	77	101	79	88	103	120	141
Value/new subscriber	261	269	276	284	293	301	310	319	328	338	347
Value added by new subscribers		7 896	12 188	16 722	22 584	30 431	24 596	28 068	33 641	40 543	48 891
Continuing value	159 122										
PV		7 031	9 664	11 807	14 199	17 037	12 262	12 460	13 298	14 271	65 200
Total value added by new subscribers	**177 229**										

We know that the acquisition cost is over $118 per subscriber, we can deduct that from the value per current subscriber and obtain the value per future subscriber of Netflix for the base year, which is $261. We will take this number and project it 10 years into the future and let it grow every year in tandem with the inflation rate. Multiplying Netflix subscribers by the value per user gives us the value added, which we will then project it, find its terminal value, and then the Present Values of each projected value added + the terminal value's PV, and that results in the total value of future subscribers which is $177.2 billion. Almost 4 times more than the value of its existing subscribers. (Financial Times, n.d.)

Figure 29. Value drags of operating expenses

Value drag of operating expenses on company										
Opex on company	-5 427	-5 560	-5 696	-5 836	-5 979	-6 125	-6 275	-6 429	-6 587	-6 748	-6 913
After-tax opex on company		-4 392	-4 500	-4 610	-4 723	-4 839	-4 957	-5 079	-5 203	-5 331	-5 461
Continuing value	-67 543										
PV		-3 911	-3 568	-3 255	-2 970	-2 709	-2 471	-2 255	-2 057	-1 876	-22 882
Total value drag of opex on company	**-47 955**										

Now that we estimated both the total value of the existing and the future subscribers of Netflix, we must also estimate the value drag caused by corporate expenses, following

the method outlined in methodology of this project, and we estimate that we will need to subtract almost $48 billions of corporate expenses from Netflix to derive the estimate total market value of Netflix, as shown in the picture 17 below.

Figure 30. Total value of Netflix using subscribers

Total value of Netflix	
Value of current subscribers	44 645
Value of future subscribers	177 229
Value drag of opex on company	-47 955
Cash and cash equivalents	2 823
Total debt	6 499
Equity value of Netflix	**170 242**
Estimated price per share of Netflix	**390**

Value of current subscribers, plus value of future subscribers, minutes the value drag of corporate expenses, plus the cash and minus the debt results in Netflix having an estimated market value of $170.2 billion. Or put it in terms of stocks, that is $390 per share.

4. THESIS CONCLUSION

The results from both of the models is clearly visible now. The classic DCF model suggested that Netflix is overvalued by the market, and now the new model suggests that Netflix is actually undervalued by the market. Both of the models are built using the financial indicators, such as the components of the discount rate (the bond yield etc.) based on the data available on the 26th of November 2018, when the stock price was around $260 per share. Since then the stock price has increased by more than 22%, up to $320 (10th of January 2019), and the subscriber-based model suggests that the current market value must be around $390 per share. Therefore, it's safe to say that the second model, which is the subscriber-based valuation model, was more appropriate to value this internet company, because it also considered the modern data and subscriber driven business environment of Netflix.

Finally, the answer to the research question of main value drivers of modern companies are listed in the following three bullet points:

- Accuracy in forecasting
- Subscriber lifetime
- Subscriber renewal

By breaking down the internet company's financials to its subscribers, I was able to accurately predict key financial metrics such as revenues, operating expenses and costs, which also allowed me to project the financials of Netflix beyond 5 years, all the way up to 10 years.

The latter two points, subscriber lifetime and renewal, gave a new perception on value. We learned that what really drives growth and brings value to modern internet companies, such as Netflix, is customer loyalty, and the company's ability to maintain their existing customers, while also growing it by attracting new customers.

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5. **APPENDIX**

Excel picture 1. Income Statement of Netflix

P&L source

USD in millions except per share data	31Dec2015 Act	31Dec2016 Act	31Dec2017 Act
revenues	6 780	8 831	11 693
cost of revenues	(4 591)	(6 030)	(7 660)
gross profit	2 188	2 801	4 033
gross margin	32,3%	31,7%	34,5%
marketing	(824)	(991)	(1 278)
technology and development	(651)	(852)	(1 053)
general and administrative	(407)	(578)	(864)
operating expenses	(1 882)	(2 421)	(3 194)
opereating income	306	380	839
interest expense	(133)	(150)	(238)
interest and other income (expense)	(31)	31	(115)
income before income taxes	141,9	260,5	485,3
provision for (benefit from) income taxes	(19)	(74)	74
net income	123	187	559
earnings per share:			
basic	0,29	0,44	1,29
diluted	0,28	0,43	1,25
weighted-average common shares outstanding:			
basic	426	429	432
diluted	436	439	447

Excel picture 2. Balance Sheet of Netflix

BS source

USD in millions, exc. Share & per share	31Dec15 Act	31Dec16 Act	31Dec17 Act
Assets			
current assets:			
cash and cash equivalents	1 809	1 468	2 823
short-term invetments	501	266	-
current content assets, net	2 906	3 726	4 311
other current assets	215	260	536
total current assets	5 432	5 720	7 670
non-current content assets, net	4 313	7 275	10 371
preperty and equipment, net	173	250	319
other non-current assets	285	341	652
total non-current assets	4 771,0	7 866,3	11 342,8
total assets	10 203	13 587	19 013
Liabilities and Stockholders' Equity			
current liabilities:			
current content liabilities	2 789	3 633	4 173
accounts payable	253	313	360
accrued expenses	140	198	315
deferred revenue	346,7	443,5	618,6
total current liabilities	3 529,6	4 586,7	5 466,3
non-current content liabilities	2 026,4	2 894,7	3 329,8
long-term debt	2 371,4	3 364,3	6 499,4
other non-current liabilities	52,1	61,2	135,2
total non-current liabilities	4 449,8	6 320,2	9 964,5
total liabilities	7 979,4	10 906,8	15 430,8
commitments and contingencies (note 5)			
stockholders' equity:			
preferred stock, $0,001 par value; 10mln sha	-	-	-
common stock, $0,001 par value; 4,990mln s	1 324,8	1 599,8	1 871,4
accumulated other comprehensive loss	(43,3)	(48,6)	(20,6)
retained earnings	941,9	1 128,6	1 731,1
total stockholders' equity	2 223,4	2 679,8	3 582,0
total liabilities and stockholders' equity	10 202,9	13 586,6	19 012,7
BS check	-	-	-

Excel picture 3. Cash Flow Statement of Netflix, cash flows from operations and investing.

CF source

USD in millions	31Dec15 Act	31Dec16 Act	31Dec17 Act
cash flows from operating activities:			
net income	123	187	559
adj. to reconcile net income to net cash used in operating activities:			
additions to streaming content assets	-5 772	-8 653	-9 806
change in streaming content liabilities	1 162	1 773	900
amortization of streaming content assets	3 405	4 788	6 198
amortization of DVD content assets	79	79	61
D&A of property, equipment and intangibles	62	58	72
stock-based compensation expense	125	174	182
excess tax benefits from stock-based compensation	-80	-65	0
other non-cash items	32	41	57
foreign currency remeasurement loss on long-term debt	0	0	141
deferred taxes	-59	-47	-209
changes in operating assets and liabilities:			
other current assets	19	47	-234
accounts payable	52	32	75
accrued expenses	49	69	114
deferred revenue	72	97	178
other non-current assets and liabilities	-18	-52	-74
net cash used in operating activities	-749	-1 474	-1 786
cash flows from investing activities:			
acquisitions of DVD content assets	-78	-77	-54
purchase of property and equipment	-91	-108	-173
other assets	-2	-1	-7
purchase of short-term investments	-372	-187	-75
proceeds from sale of short-term investments	259	282	320
proceeds from maturities of short-term investments	105	140	23
net cash provided by (used in) investing activities	-179	50	34

Excel picture 4. Cash Flow Statement of Netflix, cash flows from financing activities

cash flows from financing activities:			
proceeds from issuance of debt	1 500	1 000	3 021
issuance costs	-18	-11	-32
proceeds from issuance of common stock	78	37	88
excess tax benefits from stock-based compensation	80	65	0
other financing activities	-1	0	0
net cash provided by financing activities	1 640	1 092	3 077
effect of exchange rate changes on cash and cash equivalents	-16	-9	30
net increase (decrease0 in cash and cash equivalents	696	-342	1 355
cash and cash equivalents, beginning of year	1 114	1 809	1 468
cash and cash equivalents, end of year	1 809	1 468	2 823
supplemental disclosure:			
income taxes paid	28	27	114
interest paid	112	139	213
increase (decrease) in investing activities included in liabiliti	-5	28	-33

Excel picture 5. Main income statement line item projections of Netflix

P&L assumptions

Case scenarios:
Case 1: Optimistic case
Case 2: Base case
Case 3: Worst case

Selected case: 1

$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
Revenues	6 780	8 831	11 693	15 551	20 839	28 132	37 697	50 137
y-o-y growth %	-	30,3%	32,4%	33%	34%	35%	34%	33%
Case 1				33%	34%	35%	34%	33%
Case 2								
Case 3								
Other revenues	-	-	-	-	-	-	-	-
y-o-y growth %	0%	0%	0%	0%	0%	0%	0%	0%
Case 1				0%	0%	0%	0%	0%
Case 2								
Case 3								
Cost of goods sold	(1 328)	(1 378)	(1 594)	(1 711)	(1 875)	(2 251)	(2 450)	(2 758)
% of revenues	-20%	-16%	-14%	-11%	-9%	-8%	-7%	-6%
Case 1				-11%	-9%	-8%	-7%	-6%
Case 2								
Case 3								
Operating expenses	(1 882)	(2 421)	(3 194)	(4 199)	(5 626)	(7 596)	(10 178)	(13 537)
% of revenues	-28%	-27%	-27%	-27%	-27%	-27%	-27%	-27%
Case 1				-27,0%	-27,0%	-27,0%	-27,0%	-27,0%
Case 2								
Case 3								
D&A	(3 547)	(4 925)	(6 330)	(8 398)	(11 253)	(15 191)	(20 357)	(27 074)
% of revenues	-52%	-56%	-54%	-54%	-54%	-54%	-54%	-54%
Case 1				-54%	-54%	-54%	-54%	-54%
Case 2								
Case 3								
Interest expenses	(133)	(150)	(238)	(262)	(288)	(317)	(349)	(384)
y-o-y growth %	-	13,1%	58,7%	10%	10%	10%	10%	10%
Case 1				10%	10%	10%	10%	10%
Case 2								
Case 3								
Extraordinary items	(31)	31	(115)	-	-	-	-	-
% of revenues	0%	0%	-1%	0%	0%	0%	0%	0%
Case 1				0%	0%	0%	0%	0%
Case 2								
Case 3								
Taxes	(19)	(74)	74					
% of EBT	14%	593%	33%	-21%	-21%	-21%	-21%	-21%
Case 1				-21%	-21%	-21%	-21%	-21%
Case 2								
Case 3								

Excel picture 6. Main balance sheet line item projections of Netflix

BS assumptions

$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
Trade receivable	-	-	-	-	-	-	-	-
Days receivables (DSO)	-	-	-	-	-	-	-	-
Inventory	-	-	-	-	-	-	-	-
Days inventory (DIO)	-	-	-	-	-	-	-	-
Trade payable	253	313	360	367	402	483	525	591
Days payables (DPO)	*68,7*	*81,7*	*81,2*	*77,2*	*77,2*	*77,2*	*77,2*	*77,2*
PP&E	4 486	7 525	10 690	12 587	16 867	22 770	30 512	40 580
as a % of revenues	*66,2%*	*85,2%*	*91,4%*	*80,9%*	*80,9%*	*80,9%*	*80,9%*	*80,9%*
Other assets	500	602	1 189	1 262	1 692	2 284	3 060	4 070
as a % of revenues	*7,4%*	*6,8%*	*10,2%*	*8,1%*	*8,1%*	*8,1%*	*8,1%*	*8,1%*
Other liabilities	4 867	6 589	7 638	10 976	14 707	19 855	26 606	35 385
as a % of revenues	*71,8%*	*74,6%*	*65,3%*	*70,6%*	*70,6%*	*70,6%*	*70,6%*	*70,6%*

Excel picture 7. Income Statement output model, historical and forecasted

P&L

$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
Revenues	6 780	8 831	11 693	15 551	20 839	28 132	37 697	50 137
Other revenues	-	-	-	-	-	-	-	-
Total Revenues	**6 780**	**8 831**	**11 693**	15 551	20 839	28 132	37 697	50 137
Cost of goods sold	(1 328)	(1 378)	(1 594)	(1 711)	(1 875)	(2 251)	(2 450)	(2 758)
Gross Margin	**5 452**	**7 453**	**10 098**	13 841	18 963	25 882	35 247	47 380
Operating expenses	(1 882)	(2 421)	(3 194)	(4 199)	(5 626)	(7 596)	(10 178)	(13 537)
EBITDA	**3 570**	**5 032**	**6 904**	9 642	13 337	18 286	25 069	33 843
D&A	(3 547)	(4 925)	(6 330)	(8 398)	(11 253)	(15 191)	(20 357)	(27 074)
EBIT	**23**	**107**	**574**	1 244	2 084	3 095	4 712	6 769
Interest expenses	(133)	(150)	(238)	(262)	(288)	(317)	(349)	(384)
Extraordinary items	(31)	31	(115)	-	-	-	-	-
EBT	**(141)**	**(12)**	**220**	982	1 796	2 778	4 363	6 385
Taxes	(19)	(74)	74	(206)	(377)	(583)	(916)	(1 341)
Tax rate	14%	593%	33%	-21%	-21%	-21%	-21%	-21%
Net Income	**(161)**	**(86)**	**294**	**776**	**1 419**	**2 194**	**3 447**	**5 044**

Excel picture 8. Balance Sheet output model, historical and forecasted

Balance Sheet

$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
Intangible assets	2 906	3 726	4 311	4 311	4 311	4 311	4 311	4 311
PP&E	4 486	7 525	10 690	12 587	16 867	22 770	30 512	40 580
Financial assets	501	266	-	-	-	-	-	-
Inventory	-	-	-	-	-	-	-	-
Trade receivable	-	-	-	-	-	-	-	-
Other assets	500	602	1 189	1 262	1 692	2 284	3 060	4 070
Cash and equivalents	1 809	1 468	2 823	4 973	5 450	6 377	8 099	10 911
Total Assets	**10 203**	**13 587**	**19 013**	**23 133**	**28 319**	**35 741**	**45 982**	**59 872**
Trade payable	253	313	360	367	402	483	525	591
Other liabilities	4 867	6 589	7 638	10 976	14 707	19 855	26 606	35 385
Financial liabilities	2 858	4 005	7 433	7 433	7 433	7 433	7 433	7 433
Shareholders' equity	2 223	2 680	3 582	4 358	5 776	7 971	11 418	16 462
Total Liabilities & Equities	**10 203**	**13 587**	**19 013**	**23 133**	**28 319**	**35 741**	**45 982**	**59 872**
Check	-	-	-	-	-	-	-	-

Excel picture 9. Forecasted cash flows of Netflix

Cash Flow

$ in millions		FY16 Actual	FY17 Actual	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast	FY22 Forecast
EBIT	P&L	107	574	1 244	2 084	3 095	4 712	6 769
Operating taxes	P&L	633	192	(261)	(438)	(650)	(990)	(1 421)
Operating tax rate		593%	33%	-21%	-21%	-21%	-21%	-21%
NOPAT		**740**	**765**	**983**	**1 646**	**2 445**	**3 723**	**5 347**
Add-back D&A	P&L	4 925	6 330	8 398	11 253	15 191	20 357	27 074
Gross Cash Flow		**5 665**	**7 096**	**9 381**	**12 899**	**17 636**	**24 079**	**32 421**
Inventory	BS	-	-	-	-	-	-	-
Trade receivables	BS	-	-	-	-	-	-	-
Trade payables	BS	59	47	7	35	80	43	66
Investments in working capital		**59**	**47**	**7**	**35**	**80**	**43**	**66**
Investments in other assets/liabilities	BS	**1 619**	**463**	**3 264**	**3 303**	**4 556**	**5 974**	**7 770**
Capex	BS	**(7 964)**	**(9 496)**	**(10 294)**	**(15 532)**	**(21 095)**	**(28 098)**	**(37 143)**
Other investments	BS	**(585)**	**(318)**	**-**	**-**	**-**	**-**	**-**
Extraordinary items	P&L	**31**	**(115)**	**-**	**-**	**-**	**-**	**-**
UFCF		**(1 174)**	**(2 325)**	**2 357**	**705**	**1 177**	**1 998**	**3 114**
Interest expenses	P&L	(150)	(238)	(262)	(288)	(317)	(349)	(384)
Delta Oper taxes vs. Taxes	P&L	(707)	(118,1)	55	61	67	73	81
Delta Financial liabilities	BS	1 147	3 428	-	-	-	-	-
Delta Equity incl. dividends	BS, P&L	543	608	-	-	-	-	-
Net Cash Flow		**(342)**	**1 355**	**2 150**	**477**	**927**	**1 722**	**2 811**
Opening cash		1 809	1 468	2 823	4 973	5 450	6 377	8 099
Closing cash		1 468	2 823	4 973	5 450	6 377	8 099	10 911
Check		1 468	2 822,8	4 973	5 450	6 377	8 099	10 911
		-	-	-	-	-	-	-

Excel picture 10. Classic DCF Valuation of Netflix

DCF Valuation

WACC	**12,3%**
g	**3,9%**

$ in millions	FY15 Actual	FY16 Actual	FY17 Actual	1,0 FY18 Forecast	2,0 FY19 Forecast	3,0 FY20 Forecast	4,0 FY21 Forecast	5,0 FY22 Forecast
UFCF				2 357	705	1 177	1 998	3 114
Discount factor (WACC)				0,89	0,79	0,71	0,63	0,56
PV of UFCF				**2 099**	**559**	**831**	**1 256**	**1 744**

DCF Valuation				
PV of Cash flows	6 489	$	23%	of Enterprise value
Continuing value	38 515	$		
PV of Continuing value	21 563	$	77%	of Enterprise value
Enterprise value	**28 051**	**$**		
-Financial liabilities	(7 433)	$		
+Cash	2 823	$		
Equity value	**23 441**	**$**		
Equity value per share	**53,8**	**$**		

CAPM	**12,9%**
risk-free rate	3,05%
beta	1,8
market risk premium	5,5%

WACC	**12,3%**
weight of equity	0,9
cost of equity	12,9%
weight of debt	0,1
cost of debt	3,7%

		WACC			
		4%	10%	16%	20%
g	1%	94 408	28 609	15 880	12 003
	2%	138 776	31 563	16 699	12 442
	3%	271 880	35 361	17 644	12 933
	4%	2 667 746	39 845	18 628	13 427

Excel picture 11. Main company data and financial ratios

Company Data	
Share price	261
Shares outstanding	436
Market Cap	114 007
Enterprise Value	118 617
Current EBITDA	6 904
EV / EBITDA multiple	17
Current Financial Liabilities	7 433
Tax rate	21%

peer group

Hulu
HBO Go
Amazon Instant Video
Google and Apple (due to similar BS)

Profitability ratios	
Profit margin	86,4%
Adj. profit margin	32,2%
ROA	1,5%
ROE	8,2%
ROIC	4,1%

Liquidity Ratios	
Current ratio	0,5
Interest Coverage ratio	2,4
Debt/EBITDA	1,1
Debt/Equity	2,1

Profit Margin per Industry	
Software (entertainment)	67%
Entertainment	42%
Cable TV	61%
Broadcasting	53%
Average	**56%**

ROE per Industry	
Software (entertainment)	15%
Entertainment	22%
Cable TV	36%
Broadcasting	82%
Average	**39%**

ROIC per industry	
Software (entertainment)	19%
Entertainment	26%
Cable TV	14%
Broadcasting	24%
Average	**21%**

Excel picture 12. Altman Z Score model of Netflix

Altman Z Score of Netflix

Key model inputs	
Working capital	3 207
Retained earnings	2 942
Total assets	25 974
EBIT	1 605
Book value of equity	5 238
Total liabilities	20 735
Altman Z Score Result =	**1,86**

Key model ratios	
A	0,12
B	0,11
C	0,06
D	0,25

Excel picture 13. Key financial data breakdown of Netflix per segment and fiscal year

USD in millions, FY17	Domestic str.	International str.	Domestic DVD	Consolidated business performance
Total subscribers in thousands	54,8	62,8	3,4	118
Revenues	6 153	5 089	450	11 693
Cost of revenues	3 319	4 138	203	7 660
Marketing	553	725	0	1 278
Contribution profit	2 280	227	248	2 755
Profit margin	**37%**	**4%**	**55%**	**24%**
Other operating expenses				1 916
Operating income				839
Other income (expense)				-353
Benefit from income taxes				-74
Net income				559
D&A	2 757	3 441	61	6 258

USD in millions, FY16	Domestic str.	International str.	Domestic DVD	Consolidated business performance
Total subscribers in thousands	49,4	44,4	4,1	94
Revenues	5 077	3 211	542	8 831
Cost of revenues	2 856	2 911	263	6 030
Marketing	383	608	0	991
Contribution profit	1 839	-309	280	1 810
Profit margin	**36%**	**-10%**	**52%**	**20%**
Other operating expenses				1 430
Operating income				380
Other income (expense)				-119
Benefit from income taxes				74
Net income				187
D&A	2 338	2 451	79	4 867

USD in millions, FY15	Domestic str.	International str.	Domestic DVD	Consolidated business performance
Total subscribers in thousands	44,7	30,0	4,9	75
Revenues	4 180	1 953	646	6 780
Cost of revenues	2 487	1 780	324	4 591
Marketing	318	506	0	824
Contribution profit	1 376	-333	322	1 364
Profit margin	**33%**	**-17%**	**50%**	**20%**
Other operating expenses				1 058
Operating income				306
Other income (expense)				-164
Benefit from income taxes				19
Net income				123
D&A	1 905	1 500	79	3 485

Excel picture 14. Preliminary Netflix data for subscriber-based valuation

Netflix data for valuation FY2017	
Current # of subscribers	118
Prior year's # of subs.	94
Difference between new & prior # of sub.	24
Total revenue	11 693
Current revenue/subscriber	99,4
Prior year's revenue/subscriber	94,1
Total opex + costs	-10 854
Operating income	839
Total cash and cash equivalents	2 823
Total debt	6 499
% of opex associated with new subs.	26%
% of opex that are spent on company	50%
% of opex spent on current users	24%
Corporate tax rate	21%
Inflation rate	2,9%
Risk-free rate	3,05%
# of shares outstanding	436
Perpetuity growth rate	3,9%

If we compare this model to the classic DCF, we can already conclude that forecasts are more detailed and accurate, given that we found out several important points, including the lifetime and the renewal rate of a subscriber.

The 26% of opex associated with new subscribers, represents marketing and production of new content.

The 24% of opex associated with current/existing subscribers represents T&D expenses and production of new content.

The rest, including G&A and D&A are corporate expenses - 50%.

Excel picture 15. Data on existing and new subs. Including value of current subs and sensitivity analysis

Data on existing subs.	
subscriber lifetime (years)	8
subscriber renewal rate	100%
Revenue/subscriber growth rate	5,6%
Services costs as % of revenues	24%

Data on new subs.	
Cost of acquiring subs.	118,64
Subscriber growth rate for first 5 years	25%
Subscriber growth rate for next 5 years	15%

Value of current subscribers	
Revenue	99,44
Opex	23,87
Operating income	75,58
Operating income after tax	59,71
y-o-y growth rate in revenue/subscriber	5,6%
y-o-y growth rate in opex/subscriber	2,45%
Discount rate (cost of capital)	12,30%
Subscriber lifetime	8
Full life probability	100,0%
Value/subscriber	379,69
Total value of all current subscribers	**44 645**

According to some statistics published by the UK, a person spends 10 years of watching TV etc. on aver
this means that Netflix does not lose subscribers, calculated by subtracting the difference between cur

	3	4	5	6	7	8	9	10	11	12
91%	-45	14	70	123	173	220	265	308	349	387
92%	-42	20	78	133	185	235	282	327	369	409
93%	-38	26	86	144	199	251	300	346	391	432
94%	-35	32	96	156	213	267	319	367	413	457
95%	-31	39	105	168	228	285	338	389	437	483
96%	-27	46	116	182	244	303	360	413	463	511
97%	-23	54	127	196	261	323	382	438	490	540
98%	-18	62	139	211	279	344	406	464	519	571
99%	-13	71	151	227	299	367	431	492	550	605
100%	-8	80	164	244	319	390	458	522	583	640

https://www.independent.co.uk/news/media/tv-radio/average-watching-tv-briton-10-years-life-reseai
again showing that Netflix does not lose subscribers

Excel picture 16. Value of future subscribers, value of all subscriber and equity value

Value of future subscribers	
Acquisition cost of subscribers	118,64
Value/new subscriber	261,05

Period	0	1	2	3	4	5	6	7	8	9	10
Total subscribers	118	147	191	250	327	428	507	595	698	818	959
New subscribers	0	29	44	59	77	101	79	88	103	120	141
Value/new subscriber	261	269	276	284	293	301	310	319	328	338	347
Value added by new subscribers		7 896	12 188	16 722	22 584	30 431	24 596	28 068	33 641	40 543	48 891
Continuing value	159 122										
PV		7 031	9 664	11 807	14 199	17 037	12 262	12 460	13 298	14 271	65 200
Total value added by new subscribers	**177 229**										

Value drag of operating expenses on company											
Opex on company	-5 427	-5 560	-5 696	-5 836	-5 979	-6 125	-6 275	-6 429	-6 587	-6 748	-6 913
After-tax opex on company		-4 392	-4 500	-4 610	-4 723	-4 839	-4 957	-5 079	-5 203	-5 331	-5 461
Continuing value	-67 543										
PV		-3 911	-3 568	-3 255	-2 970	-2 709	-2 471	-2 255	-2 057	-1 876	-22 882
Total value drag of opex on company	**-47 955**										

Total value of Netflix	
Value of current subscribers	44 645
Value of future subscribers	177 229
Value drag of opex on company	-47 955
Cash and cash equivalents	2 823
Total debt	6 499
Equity value of Netflix	**170 242**
Estimated price per share of Netflix	**390**