Subscription based valuation approach: An Estimation of Netflix's and Spotify's Value

Master Thesis

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Abstract

This thesis takes a closer look into user economics and how one can use it to value subscription-based companies. This method is applied practically by analyzing the content subscription companies Netflix and Spotify. This analysis is conducted by running Monte Carlo simulation over different user economic KPI, user growth, overhead costs development in order to determine the likely present value of current and future users as well as overhead costs of the two companies. The findings suggest that there is a very low probability that the present value of the future cash flows generated from the companies will justify their current valuation. This is primarily driven by bad user economics for Spotify, and a combination of the user economics and the fixed amount of content spend for Netflix. Furthermore, the results suggest that there are a greater upside and downside valuation potential from proposed median value for Netflix due to its content acquisition strategy compared to Spotify.

Acronyms

- SaaS: Software as a Service
- OTT: Over-the-top
- SVOD: Subscription video on demand
- TVOD: Transactional video on demand
- AVOD: Advertisement video on demand
- MVPD: Multichannel video programming distribution
- ISP: Internet Service Provider
- KPI: Key Performance Indicator
- CL: Customer Lifetime
- CAC: Customer Acquisition Cost
- ARPU: Average Revenue per User
- ARPPU: Average Revenue per Paying User
- CORPU: Cost of Revenue per User
- CFPU: Cash Flow per User
- CLV: Customer Lifetime Value
- E(CLV): Expected Customer Lifetime Value
- DCF: Discounted Cash Flow
- CAGR: Compound Annual Growth Rate
- GM: Gross Margin
- FX: Foreign Exchange

Content

Chapter 1

1. Introduction

Subscription-based business model is an old business model stretching back to the 17th century within the newspaper industry (Clapp, 1931). Since then, this business model has been implemented across many other industries. This business model was adopted at the end of the 19th century by AT&T within the telecommunication industry, and in the 1990's within the home security industry (Aria Systems, 2012-a). As the world has become more digitalized, this business model has become increasingly popular, and has been implemented within the entertainment industry, food industry, consumable goods industry, software industry, security industry among other (Aria Systems, 2012-b).

One common characteristic that exists in all subscription-based business models is that the company is generating recurring revenue from the customer over the extended time the customers are using the service (Nets, n.d.). Even though subscription-based recurring revenue model has existed for many centuries, the concept of customer lifetime value, which measures the total value of a customer for a company, was only introduced in late 1980's and is relatively new (Ranchhod & Gurau, 2013).

Since then, the concept of customer lifetime value and the key performance indicators associated with it (collectively called unit economics) has become increasingly popular, especially among VC-firms when analyzing internet companies with large user base where the interaction between the company's service and the users are over a continuous/recurring time in instead of transactional (Rate, 2017). Example of such companies are Facebook, Uber, Airbnb, Netflix, Salesforce, Pinterest.

This thesis will analyze and value two these internet-based companies, the streaming content companies Netflix and Spotify, from a user-based valuation approach by looking at the unit economics of the companies.

Apart from the subscription-based business model, there are several more similarities between Netflix and Spotify. Both companies are within the entertainment industry and are offering relatively similar products to. Netflix is offering movie and tv-show content, whereas Spotify provides music and podcast content. Given this, both companies are dependent on delivering interesting / relevant content to their users and hence relies on negotiating licensing rights with IP-owners, which are primarily multichannel video programming distributors for Netflix and record labels for Spotify. Netflix and Spotify have rather different means of negotiating these licensing rights; and this thesis will address the differences and look into implications brought by them on the company's value.

Although the thesis takes a closer look at the two companies, it aims at proposing a valuation model approach that can be applied to other subscription-based companies with recurring revenue, such as other SVOD-companies, media subscription-companies, SaaS companies, subscription e-commerce, etc.

This thesis will have the following structure: chapter two will introduce the concept unit economics and how one can use it in order to value user-based / subscription-based companies. Thereafter chapter three and four will introduce Netflix and Spotify as companies and its past financials. This will be followed up with chapter five, which will combine the insight from the previous chapters in order to create appropriate valuation models for Netflix and Spotify, as well as calculate the implied value of the companies. The final chapter will discuss and conclude based on the results, as well as point out potential limitation of the presented method and valuation model.

Chapter 2

2. User Based Valuation Method

The following chapter will first cover unite economics, what it is, why it is useful, and how one can apply it, and subsequently introduce the approach which can be used when valuing user-based companies.

2.1 Unit economics

The following section will describe user economics, its importance for subscription businesses, and the key metrics used in unit economics and their definitions. The section will particularly focus on the KPI expected customer lifetime value and the different methods past research has suggested one should calculate this value.

Unit economics describes the economics for a single unit (Hazlett, 2015). It looks at the revenues and costs directly associated with the basic element of a firm's business model (Wille, 2016). For subscription-based companies, this unit is usually a single customer, user, or subscriber (Skok, n.d.-a). For user-based companies, unit economics primarily tries to describe the relationship between how much it costs to acquire a customer vs. how much that customer is with worth for the organization (Bhalla, 2017). Unit economics can give insight over the scalability of the business, capital requirements the business might need, and the long-term profitability (Shea & Company, 2017).

Unit economics is a popular method for analyzing subscription-based companies. (Shea & Company 2017). The reason for this, according to serial entrepreneur and Investor David Skok, is that traditional metrics fail to capture the value drivers of a subscription-based business. The more successful a company is at acquiring new customers to their service, the bigger the losses will be for the company in the early days. The costs for acquiring a customer are generated before the customer signs up for the service, whereas the revenues from a customer incur over a lengthened time. The more satisfied a customer is with the service, the longer he/she will stay, and the more valuable the

customer will be, assuming that contribution profit is positive. Opposingly, the more unsatisfied a customer is with the service, the more likely it is that he/she will stop using the service, and the less valuable the customer will be. Hence, Skok argues that traditional metrics does not take into account the duration differences in the costs and revenues, whereas unit economics takes this into account. Skok continues to suggest that these exist two types of sales for subscription-based companies: acquiring the customer, and keeping the customer. Given this, Skok argues that there are primarily three key factors to be successful in subscription-based companies. One, acquiring customers, two, retaining the customers, and three, monetizing the customers (Skok, n.d.-a).

2.1.1 Definitions

The following section will cover some key performance indicators (KPIs) that are commonly used to evaluate Subscriptions business from a unit economics perspective.

Churn Rate & Retention Rate

Churn rate measures the percentage of subscribers who stopped their subscription within a certain period (Green, 2018.). Given this, churn rate can be described with the following equation:

$$churn_t = \frac{abandoned\ U_t}{U_{t-1} + Gross\ added\ U_t}\ where, \tag{2.1}$$

$U_t = \#\ of\ users\ at\ the\ end\ of\ period\ t$

$abandoned\ U_{t,t-1} = U_{t-1} - U_{t,t-1}$

$U_{t,t-1} = \#\ of\ users\ at\ end\ of\ period\ t\ that\ was\ also\ a\ user\ at\ t-1$

However, equation (2.*1*) does not take into consideration of the users that were added during the time period t and churned before the end of the time period t. Hence, the following equations has also been used by subscription-based companies to define churn:

$$churn_t = \frac{abandoned\ U_t}{U_{t-1} + Gross\ added\ U_t}\ where \tag{2.2}$$

$abandoned\ U_t = \#\ users\ stop\ using\ service\ during\ time\ period\ t$

(Netflix, n.d.-a)

And,

$$churn_t = \frac{abandoned\ U_t}{\bar{U}_t}\ where, \tag{2.3}$$

$\bar{U}_t = average\ number\ of\ users\ during\ time\ period\ t$

(Spotify, n.d,-a).

Retention rate is the opposite of churn rate and measure the number of users that continued using their subscription over a time period (Shea & Company, 2017) and can be defined with the following formula:

$$retention_t = 1 - churn_t \tag{2.4}$$

(Skok, n.d.-b).

For subscription-based companies churn rate is considered as one of the most important business risks. Churn rate is associate with how long a user is expected to use a service and is therefore affecting the potential monetization from the user (Insight Squared, 2014). The primary reason for a subscriber to churn is consumer dissatisfaction. The more satisfied a subscriber is with a service, the less likely it is that the user will churn (McCarthy, 2018). For well performing subscription-based companies, the overall churn rate is expected to decline over time. This is due to two reasons. The first reason is that the company will learn more about their subscribers over time. From these findings the company can do product and operational improvements which will lead to better churn developments for each new cohort compared to the comparable previous cohort (Skok, n.d.-a). The second reason is that the churn is expected to decline over the life time of a subscriber (McCarthy, 2018). (See Figure A.1 for illustrative example.)

Customer Lifetime

Customer lifetime (CL) measures how long a subscriber uses a service.

One way of calculating the expected life time from an average customer is by using the following formula:

$$CL = \frac{1}{churn} \tag{2.5}$$

(Skok, n.d.-b).

This formula is derived from the following equation:

$$CL = \sum_{t=0}^{\infty}(1 - churn)^t = \frac{1}{churn} \tag{2.6}$$

Given that churn is expected to decrease over the time for a subscriber, and that it is highly theoretical that a person could potentially use a service to infinity, this thesis suggests an alternative equation to (2.5):

$$CL = \sum_{t=0}^{N}(1 - churn_t)^t \ \ where, \tag{2.7}$$

$N = \ reasonable\ upper\ time\ period\ for\ using\ the\ service$

Customer Acquisitions Cost

Customer acquisition cost (CAC) measures how much the cost is to acquire a new customer. In the simplest form, CAC can be calculated by using the following formula:

$$CAC_t = \frac{Total\ Sales\ \&\ Marketing\ expenses_t}{Number\ of\ new\ customer\ added_t} \tag{2.8}$$

(Shea & Company, 2017).

However, as Berger et al. mentions in the report *Customer lifetime value: Marketing models and applications*, in scenarios where there is marketing cost for the current customers, such as promotions, the following equation can be applied to calculate CAC more accurately:

$$CAC_t = \frac{Tot\ Sales\ \&\ Marketing_t - Promotions\ to\ existing\ customers_t}{Number\ of\ new\ customer\ added_t} \tag{2.9}$$

(Berger et al., 1998).

Average Revenue per User

Average Revenue per User (ARPU) shows how much the company is earning per average user during a certain time period. ARPU can be calculated by using the following formula:

$$ARPU_t = \frac{Total\ Revenue_t}{Average\ number\ of\ Users_t} \tag{2.10}$$

(Shea & Company, 2017).

In case the average number of users is not given for a certain time period, this thesis proposes that the following function is a good proxy in order to estimate the ARPU:

$$ARPU_t = \frac{R_t}{\frac{U_t + U_{t-1}}{2}}\ where, \tag{2.11}$$

$R_t = Reported\ revenue\ during\ time\ period\ t$

$U_t = Reported\ paid\ users\ during\ end\ of\ time\ period\ t$

A related metric to ARPU is Average Revenue per Paying Users (ARPPU). ARPPU is a common metric used for companies with a freemium business model, because a large part of the users are not paying for the product (Seufert, 2013).

Customer Lifetime Value

Customer lifetime value (CLV[1]) is one of the most important metrics for subscription-based companies. Without having an understanding of what CLV is, a subscription-based company cannot determine whether their CAC levels are good, or whether they have sustainable a unit economic and a viable business. This relationship between CLV and CAC is referred to as the CLV:CAC-ratio. The higher the customer lifetime value is per user, the more profitable a business can be in the future. Lead Edge Capital (2015) suggests that other expenses such as R&D and G&A tends to stabilize over time and become a lower share of total revenue. Hence, the CLV:CAC ratio is the most important ratio for a subscription-based companies' long-term profitability (Lead Edge Capital, 2015).

[1] The notation LTV is also commonly used for Customer lifetime value.

The actual CLV is for an individual subscriber can only be known afterward, when a subscriber churn. However, knowing the CLV afterward gives little actionable insight to a company whether they have good or bad unit economics (Fader and Hardie, 2014). Hence, the notation CLV is usually referred to as the estimated or expected customer lifetime value for current or potential future customers of a company. Given this, Fader and Hardie (2012) propose that a more accurate notation for *expected* customer lifetime value is E(CLV) compared to CLV (Fader and Hardie, 2012). Going forward, this thesis will use this notation, E(CLV), when referring about *expected* customer lifetime value and use the notation CLV for the *actual* customer lifetime value.

As the reader will see below, the definition of how one should measure E(CLV) depends on who one asks. For example, Jain and Singh (2002) proposes that customer acquisition cost (CAC) should be included when measuring customer lifetime value and argues that Berger and Nasr's (1998) interpretation of E(CLV) as the "maximum profitable acquisition cost" is inaccurate (Jain and Singh, 2002). The following section will mention some of the equations other has proposed in order to calculate E(CLV).

One of the more basic equations to calculate E(CLV) is under the assumption assume that the ARPU will be constant over the customer lifetime (CL) and multiply these two factors.

$$E(CLV) = ARPU * CL \tag{2.12}$$

(Skok, n.d.-b).

If one assumes constant churn rate over time and an infinite time period, one can substitute terms in equation (2.5) into equation (2.12) and reach a new equation:

$$E(CLV) = \frac{ARPU}{churn} \tag{2.13}$$

(Skok, n.d.-b).

Equations (2.12) and (2.13) do not take into account any direct cost there might incur when offering the service to the subscribers. Hence, Skok suggests that gross marging should be included when calculating E(CLV). Adjusting equation (2.13) one gets:

$$E(CLV) = \frac{ARPU * GM}{churn} \; where, \tag{2.14}$$

$$GM = Gross\ Margin\ \% = \frac{Revenue - Cost\ of\ Revenue}{Revenue}$$

(Skok, n.d.-b).

Equation (2.14) is commonly referred as the as the proposed way of calculating E(CLV) in other reports such as Shea & Company (2017), River Cites Capital Funds (2017), and SaaSMetrics (n.d.).

Equation (2.14) assumes that everything will be constant over the customer lifetime. If one assumes a constant growth of ARPU amount over the lifetime, Skok proposes that the following equation is more representative as for E(CLV):

$$E(CLV) = \frac{ARPU * GM}{churn} + \frac{ARPUgrowth * GM * (1 - churn)}{churn^2} \tag{2.15}$$

(Skok, n.d.-b).

Equation (2.15) is derived from the following equations:

$$E(CLV) = \sum_{t=0}^{\infty} ARPU * GM * (1 - churn)^t + \sum_{t=1}^{\infty} t * ARPUgrowth * GM * (1 - churn)^t \tag{2.16}$$

and

$$\sum_{t=1}^{\infty} t * k^{t-1} = \frac{1}{(1-k)^2} \; for\ |k| < 1 \tag{2.17}$$

Equation (2.15) assumes that the revenue will increase constantly over the customer lifetime, which is very unlikely for a subscription-based company (Skok, n.d.-b).

In the paper *Customer Lifetime Value, Customer Profitability, and the Treatment of Acquisition Spending,* Pfeifer et al. (2005) argues that the definition of value in customer lifetime value should be similar to the definition of value in finance, where

one is valuing as assets based on its net present value[2], which could be explained by the equation (Pfeifer et al., 2005).

$$DCF = \sum_{t=1}^{\infty} \frac{CF_t}{(1+r)^t} \tag{2.18}$$

Taken into account equation (2.18), there are still many different suggestions regarding how one should calculate E(CLV), as Fader and Hardie (2012) mentioned in their paper *Reconciling and Clarifying CLV Formulas*.

For example, Blattberg et al. (2008) suggest the following equation to calculate E(CLV):

$$E(CLV) = \frac{ARPU * GM * (1+r)}{1 + r - retention} = \frac{ARPU * GM * (1+r)}{r + churn} \tag{2.19}$$

which is derived from:

$$E(CLV) = \sum_{t=0}^{\infty} \frac{ARPU * GM * retention^t}{(1+r)^t} \tag{2.20}$$

Davis (2013) suggest the following equation to calculate E(CLV):

$$E(CLV) = \frac{ARPU * GM}{1 + r - retention} = \frac{ARPU * GM}{r + churn} \tag{2.21}$$

which is derived from:

$$E(CLV) = \frac{1}{1+r} * \sum_{t=0}^{\infty} \frac{ARPU * GM * retention^t}{(1+r)^t} \tag{2.22}$$

Chapon and Chapon (2009), and Kotler and Keller (2012) suggest the following equation:

$$E(CLV) = \frac{ARPU * GM * retention}{1 + r - retention} = \frac{ARPU * GM * (1 - churn)}{r + churn} \tag{2.23}$$

which is derived from:

$$E(CLV) = \sum_{t=1}^{\infty} \frac{ARPU * GM * retention^t}{(1+r)^t} \tag{2.24}$$

[2] See section 2.1 for more details.

The differences between the equations (2.19), (2.21), and (2.23), streams from the time point of the transaction being made. For equation (2.19) the time point is at the start of time period 0, for equation (2.21) it is at the end of the time period 0, whereas for equation (2.23) it is at the start of the time period 1 (Fader and Hardie, 2012). The similarities between these equations (2.19), (2.21), and (2.23) are that all share a period that could theoretically go to infinity, as well as they all, assume constant input variables[3] will be constant over the period. The suitability of these equations for the E(CLV) calculation are determined based on the specific situation. For example, equation (2.19) gives the expected lifetime value for a future subscriber, whereas equation (2.23) shows that for a recently-added subscriber (Fader and Hardie, 2014).

In the paper *Customer lifetime value: Marketing models and applications*, Berger and Nasr (1998) provides several suggestive models on how one can calculate E(CLV). Berger and Nasr (1998) suggest that if a company has any non-related cost of sales cost that is still related to a customer that occurs throughout the customer cycle, such as promotion costs, this cost should be taken into account when calculating E(CLV). For this scenario they propose the following equation:

$$E(CLV) = ARPU * GM * \sum_{t=0}^{N} \frac{retention^{t}}{(1+r)^{t}} - M * \sum_{t=1}^{N} \frac{retention^{t-1}}{(1+r)^{t-0.5}} \; where, \qquad (2.25)^{4}$$

$M = promotion\ cost\ per\ customer\ per\ year$

The 0.5 in the equation (2.25) reflects the approximation that the promotion costs happens midpoint in the cycle.

In the case where there are many sales cycles throughout a year, Berger and Nasr (1998) propose that one should adjust equation (2.25) the following way:

[3] Input variables: ARPU, gross margin (GM), retention rate/churn, discount rate (r)

[4] In the paper Customer lifetime value: Marketing models and applications, Berger and Nasr is referring to the notation GC, which is the expected yearly gross contribution margin per customer. However, as they defined GC as revenue – cost of sales per user, for consistency this thesis uses ARPU*GM as a notation instead of GC.

$$E(CLV) = ARPU' * GM' * \sum_{t=0}^{pN} \frac{(retention')^t}{(1+r)^{\frac{t}{p}}} - M' * \sum_{t=1}^{N} \frac{(retention')^{t-1}}{(1+r)^{\frac{t-0.5}{p}}} \; where, \qquad (2.26)^5$$

$p = number\ of\ cycles\ per\ year$

$'\ is\ used\ to\ clarify\ that\ the\ variable\ is\ measured\ per\ cycle, not\ per\ year$

(Berger and Nasr, 1998).

Equations (2.26) and (2.25), together with the previous mentioned E(CLV) equations, assume that all variables will be constant over the entire period.
However, in reality, it is common that the ARPU and its related cost would change over time for a user (Skok, n.d-c).

In order to take into account potential changes in the contribution profits for a user, Berger and Nasr (1998) propose that one could use the following equation to calculate E(CLV):

$$E(CLV) = \sum_{t=0}^{N} \pi(t) * \frac{retention^t}{(1+r)^t} \; where, \qquad (2.27)$$

$$\pi(t) = profit\ per\ customer\ in\ year\ t$$

The profit function varies among different scenarios. Berger and Nasr (1998) propose that in a situation where one expects an S-shaped customer lifetime profit development, the profit function could be expressed in the following way:

$$\pi(t) = \pi_1(t) = h * t^2 + v \quad for\ t \leq g \qquad (2.28)$$
$$\pi(t) = \pi_2(t) = \pi_1(g) + N * (1 - e^{-t+g}) \quad for\ t > g$$

Where h, g, v, N are positive constants (Berger and Nasr, 1998).

All the above-mentioned-E(CLV)-equations have been using some proxy of net contribution profit per customer in order to estimate the customer lifetime value. Some of the equations[6] have discounted the future expected net contribution profit per

[5] One alternative to express equation (2.26) is to adjust the discount rate from yearly to the cycle time and keep everything else aligned with equation (2.25)
[6] Equation: (2.19), (2.21), (2.23), (2.25), (2.26), (2.27)

customer to calculate the present value of the future profits, whereas other equations[7] have not. As mentioned earlier, Pfeifer et al. (2005) propose that one should view the value in E(CLV) the same way finance industry is valuing assets. Hence, Pfeifer et al. argue that when estimating the expected customer lifetime value, one should focus on predicting the future cash flows related to a customer, not its net profit. Although the cash flows and the net contribution profit for a customer can often be similar, by focusing on the cash flow from a customer instead of the net contribution profit, Pfeifer et al. (2005) allows situations where that is not the case (Pfeifer et al., 2005). Therefore, Pfeifer et al. (2005) proposes the following definition of customer lifetime value:

> "Customer Lifetime Value (CLV) is the present value of the future cash flows attributed to the customer relationship."

2.1.2 E(CLV) Proposition

This thesis agrees with Pfeifer et al.'s (2005) reasoning and will use their definition of customer lifetime value.

Furthermore, this thesis proposes that previously mentioned equations for E(CLV) are not aligned with Pfeifer et al.'s definition of E(CLV).

This thesis agrees with Fader and Hardie (2014) that one has to make a distinction in the equations on E(CLV) between newly acquired customers and to-be-acquired/potential customers. To elaborate the period for newly acquired customers should start at 1, whereas for about to be acquired customers the period should begin at 0.

This thesis proposes the following equation in order to calculate E(CLV) for newly acquired customers:

$$E(CLV) = \sum_{t=1}^{N} CFPU(t) * \frac{(1 - churn_t)^t}{(1 + r)^t} \tag{2.29}$$

and the following equation in order to calculate E(CLV) for to-be-acquired customers

[7] Equation: (2.12), (2.13), (2.14), (2.15)

$$E(CLV) = \sum_{t=0}^{N} CFPU(t) * \frac{(1 - churn_t)^t}{(1 + r)^t} \; where, \tag{2.30}$$

$CFPU(t) = Cash\ flow\ per\ user\ during\ time\ period\ t$

However, it is difficult to know the future free cash flow and the development of a cohorts churn over time. Simplified version of equation (2.29) and (2.30) are then proposed:

Simplified version of equation (2.29)[8]:

$$E(CLV) = \sum_{t=1}^{\infty} CFPU * \frac{(1 - churn)^t}{(1 + r)^t} = CFPU * \frac{1 - churn}{r + churn} \tag{2.31}$$

Simplified version of equation (2.30)[9]:

$$E(CLV) = \sum_{t=0}^{\infty} CFPU * \frac{(1 - churn)^t}{(1 + r)^t} = CFPU * \frac{1 + r}{r + churn} \tag{2.32}$$

Thesis proposes that equation (2.29) or (2.31) can be used in case one wants to calculate the future estimated customer lifetime value of current customers[10], and equation (2.30) or (2.32) can be used to calculate the present value of future customers. In case one wants to calculate the present value of a future customer who starts using the service in beginning of period g, one can discount the E(CLV) value with 1/(1+r)^g.

This thesis proposes that whether CAC should be included in the E(CLV), depends on the purpose of E(CLV) calculation. This thesis proposes that when the primary purpose of calculating E(CLV) is to understand the E(CLV):CAC-ratio, CAC should not be included in the E(CLV). However, if one wants to use E(CLV) in order to calculate the valuation of the company, one should include the CAC for to-be-acquired customer or future customers, but not for current customers. Hence, equation (2.32) would need to be adjusted to the following:

[8] Observe similarity with equation (2.23)
[9] Observe similarity with equation (2.23)
[10] Any type of customers who have signed up for the service prior to time period 0.

$$E(CLV) = \sum_{t=0}^{\infty} CFPU * \frac{(1-churn)^t}{(1+r)^t} - CAC \; = \; CFPU * \frac{1+r}{r+churn} - CAC \qquad (2.33)$$

For equation (2.30) no change is needed as one can argues that the variable CFPU(t) already takes into account the customer acquisition cost.

The actual CAC for a certain customer can be over several periods before the customer signs up for the service. However, for simplicity in modeling, this thesis proposes that one should measure the CAC at the beginning of period 0.

2.2 User-based valuation approach

When valuing the value of a user-based company's operation, Professor Damodaran proposes that there are three components one has to calculate. One has to calculate: present value of existing users, present value of future users added, and present value of corporate expenses If one wants to calculate the value of the equity for the company, one has to add upon the operational value any non-operating assets the company might have, such as cash and long-term investments and deduct any non-operating debs the company might have such as long-term debt (Damodaran, 2017).

This thesis proposes the utilization of equation (2.29) or (2.31) in order to value the present value of the existing users, whereas equation (2.33) or (2.32) can be used in order to value the present value of future users[11].

[11] In order to calculate the present value of future users that signs up at time period g, one can discount the E(CLV) with 1/(1+r)^g

Chapter 3

3. Netflix business overview

The following chapter introduces Netflix with a closer look into its financials by looking at their income statements, balance sheet, and cash flow statement.

3.1 Overview

3.1.1 Historical Introduction

Netflix was founded in 1997 by Reed Hastings and Marc Randolph with initial offering of DVD rentals and sales. In 1999, Netflix launched a subscription service which provided users to rent an unlimited number of DVDs for a fixed price per month for the US market. In 2007, Netflix expanded their service offering by introducing an over-the-top (OTT) streaming service which made it possible for users to watch tv-shows and movies online. By the end of 2010, Netflix expanded its business by launching its streaming service in Canada. Since then, Netflix has grown its global presence, it is now available in over 190 countries. Netflix has also diversified its profile from a sole displayer of tv shows and movies to a content producer and distributer. Its first "Netflix Original" by beginning of 2013 (Netflix, n.d.-d).

The DVD streaming service still exists today but makes ups only small part of Netflix business.

3.1.2 Current Competition

Broadly speaking, Netflix is in competition for end-consumers attention for their leisure time. The main competitors include linear networks, Cinemas, DVD watching, transactional video on demand content (TVOD), advertising video on demand content (AVOD) such as YouTube, other subscription video on demand (SVOD) content providers among others. Some of the competitors for end-consumers attention also acts as Netflix's content suppliers.

Out of the OTT SVOD segment, the one Netflix is primarily operating in,[12] Netflix has declared that their primary long-term competitor is HBO. However, it also stated state that many end-users use both services since they have different content on the platforms (Netflix, n.d.-c). Apart from the current competitors Netflix is facing, larger companies, some which are also Netflix content suppliers, are also expected to enter the streaming market (see Table 3.*2*).

Company	Number of Devices	Bundle Option	Price
Netflix	2	No	$12.99
HBO	3	Yes	$14.99
Hulu	1	Yes	$11.99
Amazon Prime Video	3	Yes	$8.99

Table 3.1: *Example of current competitors to Netflix within the OTT SVOD segment.*

Company	Launch Date	Price
Disney+	November 2019	$6.99
Apple TV+	Q3/4 2019	NA
Warner Media (AT&T)[13]	September/October 2019	$NA
NBC	2020	$11.99

Table 3.2: *Companies announced to enter the streaming market in US.*

3.2 Income Statement

3.2.1 Revenue

Netflix generates revenue by selling subscription services to end users. Hence, its revenue model can be described with the following equation:

$$R_t = \sum_i ARPU_{i,t} * \bar{U}_{i,t} \ \ where, \qquad (3.1)^{14}$$

$R_t = Revenue\ during\ time\ perdiod\ t$
$ARPU_{i,t} = Average\ Revenue\ per\ User\ per\ Business\ Segemnt\ i, during\ time\ period\ t$
$\bar{U}_{i,t} = Average\ number\ of\ Paying\ Users\ per\ Business\ Segemnt\ i, during\ time\ period\ t$

[12] The DVD subscription segment is not an OTT SVOD.
[13] Warner Media, which is owned by AT&T, is the owner of HBO.
[14] Observe similarity with equation (2.19)

General Outlook

From the beginning of 2009 to the end of 2018, Netflix has had a compounded annual growth rate (CAGR) of 27%.

Over this period, Netflix has transformed its revenue mix. The DVD segment has evolved to be a minuscule part of Netflix's revenue. Looking back, in Q4 2011, the domestic DVD segment accounted for 42% of the revenue, domestic Streaming for 54% of the revenue and international streaming for 3% of the revenue. In Q4 2018, the domestic DVD segment merely accounted for 2% of the revenue, domestic streaming for 48% of the revenue and International Streaming for 50% of the revenue. During this period, the domestic DVD Revenues also decreased in absolute terms with 77%.

Given the development of the domestic DVD segments development, this thesis will focus less on this segment going forward.

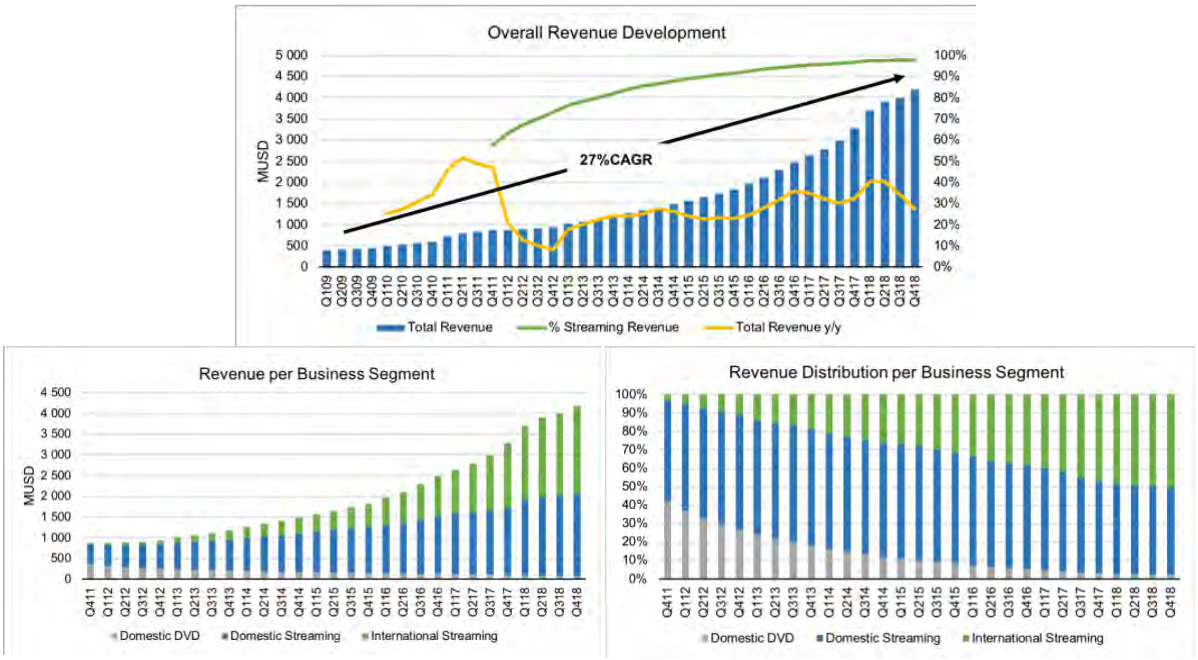


Figure 3.1: *Quarterly Revenue development for Netflix from 2009 to 2018.*

User Development

The number of paying users is one of the variables in Netflix's revenue equation (3.1). Therefore, the following section will look at how the number of paying users has developed for Netflix over time.

Q3 2011 was the first quarter Netflix disclose user data under the current business segmentation. Previous to that, Netflix grouped the business segments domestic DVD and domestic streaming and only reported the number of unique paying subscribers. Netflix has always kept its international streaming service segmented from its launch Q4 2010.

In Q3 2011 there were 35 313 thousand paying subscriber[15] from the three different business segments, in which 13 813 (39%) thousands were from domestic DVD, 20 511 (58%) thousands were from domestic Streaming, 989 (3%) thousands were from international streaming. Among 141 965 thousand paying subscribers in Q4 2018, where 2 706 (2%) thousands was from domestic DVD, 58 486 (41%) thousands was from domestic streaming, 80 773 (57%) thousands was from international streaming. Since Q3 2011 domestic DVD has shown a steady decline of paying users; from Q1 2013 the decline rate has been between 15 – 21%. domestic streaming's growth rate has been declining over time from 30% to 10%, which is roughly equates the yearly growth has been since the beginning of 2017. International streaming paying user growth has been very high but from lower numbers. Since the beginning of 2017, the y/y growth has been around 40%.

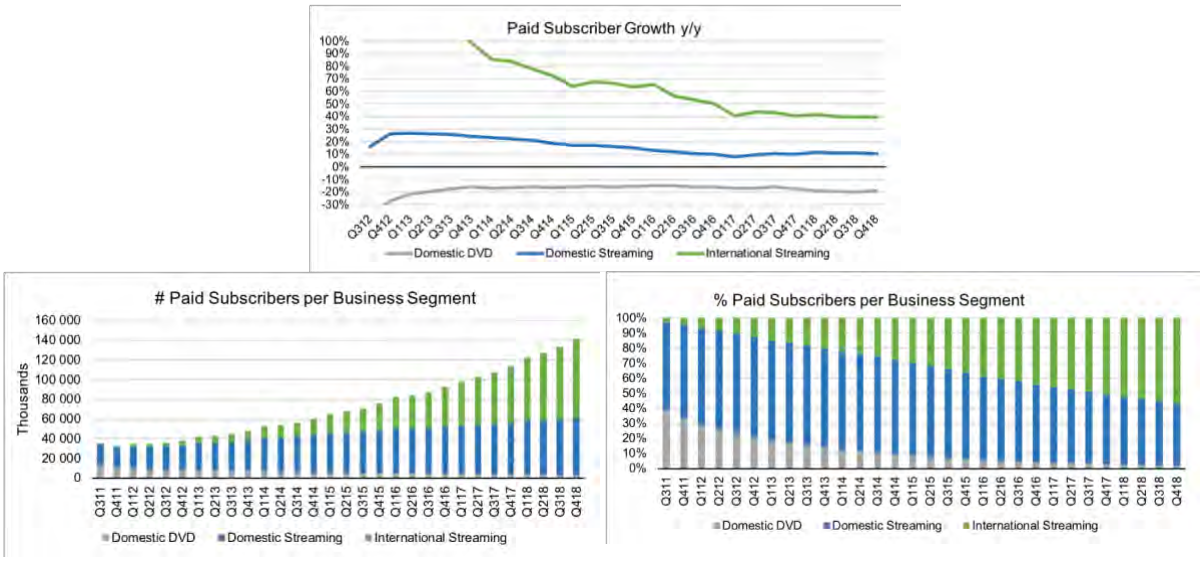


Figure 3.2: *Quarterly user development for Netflix from Q3 20111 to Q4 2018.*

[15] The first month using Netflix is usually free, therefore Netflix also have non-paying Subscribers. However, given that Netflix don't have a clear freemium business model this thesis will only focus on the Paying Subscriber data.

Netflix stopped disclosing the churn rate at the beginning of 2012. During Q1 2009 and Q4 2011, the monthly churn rate[16] were between 3.7% and 6.3%, with that of the last two quarters being significantly higher than the rest.

Figure 3.3: *Monthly churn rate for Netflix from 2009 to 2011*

MIDiA Research has estimated that the churn from the different quarters was in-between 11% and 7.8% on a quarterly basis (Mulligan, 2018), whereas Ampere Analysis estimates that Netflix has a yearly churn rate of 20%-25%[17] in the US (Moulding, 2018). These numbers can be compared to US cable which has a quarterly churn rate of 7% with minimum contract lengths whereas Netflix users are free to leave at any time (Powell, 2018). A quarterly churn rate of 5% or 11% is equivalent to a monthly churn rate of 1.7% or 3.8%.[18]

Research conducted from the firm The Diffusion Group suggests that 8% of Netflix subscribers would downgrade to a lower price plan, and another 8% would cancel Netflix over a $1 price increase. For a $3 price increase, 22% would downgrade, and 16% would cancel (Munson, 2019).

ARPU Development

The second variable in Netflix's revenue equation is the amount a user is paying for the services offered by Netflix, also known as Average Revenue per (paying) User (ARPU).

[16] Netflix measured the monthly churn rate by adopting the equation (2.2) and divided it by three.
[17] Equivalent to 5.4% to 6.9% churn of a quarterly basis.
[18] $Monthly\ churn\ = 1 - (1 - quaterly\ churn)^{1/3}$

Therefore, the following section will look at the development of ARPU on different business segments of Netflix.

Netflix started to report the Average monthly revenue per paying Membership (Monthly ARPU) per business segment from Q1 2015. Before that, this thesis has made the following approximation for calculating the ARPU, which is based on equation (2.11):

$$ARPU_{i,t} = \frac{R_{i,t}}{3 * (\frac{U_{i,t} + U_{i,t-1}}{2})} \; where \tag{3.2}$$

$ARPU_{i,t} = Monthly\ Average\ Revenue\ per\ User\ per\ business\ segment\ i\ during\ quater\ t$

$R_{i,t} = Reported\ revenue\ per\ Business\ Segment\ i\ during\ quater\ t$

$U_{i,t} = Reported\ paid\ users\ per\ Business\ Segment\ i\ during\ end\ of\ quater\ t$

The streaming service offers three different price plans to the users: Basic, Standard, and Premium. The difference between these plans is the number of screens that can be used at the same time and the video quality. For Basic, only one device can be used at the same time and the users can't view the content in HD quality. For Standard, two devices can be used at the same time, and the users can see content in HD quality. For Premium, four devices can be used at the same time, with content in Ultra HD quality (Netflix, n.d-b).

This thesis believes that the changes in monthly ARPU on domestic streaming comes from two factors, price increases and changes in the distribution of the different price plans. From Q4 2011 to Q3 2015, the monthly ARPU fluctuate between $7.8 and $8.4. Since then Netflix has raised the price twice for Standard, and once for Premium. Until 2018, and the monthly ARPU has steadily increased from $8.5 to $11.5 during the period. In Q4 2018 the monthly ARPU was at $11.5 indicating that the average paying subscriber pays slightly more than the standard plan, which was at $10.99, the Premium plan for Q4 2018 was $13.99.

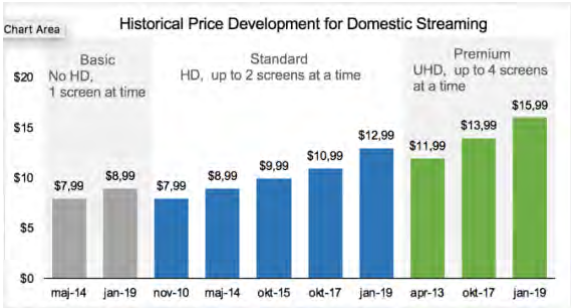


Figure 3.4: *Price development in USA for Netflix streaming service (Richter, 2019).*

For international streaming this thesis proposes that changes in the monthly ARPU depend not only on price increases and changes in the distribution of the different price plans, but also on how the revenue distribution between different non-US countries is, as well as the FX development between USD and other currencies. For example, in Denmark, the basic plan is priced at DKK 79, which is roughly equivalent to $11.94, whereas in Brazil, the basic plan is priced at BRL 19.90, which is approximately equivalent to $5.33.[19]

The monthly ARPU for international streaming has experience more fluctuations than the monthly ARPU for domestic streaming. From Q4 2010 to Q2 2017 the monthly ARPU fluctuate within a range of $7.2 to $8.4. Since then the monthly ARPU has increased. During the period Q3 2017 and Q4 2018 the monthly values were between $8.7 and $9.8.

The monthly ARPU for Domestic DVD from Q4 2010 to Q4 2018 has been steadily around $10.

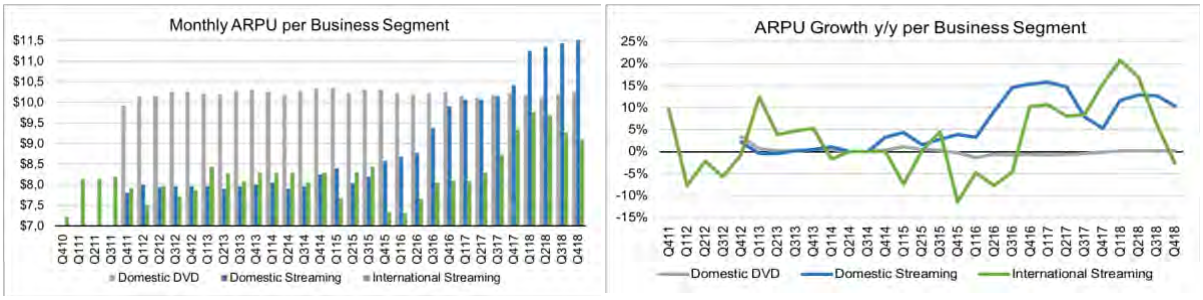


Figure 3.5: *Monthly ARPU development for Netflix different business segments from Q4 2011 to Q4 2018*

[19] Data extracted from Netflix's website by visiting it

3.2.2 Cost of Revenue

From 2009 to 2018 the cost of revenue has been 63%-73% of total revenue on an annual basis, in 2018 the level was at 63%. The cost of revenue decreased from 53% in 2012 to 42% in 2018 for domestic DVD, decreased from 72% to 53% for domestic streaming, and decreased from 168% to 74% for international streaming. At the same time as the cost of revenue has gone down, in relative terms, for each business segment, Netflix has transformed.

The main cost component of cost of revenue is amortization of content assets, which has accounted for 75% to 85% of the cost of revenue from 2015 to 2018. The cost component amortization of content assets was significantly lower when the business segment domestic DVD had a larger share of total Revenue, back in 2009 it was at 20% of the cost of revenue. Other major cost components in the cost of revenue include expenses associated with acquisition, licensing and production of content, as well as delivering the content to end consumer such as cloud computing cost for the streaming segment and fulfillment and shipping cost for the DVD segment.

As amortization of content assets % of cost of revenue is relative similar between domestic streaming and international streaming (see Figure 3.7) and the cost of revenue % of revenue is higher for international streaming than domestic streaming (see Figure 3.6), this paper will interoperate this as i) the content cost per earned revenue is higher for the international business segment and ii) other cost components in the cost of revenue per earned revenue are also higher for the international business segment than the domestic business segment.

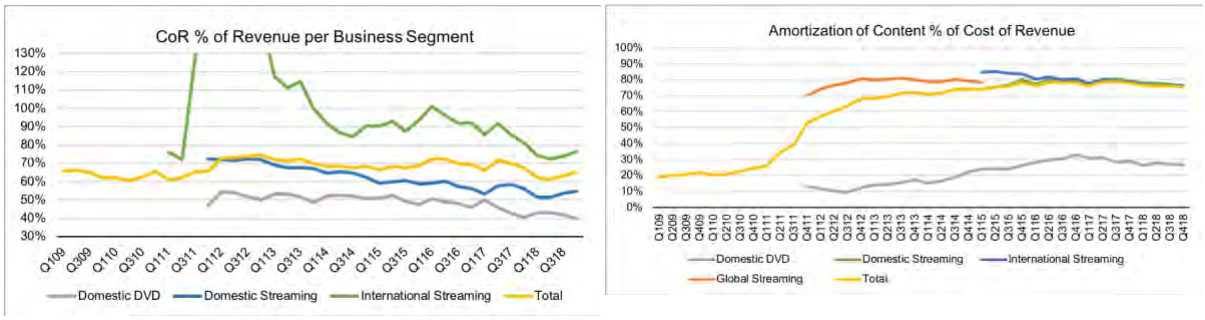


Figure 3.6: *a) Cost of Revenue as % of Revenue from 2009 to 2018. b) Amortization of content % of cost of revenue from 2009 to 2018 for Netflix*

Netflix's content is amortized on an accelerated basis, and 90% of the streaming content assets is expected to be amortized within 4 years after release day (Netflix, 2018). Accelerated amortization means that a greater amount is amortized at the beginning of the asset's lifetime than the end of the asset's lifetime (Kenton, 2018).

As seen from Figure 3.7 the accumulated amortization of streaming content assets is roughly lagging 18 months to the accumulated acquisition of streaming content assets during the period 2009 to 2018.

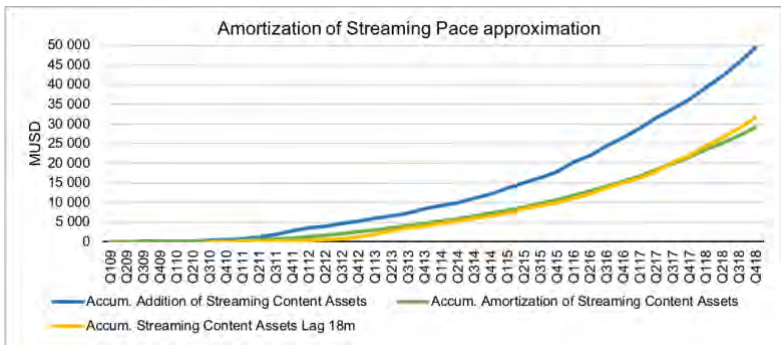


Figure 3.7: *Accumulative amortizations of streaming content assets and accumulative addition of streaming content assets from 2009 to 2018 for Netflix*

Cost of Revenue per User

The Cost of revenue per User (CORPU) for domestic streaming has steadily gone up over the last few years. In Q2 2015 it was at $4.8 com whereas in Q4 2018 it was at $6.3.

CORPU for international streaming has been higher than for domestic streaming throughout the reported period. The CORPU for international streaming has gone down over time, and in Q4 2018 the CORPU for international streaming was $6.9.

For domestic streaming CORPU has been fluctuating around $5 from Q4 2011 to Q1 2017, since then CORPU has decreased, in Q4 2018 it was $4.1.

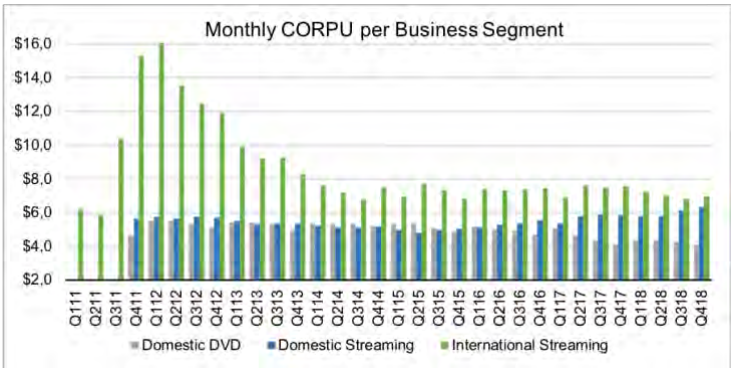


Figure 3.8: *Cost of Revenue per User per business segment from 2011 to 2018 for Netflix*

3.2.4 Marketing

Marketing costs consist mainly of advertising expenses, such as digital and television advertising, and "certain payments made to our marketing partners, including consumer electronics manufacturers, MVPDs, mobile operators and ISPs."[20] Between 2009 to 2018 the marketing cost has fluctuated between 9% and 17% on a quarterly basis, being 16% at the start of the period and 17% and the end of the period. Since 2012 to 2018 the marketing cost as percentage of revenue was, throughout the period 0% for the business segment domestic DVD, for international streaming, it decreased from 113% to 20%, and for domestic streaming, it went from 15% to 16%.

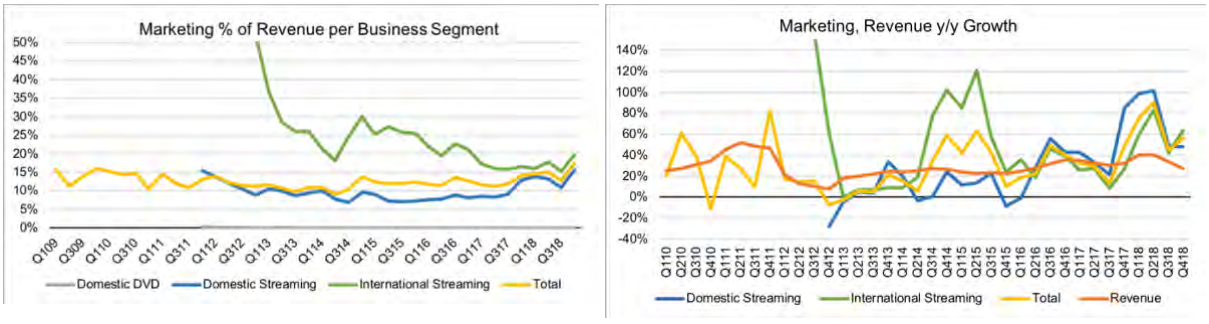


Figure 3.9: *a) marketing as % of revenue per business segments, b) marketing costs year on year growth per business segment for Netflix*

[20] From Netflix 2018 10-K. MVPD = Multichannel video programming distribution. ISP = Internet Service Provider

CAC

Netflix neither report its customer acquisition cost, nor disclose how many gross subscribers they add per quarter which could be used to calculate CAC based on equation (2.8).

However, given different churn levels, one can estimate the gross subscriber additions per quarter and subsequently the average CAC per cohort/quarter[21].

As shown in Figure 3.10 for the last couple of quarters the CAC, for a certain churn level, is higher within the domestic streaming segment compared to the international streaming segment. For the domestic streaming segment, the CAC has gone up over time, whereas for the international streaming segment is has remained relatively flat.

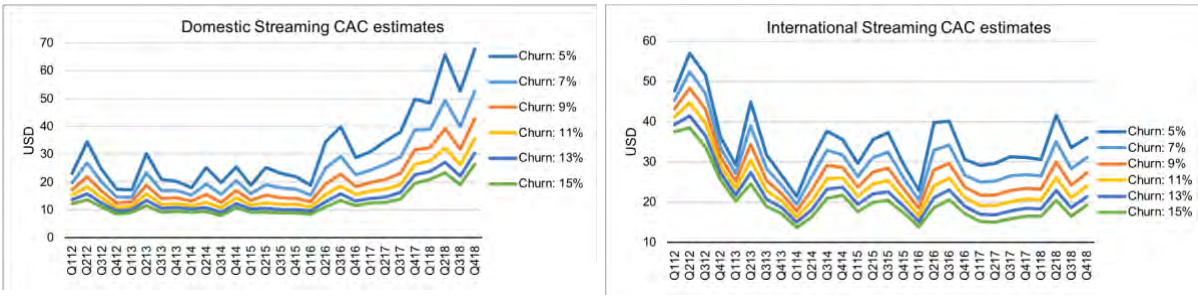


Figure 3.10: *Estimate of Netflix average CAC per quarter based on different quarterly churn levels for the business segments Domestic Streaming and International Streaming.*

3.2.5 Contribution Profit

Netflix defines Contribution profit as Revenue – Cost of Revenue – Marketing.

The contribution profit for the domestic DVD segment has been on a decline since the start of segmented reporting. The contribution profit decreased from $538 million in 2012 to $ 212 million in 2018, a 61% decrease or 14% CAGR, at the same time the contribution margin has gone up from 47% in 2012 to 58% in 2018.

[21] Gross Additions are estimated based on the following two equations. Equation (2.2) and $U_t = U_{t-1} + Gross\ added\ U_t - abandoned\ U_t$ where $churn_t, U_t, and\ U_{t-1}$ are given and, $Gross\ added\ U_t$ and $abandoned\ U_t$ are unknown. From this one can derive that $Gross\ added\ U_t$ can be estimated with the following equation:

$$Gross\ added\ U_t = (U_t - U_{t-1} + churn_t * U_{t-1})/(1 - churn_t)$$

From this one can apply equation (2.8) to derive the CAC for different quarterly churn levels.

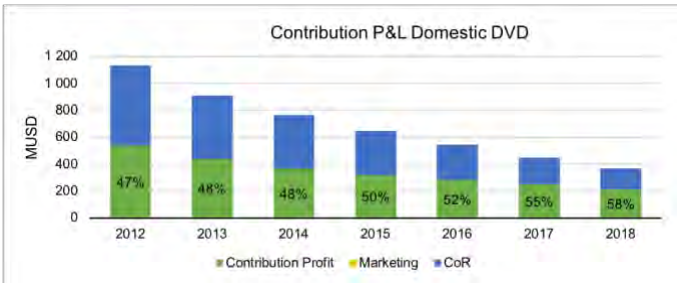


Figure 3.11: Netflix *Domestic DVD contribution profit development from 2012 to 2018*

At the same time the domestic streaming's contribution profit has soared with a 636% growth during the same period or 39% CAGR, reporting a $369 million contribution profit 2012, and a $2 583 million contribution profit 2018. The contribution margin increased from 17% in 2012 to 34% in 2018; this was mainly driven by that cost of revenue as percentage of revenue dropped from 72% in 2012 to 53% in 2018. Since 2015 the decreases in cost of revenue as percentage of revenue has been offset by increases in marketing as percentage of revenue.

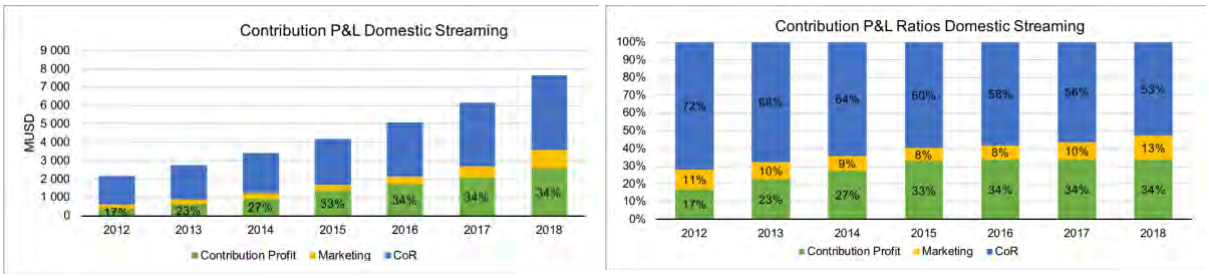


Figure 3.12: *Contribution profit development for Netflix business segment Domestic Streaming from 2012 to 2018*

The International Streaming segment showed a negative contribution profit of $-389 million in 2012. 2017 was the first year the International Streaming segment showed a positive contribution profit, and in 2018 the business segment reported a contribution profit of $630 million. The contribution margin had gone from a negative 135% in 2012 to a positive 9% in 2018, this is due the decrease of both in relative terms cost of revenue – from 168% of revenue in 2012 to 74% of revenue in 2018 – and marketing expenses – from 67% of revenue in 2012 to 17% of revenue in 2018.

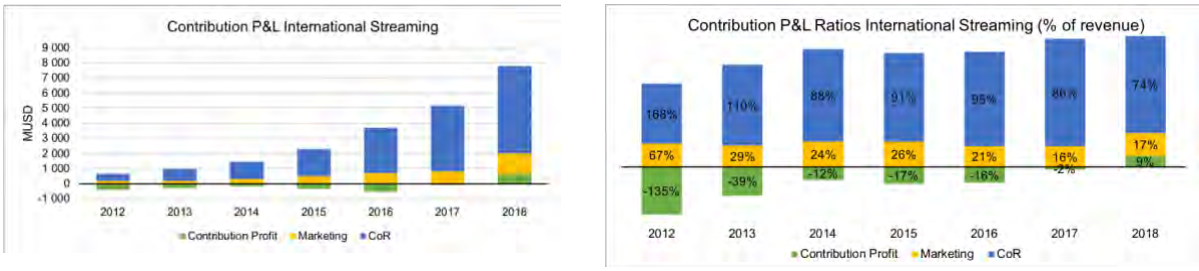


Figure 3.13: *Contribution profit development for Netflix business segment International Streaming from 2012 to 2018*

3.2.6 Operating Expenses

Other operating expenses consist of technology and development (R&D), and general and administrative (G&A).

R&D consist primarily of salaries for technology personnel, cost related to improving the services as well as computer hardware and software costs. Whereas G&A consist mainly of corporate personnel and other general expenses.

With consideration of data classification differences[22] of the dataset from Q1 2016, R&D has grown during the period 2009 to 2016 in alignment with or slightly faster than the revenue, resulting in that R&D cost as percentage of revenue increased from 6.9% to 9.6% during the period according to the old classification. Since 2016, R&D cost as percentage of revenue has declined from 8.8% to 7.7% in 2018 according to the new classification.

G&A has grown in alignment with or slightly faster than the revenue resulting in G&A cost as percentage of revenue to increase over time. For example, with the old cost classification G&A grew from 2.8% in 2009, to 7.4% in 2017, or with the new classification grew from 3.6% in 2016, to 4.0% in 2018.

[22] In Q4 2018 Netflix did a reclassification of some of their cost components, moving some of the costs that was previously considered G&A and R&D into Cost of revenue and marketing expenses. Data from Q1 2016 to Q4 2018 is according with their new classification whereas data points from Q4 2015 and backwards is not, hence comparable between different time periods might be inaccurate. For example, in Q3 2018 Technology and Development cost as % of revenue was in the old classification 8.2%, whereas in the new classification it was 7.7%, a 0.5 percent point difference. G&A cost as % of revenue was in the old classification 8.6% whereas in the new classification it was 4.2%, a 4.4 percent point difference. 3.0 percent points was transferred into Cost of Revenue with the new classification and 1.9 percent points were transferred into Marketing with the new classification during Q3 2018.

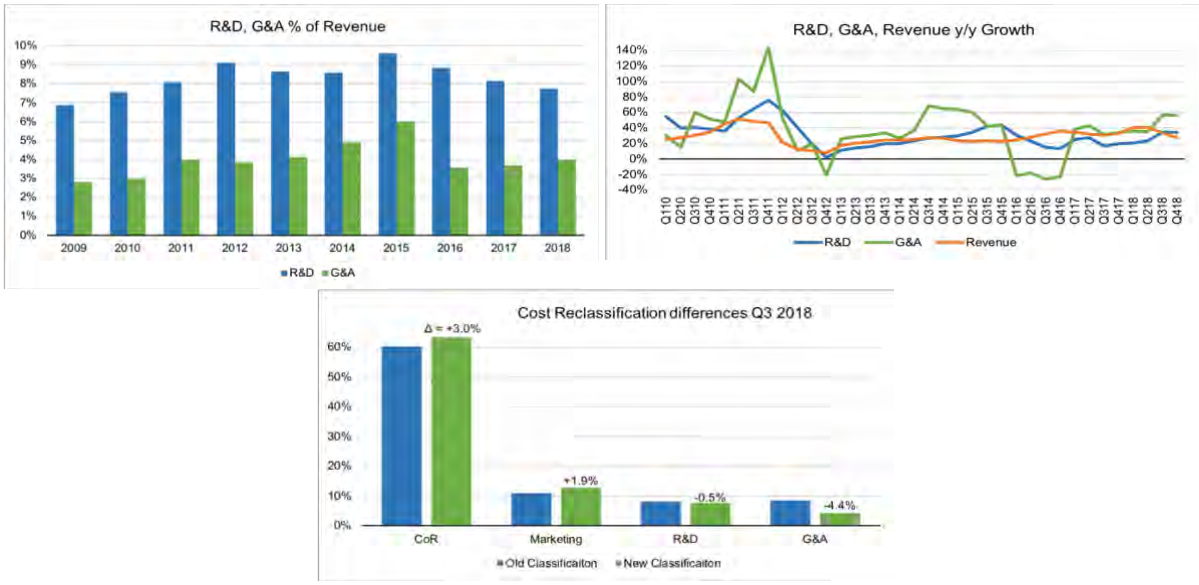


Figure 3.14: *a) R&D cost and G&A cost as % of Netflix total Revenue, b) growth of R&D cost and G&A cost year over year, c) example of how Netflix's new accounting standard affects the different cost components for Q3 2018*

3.2.7 Operating Income

Ever since 2009 Netflix has generated a positive operating income. In 2018 the operating profit margin was at 10%. Between 2009 and 2018, the operating profit margin has fluctuated between 1% and 13%.

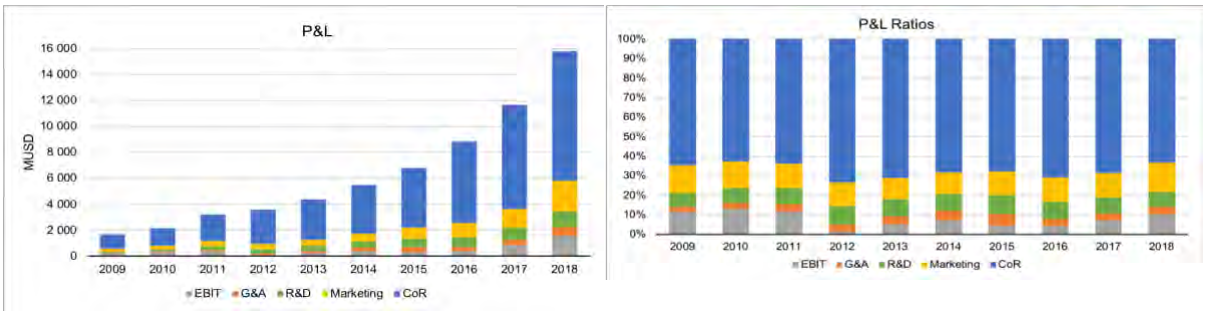


Figure 3.15: *Revenue to Operating Profit development for Netflix from 2009 to 2018.*

3.2.8 Interest

Netflix has also fairly significant interest expenses. In 2018 Netflix paid $420 million as interest expense. These expenses "consists primarily of the interest associated with our outstanding long-term debt obligations, including the amortization of debt issuance costs, as well as interest on our lease financing obligations."[23]

[23] Netflix 10-K 2018

Netflix raised its first bond in February 2013 since then the interest cost as percentage of revenue has increased. In Q4 2012, it was at 0.5%, in Q4 2018, the ratio was at 3.1%. In 2018 the interest covering ratio was at 3.8. The current run rate of interest associated with long-term bonds is $532 million (see *Table 3.3*).

Interest	Principal Amount in Pay (mn)	Issuance Date	Maturity	Interest Due Date	Yearly Interest Cost (mn)
5.375% Senior Notes	$500	Feb-13	Feb-21	Feb & Aug	$27
5.50% Senior Notes	$700	Feb-15	Feb-22	Apr & Oct	$39
5.750% Senior Notes	$400	Feb-14	Mar-24	Mar & Sep	$23
5.875% Senior Notes	$800	Feb-15	Feb-25	Apr & Oct	$47
4.375% Senior Notes	$1 000	Oct-16	Nov-26	May & Nov	$44
3.625% Senior Notes	$1 489	May-17	May-27	May & Nov	$54
4.875% Senior Notes	$1 600	Oct-17	Apr-28	Apr & Oct	$78
5.875% Senior Notes	$1 900	Apr-18	Nov-28	May & Nov	$112
4.625% Senior Notes	$1 260	Oct-18	May-29	May & Nov	$58
6.375% Senior Notes	$800	Oct-18	May-29	May & Nov	$51
5.09%	**$10 449**				**$532**

Table 3.3: *Senior Notes raised by Netflix.*

3.3 Balance Sheet

3.3.1 Assets

Netflix's asset side of the balance sheet consists primarily of content assets.
At the end of 2018 77% of total assets were content assets. The other items on the asset side of the balance sheet were: i) cash and cash equivalents, which was equivalent of 15% of total assets at the end of 2018, ii) other assets (8%). Total assets were just shy of $26 billion in 2018.[24]

Since the end of 2012 to end of 2018 the balance sheet grew 480% from $4.5 billion to $26 billion, giving a CAGR of 34%. It is worth mentioning for comparison purposes that the CAGR for content assets and revenue was 37% and 28% respectively during the same period.

[24] Content assets consist of: i) current content assets, net, and ii) non-current assets, net.
Cash consist of: i) cash and cash equivalence, and ii) short-term investments.
Other assets consist of: i) Other current assets(3%), ii) Other non-current assets (3%), iii) Property and Equipment, net(2%).

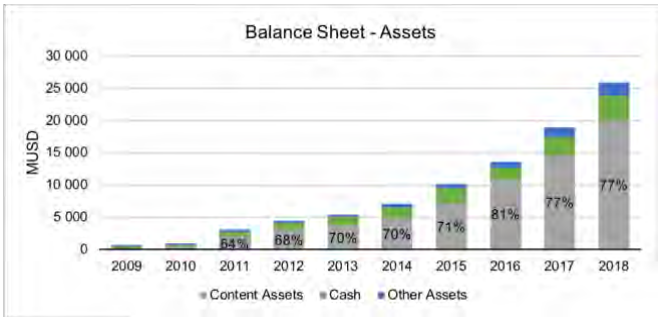


Figure 3.16: *Asset development for Netflix from 2009 to 2018*

Content Assets

Changes of the content assets from one period to another are driven by i) additions to streaming content asset, ii) acquisition of DVD content assets, and iii) amortization of content assets.

In its balance sheet, Netflix segments the content assets into: i) current content assets, net, and ii) non-current content assets, net. Where current content assets, net are defined as content assets that are expected to be amortized in the next 12 months, whereas Non-current content assets, net, are content assets expected to be amortized after 12 months (Netflix, 2018).

From an operational point of view one can segment the streaming content assets into three types: i) Self-produced Netflix Originals, ii) Licensed Netflix Originals, and iii) other licensed movies and shows (see *Table 3.4*).

Brand Type	**Netflix Original (Branded)**		**2nd Run movies & TV shows**
Type of Content	Self-Produced	Licensed	Licensed
Examples	Stranger Things	House of Cards	Friends (Warner Bros.), Captain America: Civil War (Disney)

Table 3.4: *Different types of streaming content assets for Netflix.*

The difference between Self-produced Netflix Originals and Licensed Netflix Originals is that for Self-produced Netflix Originals, Netflix is taking the investments/cost related to producing the content in return of owning the intellectual property of the content,

whereas for Licensed Netflix Originals a third party is producing and owning the intellectual property of the content and then license it to Netflix and Netflix can brand it as a Netflix Original (Netflix, 2018).

Netflix has stated that they want to increase their share of content spent on Netflix originals over time (Netflix, n.d.-c). However, it has not disclosed the share of Netflix originals in their streaming content assets vs. other licensed content. Over the last couple of years, Netflix has started to offer an alternative segmentation of the content assets in the financial statements, apart from current content assets, net and non-current content assets, net. These alternative segments include is i) DVD, net, ii) Licensed content, net, and iii) produced content, net. Product content includes, self-produced (Netflix originals) content that is: already released less amortized, in production, as well as are in development and pre-production. From the end of 2015 to the end of 2018 produced content, net grew by 1549%, and the share of produced content, net over streaming content increased from 5% to 30%.

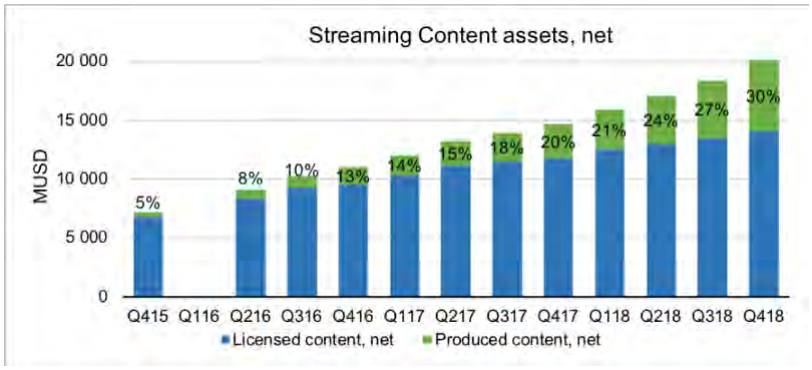


Figure 3.17: *Streaming content assets segmentation between licensed and self-produced.*

3.3.2 Equity and Liabilities

As the end of 2018 (2012) the equity and liability of Netflix balance sheet consisted of 20% (25%) equity, long-term debt 40% (10%), content liabilities 35% (55%), other liabilities 5% (10%).[25] From the end of 2012 to end of 2018 the CAGR of equity was 30%, long-term debt 66% , content-liabilities 23%, and other liabilities 28%.

[25] Equity consist of: i) Common Stock, ii) Accumulated other comprehensive income (loss), and iii) Retained earnings.
Long-term Debt consist of: Long-term debt

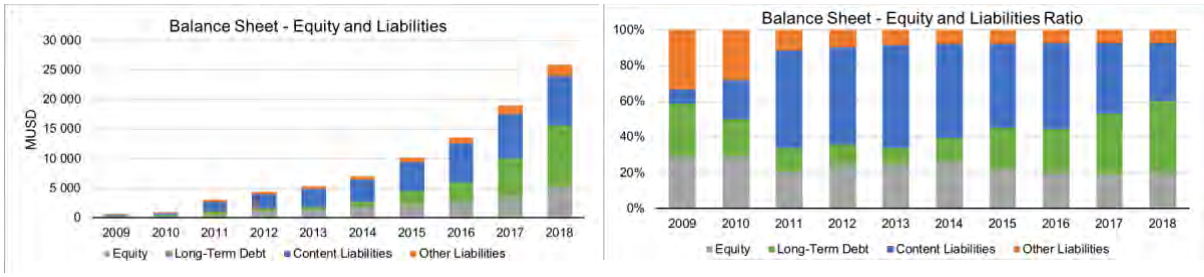


Figure 3.18: *Equity and liabilities development for Netflix from 2009 to 2018.*

3.4 Cash Flow Statement

In 2018 Netflix had a negative cash flow from operations near $2.7 billion. This can be compared to Netflix net income which was $1.2 billion in 2018. This discrepancy can be explained by the following: i) Netflix invested $13.1 billion in adding streaming content assets which affected the cash flow negatively, ii) content liabilities increased by $1 billion which affected the cash flow positively, iii) amortization of content assets which is the largest cost component for Netflix was $7.6 billion for 2018, iv) other cashflow affecting items such as stock-based compensation expense, capex changes among others affected the cash flow positively by $0.6 billion[26].

As one can see from *Figure 3.19* during period 2009-2014 Netflix generated positive cash flow from the operation, whereas from 2015 to 2018, the cash flow from operations has been negative and has been developing negatively on a year over year basis.

Content-Liabilities consist of: i) current content liabilities, and ii) non-current content liabilities.
Other liabilities consist of: i) Account payable, ii) Accrued expenses, iii) Deferred revenue, and iv) Other non-current liabilities

[26] 1.2 -13.1 +1 +7.6 +0.6 = -2.7

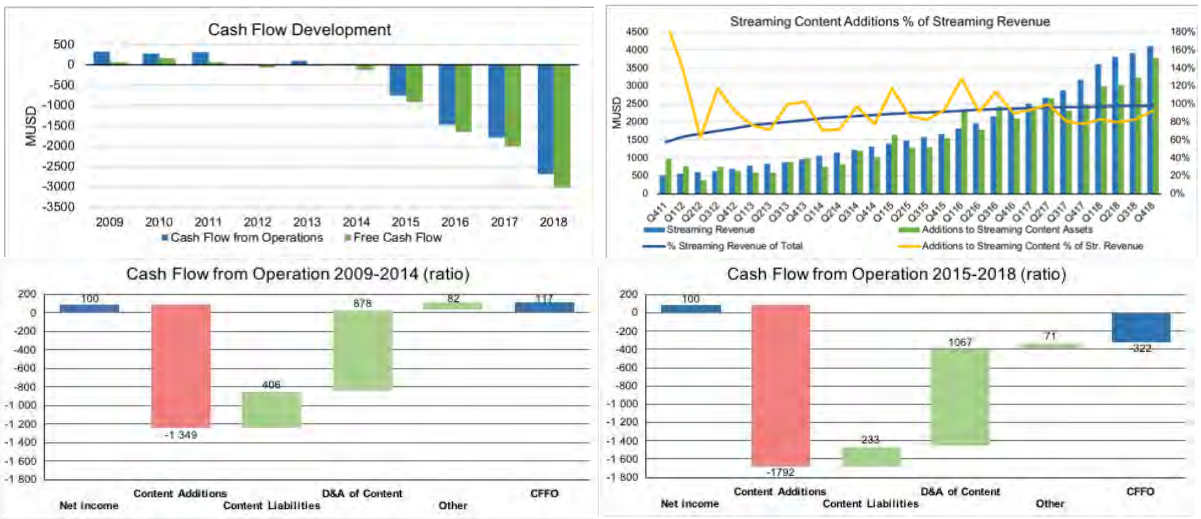


Figure 3.19: a) Annual Cash flow from Operating and Free cash flow development for Netflix from 2009 to 2018, b) additions of streaming content assets in perspective of streaming content revenue, c) indexed cash flow from operation movements from 2009 to 2014, d) indexed cash flow from operation movements from 2015 to 2018.

Comparing the cash flow for these two periods, one can see that Netflix has recently invested more into content addition per net income compared to the prior period, which is affecting the cash flow negatively. Even though content additions have increased in relative terms to net income, the content liabilities have not followed (see *Figure 3.19*). This thesis suggests that this could be due to the fact that Netflix is focusing more on self-produced content and therefore have, in relative terms, fewer IP suppliers, or that Netflix bargaining power over IP owners has decreased over time.

One potential reason for the negative development of the cash flow could be that the streaming revenues share of total revenue has increased over time. As one can see in *Figure 3.19* Netflix, have roughly spent 80% to 120% of the streaming revenue into Streaming content additions over. The increase of streaming revenue also drove up its share of the total revenue. At the same time, as Netflix spend this amount into content additions, Netflix has cash-flow affecting expenses[27] that is equivalent to 40% of the revenue. Spending 80% to 120% of revenue into content and having direct has cash-flow effecting expenses of 40% of revenue makes it difficult for Netflix to generate positive cash flow.

[27] cash-flow affecting expenses = Cost of revenue + Marketing expenses + R&D expenses + G&A expenses – Amortization of Content – Depreciation of PP&E – Stock-based compensation expense – other non-cash expenses.

This negative cash flow has been primarily financed by long-term senior bonds (see *Table 3.3*).

Chapter 4

4. Spotify business overview

The following chapter comprise of a brief introduction of Spotify as a company and a closer look into Spotify's financials at its income statements, balance sheet, and cash flow statement.

4.1 Overview

4.1.1 Historical Introduction

Spotify is a music streaming platform offering users to listen to music either for free, with ads between the songs, or for a monthly subscription price (without ads). Spotify was founded in 2006 by Daniel Ek (current CEO and chairman) and Martin Lorentzon. The product was launched in 2008 in Sweden and is now available in 78 countries.

When Spotify launched its product the music industry was in a crisis, the total revenue for the global music industry was down for seven years in a row, due to weak CD-sales. Illegal piracy had become increasingly popular. In 2008 revenue from streaming services accounted for only 1.7% of the total revenues in the industry contributing $300 million. Since then the streaming industry number has grown in relative and absolute term, and by 2018 the streaming revenue making up 46% of the total music industry, $8.9 billion (IFPI, 2019), Spotify accounted for 60% of these $8.9 billions.

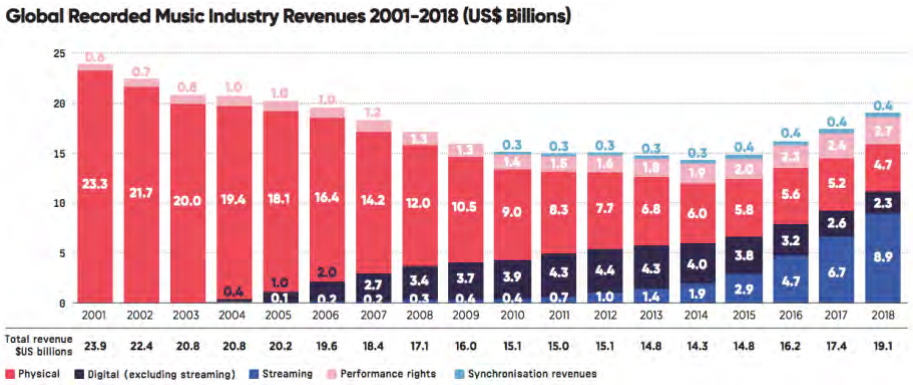


Figure 4.1: *Global Reccorded Music Industry Revenue Development from 2011 to 2018 (IFPI, 2019).*

In 2015 Spotify added podcasts onto the platform, and by 2019, Spotify announced that they would become an audible-first company. This statement was followed by acquisitions of two podcasting companies with in the segment, Gimlet Media, a narrative focused podcasts company, and Anchor a podcasting edition, distribution, and monetization tool.

4.1.2 Current Competition

Spotify is the largest Music streaming platform in the world, in terms of the number of paying subscribers. However, as seen in *Table 4.1* there are many large companies such as Apple and Amazon trying to catch up. In 2015 Spotify accounted for 67% of the global music industry compared to 59% in 2018[28].

Company	Launched	Business Model	# songs	# Paying Subscribers	MAU	Price
Spotify	2008	Freemium	40+ mn	96 mn	207 mn	$9.99
Apple Music	2015	Subscription	50+ mn	56 mn	56 mn	$9.99
Amazon Music	2016	Subscription	50+ mn	30 mn	30 mn	$9.99
Tencent Music[29]	2016	Multi	20+ mn	27 mn	644 mn	RMB15
Google Play Music	2011	Subscription[30]	40+mn	7 mn		$9.99
Deezer	2007	Freemium	53+ mn	7 mn	14 mn	$9.99

Table 4.1: *Handful of companies within the music streaming segment.*

[28] Based on Spotify's reported Revenues and IFPI (2019) reported data.
[29] Tencent Music's music segment = QQ Music, Kugou Music, and Kuwo Music. Spotify owns 9% of Tencent Music.
[30] Google Play Music also got a free service, but that service does not provide access to their 40 million song library.

4.2 Income Statement

4.2.1 Revenue

Spotify generates revenue with two means: subscription on premium accounts and advertisements display. Spotify's revenue can be defined with the equation (3.1).

General Outlook

From 2010 to 2018, Spotify has a CAGR of 61% on its total revenue. However, a large part of this hyper-growth came from the early years, in 2018, Spotify had an annual revenue growth rate of 29%. The revenue distribution between ad-supported revenue and premium revenue has been relatively constant over time, and over the last couple of years, 90% of Spotify's revenue came from premium subscriptions.

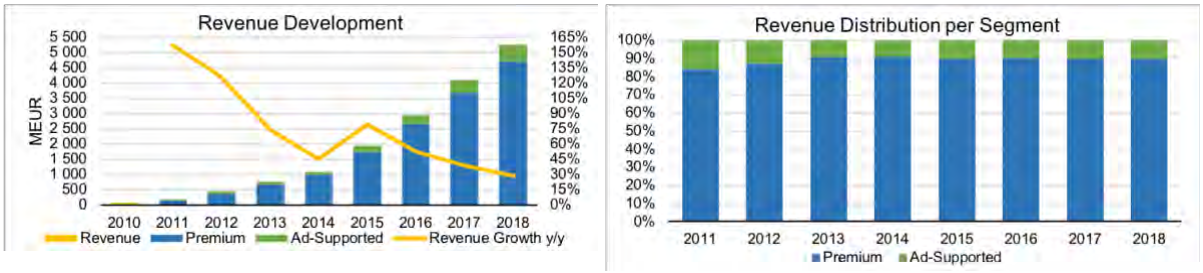


Figure 4.2: *Revenue development for Spotify from 2010 to 2018.*

User Development

By the end of 2018, Spotify had 96 million premium subscribers[31] and 116 million ad-supported subscribers. This can be compared to Q1 2015 where Spotify 18 million premium subscribers and 51 million ad-supported subscribers. The share of premium subscribers over total users have gone up over time, to 45% in Q4 2018 from 26% in Q1 2015.

By the end of 2018, 40% of the premium subscribers were from Europe, 31% North America, 20% Latin America, and 9% Rest of the World.

[31] Within premium subscribers includes all user under a family plan. There can be at most 6 users under one family plan. This can be compared to Netflix where they only report one subscriber for their premium plan even though four devices can be used at the same time.

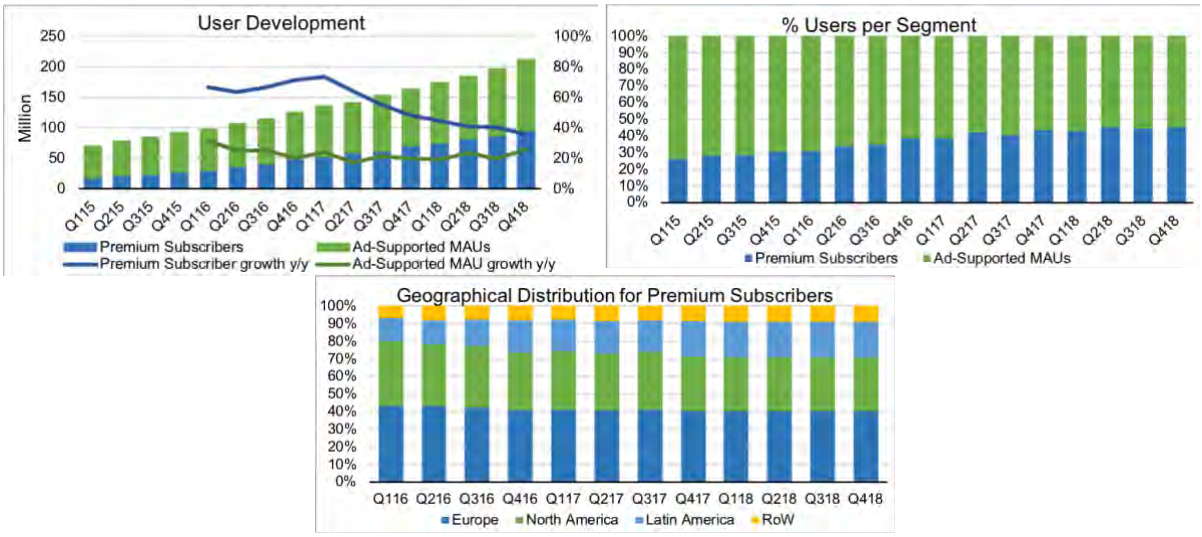


Figure 4.3: *a) b) user development from Q1 2015 to Q4 2018 per business segment for Spotify,* ***c)*** *geographical distribution of premium subscribers for Spotify from Q1 2016 to Q4 2018.*

Spotify's monthly churn rate[32] has gone down over time for premium subscribers. In 2015, the churn rate was at on average 7.7%, whereas in Q4 2018, the churn rate was at 4.8%. The churn rate for a premium subscriber decreases the longer a subscriber uses the service and retention per cohort has been improved over time (see Figure 4.4).

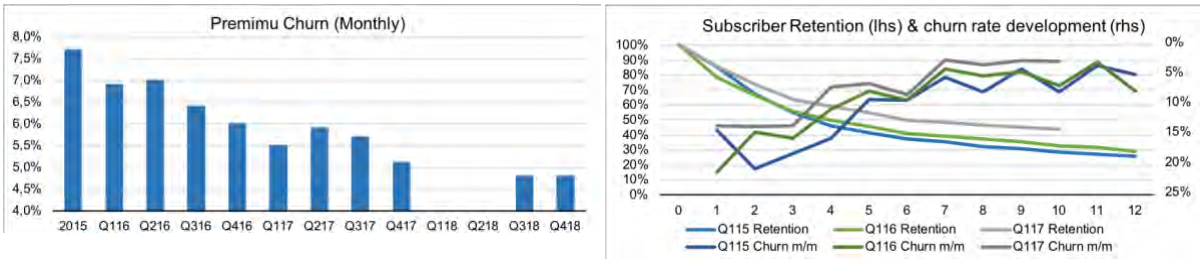


Figure 4.4: *a) churn development for Spotify from full year 2015 to Q4 2018, b) subscriber retention and churn rate development for new premium subscribers for the cohorts Q1 2015, Q1 2016, Q3 2017(Spotify, 2018-a).*

ARPU Development

Form Q4 2015 to Q4 2018, the monthly ARPU for premium subscribers has decreased by 31%, from €7.1 to €4.9. At the same time, the monthly ARPU for ad-supported subscribes went up by 91% from Q1 2016 to Q4 2018, however, from much smaller levels, €0.3 in Q1 2016 and €0.5 in Q4 2018.

[32] Spotify measures the monthly churn rate by adopting the equation (2.3) and divided it by three.

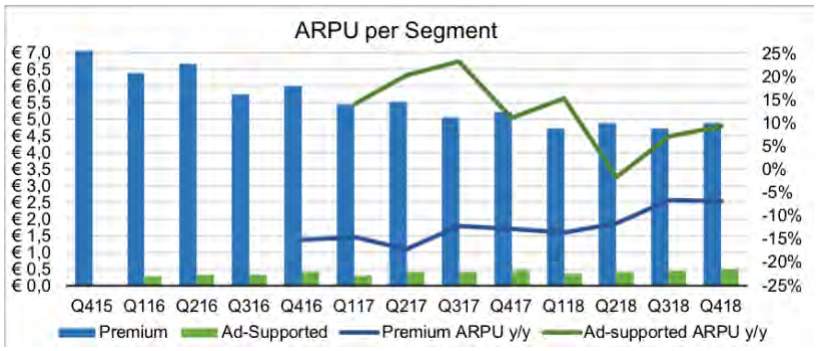


Figure 4.5: *Average Revenue per User development Q4 2015 to Q4 2018 for Spotify.*

Within the premium segment, Spotify offers three different plans: the normal premium, student plan, and family plan. These plans are priced at €9.99, €4.99, and €14.99 in Europe. There is no difference between the student plan and the normal plan, except that one needs to be a student for the student plan. Whereas the family plan offers up to 6 users living together using the service under separate accounts. Each user under a family plan is counted as a premium subscriber.

Apart from this, Spotify is bundling their Premium services with other third-party services and products, such as telecommunications companies and other content streaming companies. For example, in the US, if a customer gets the premium plan priced at $9.99, the user gets Hulu's[33] ad-supported plan priced $5.99 for free.

This thesis suggests that changes in premium ARPU depend on the distribution between different plans, number of users per family plan, geographical revenue distribution, and FX effects.

4.2.2 Cost of Revenue

Spotify's cost of revenue consists primarily of royalty cost and distribution costs such as payment transaction fees and streaming delivery cost, but also includes legal cost related to dispute charges with record labels. For the premium segment royalties are primarily based on a percentage of the revenues and "a per user amount." Where for ad-

[33] Hulu is a movie and TV-shows streaming platform.

supported revenue it is mainly based on a percentage of the ad revenue as well as per time a song is played basis.

Spotify's total cost of revenue as percentage of total revenue has gone down over time. In 2011, the cost of revenue as percentage of revenue at 98% wherein 2018 it was at 74%. It has decreased from 79% to 73% for the premium segment, and from 103% to 82% for the ad-supported segment, in a time span of 2014 to 2018.

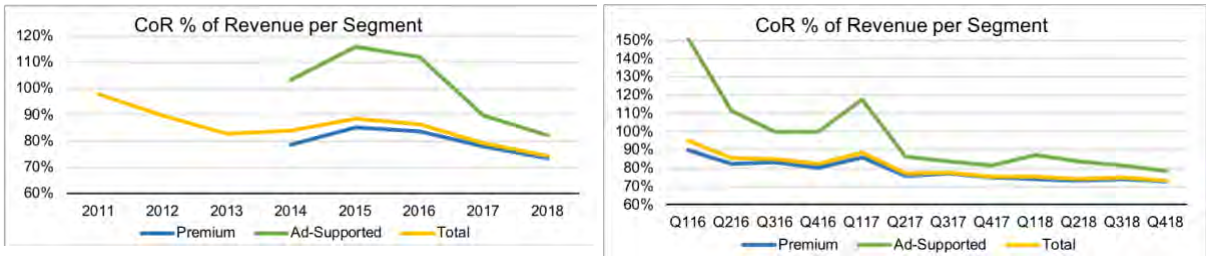


Figure 4.6: *Cost of Revenue as % of Revenue development for Spotify.*

CORPU

Form Q1 2016 to Q4 2018, the monthly CORPU for premium subscribers has decreased by 38%, a faster pace than ARPU, from €5.7 to €3.6. At the same time, the monthly ARPU for ad-supported has remained flat at €0.4.

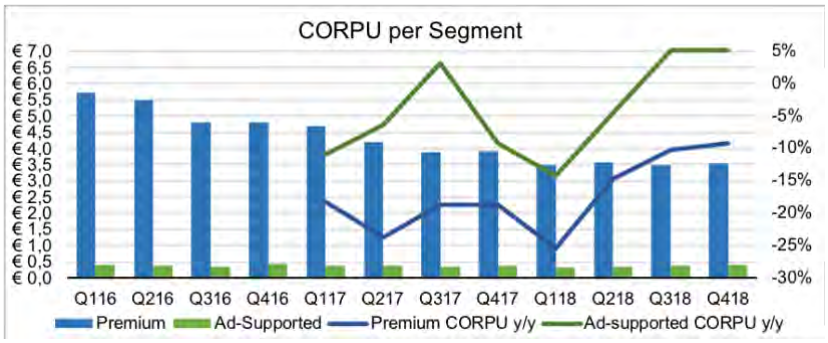


Figure 4.7: *Cost of revenue per User development for Spotify from Q1 2016 to Q4 2018*

4.2.3 Gross Profit

In 2018 Spotify reported gross revenue of €1256 million for the premium segment, a gross margin of 27%, €97 for the ad-supported segment, and a gross margin of 18%. As

the cost of revenue as percentage of revenue has gone down over time the gross profit has gone up.

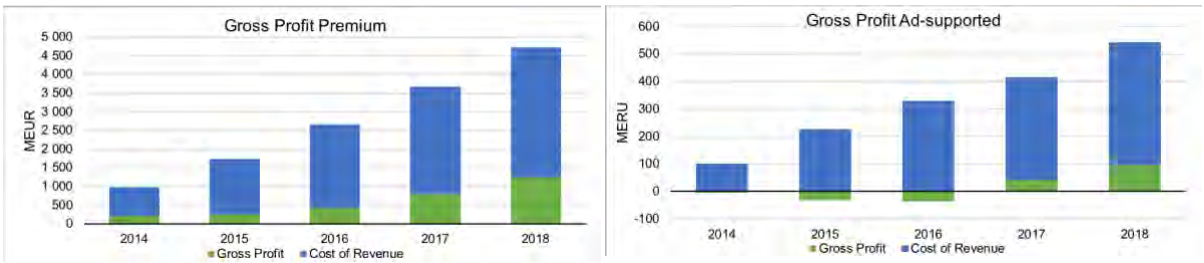


Figure 4.8: *Revenue to gross profit development from 2014 and 2018 for Spotify.*

4.2.4 Marketing

The marketing cost as percentage of revenue has been fluctuating between 11% and 17% throughout the period of 2012 to 2018. It was at 12% in 2018.

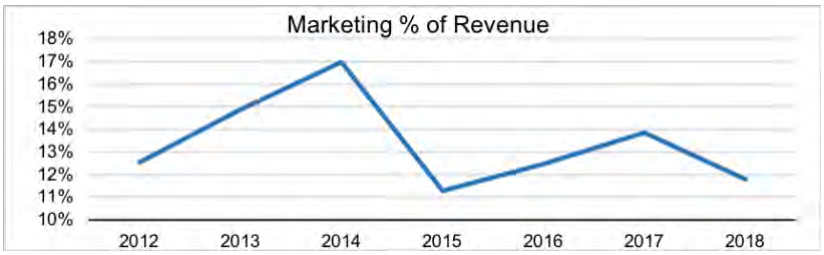


Figure 4.9: *Marketing cost as % of Revenue from 2012 to 2018 for Spotify*

CAC

Spotify does not report CAC in their quarterly reports. However, in their F-1 filing, Spotify defined CAC as marketing expense divided by gross premium subscriptions additions.

This thesis challenges this definition, since it assumes that the CAC for all gross ad-additions is equivalent to zero. Furthermore, another complexity when estimating the CAC for Spotify is that a certain share of the customer signing up for premium subscription converted from the ad-supported model.

Excluding these concerns and applying the same methodology as pointed in note 21, one can estimate the CAC for premium subscribers[34]. These estimations indicate that CAC has gone up over the period Q4 2015 to Q4 2018, from €6.3 to €13.8

[34] Worth mentioning is that this methodology assumes that the churn rate for a new subscriber is the same as an old subscriber, and as figure (sf) shows, this is not the case.

(Figure 4.10a). However if one considers that the total marketing costs should be attributed across all new users, both new premium subscribers and ad-supported users, the CAC has then been more stable over time, fluctuating around €4 to €6 (Figure 4.10 b).

Figure 4.10: *a) CAC estimate based on marketing cost over gross added premium subscribers, b) CAC estimate based on marketing cost over gross added premium subscribers and ad-supported users* [35]

4.2.5 Contribution Profit

Given the relative decrease in the cost of revenue and marketing, Spotify has managed to improve its contribution margin over time, in Q4 2018 it was at 16%.

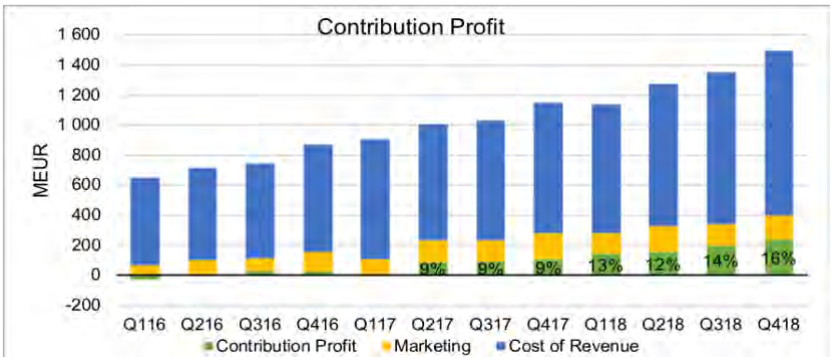


Figure 4.11: *Revenue to Contribution profit development from Q1 2016 to Q4 2018 for Spotify.*

4.2.6 Operating Expenses

From 2012 to 2018, R&D expenses have been fluctuating between 7% and 11% of total revenue, being 9% in 2018. G&A has been fluctuating between 5% and 7% of total revenue during the period 2012 and 2018, being 5% in 2018.

[35] See Table B.2 for calculations.

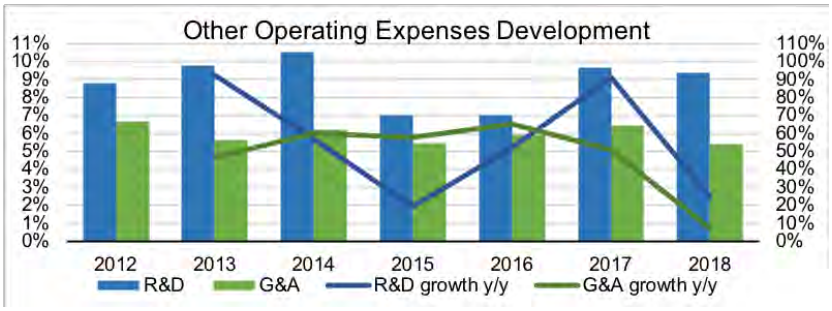


Figure 4.12: *R&A and G&A costs % of revenue and year over year growth from 2012 to 2018 for Spotify.*

4.2.7 Operating Income

Ever since 2009 Spotify has generated a negative operating income. The operating income margin has gone from -18% in 2012 to -1% in 2018. Spotify expected to have a continued negative operating profit margin for 2019.

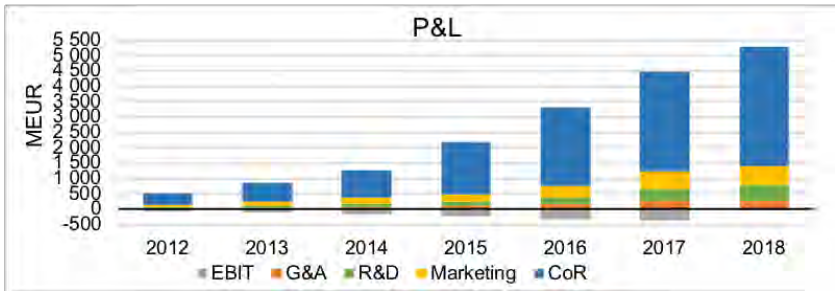


Figure 4.13: *Revenue to Operating Profit development for Spotify from 2012 to 2018.*

4.3 Balance Sheet

4.3.1 Assets

Spotify's asset side of the balance sheet consists primarily of a 9% ownership of Tencent Music and cash. At the end of 2018 42% of total assets were cash, 38% long-term investments, 10% other long-term assets, 10% receivables, and other current assets[36]. Total assets were € 4336 million in 2018.

[36] Cash consist of: i) cash and cash equivalence, and ii) short-term investments.
Long-term investments consist of: i) Long term investment, which is their ownership in TenCent music, and ii) Investments in associate and JV
Other long-term assets consist of: i) Property and equipment, ii) Intangible assets including goodwill, iii) Restricted cash and other NCA, and iv) Deferred tax assets.
Receivables and other current assets consist of: i) Trade and other receivables, ii) Income tax receivable, and iii) other current assets.

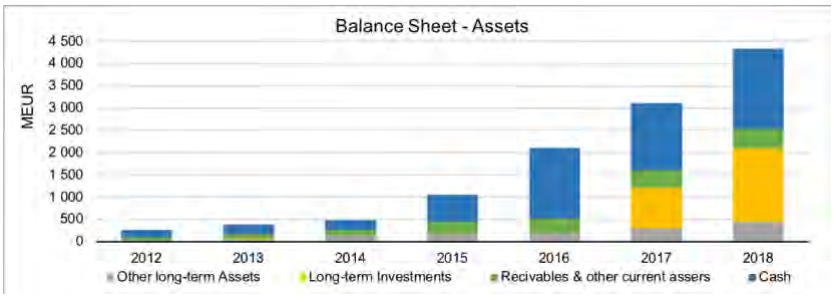


Figure 4.14: *Asset development for Spotify from 2012 to 2018.*

4.3.1 Equity and Liabilities

Spotify's equity and liability side of the balance sheet consists primarily of equity and, payable and accrued expenses. At the end of 2018 48% of total equity and liabilities were equity, 42% was payable and accrued expenses, 2% were non-current liabilities, and 8% were other.[37] In 2016 Spotify raised convertible debt, which was later converted into stocks during its IPO.

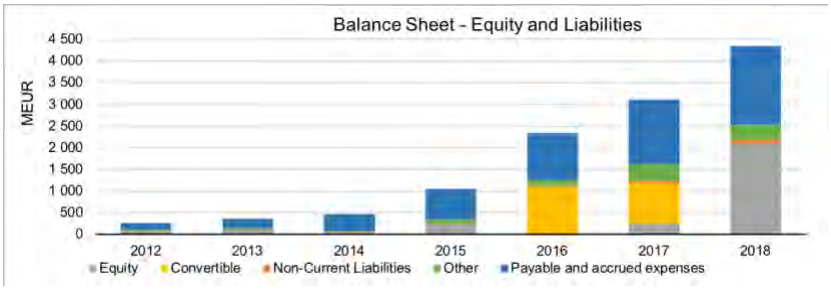


Figure 4.15: *Equity and Liabilities development for Spotify from 2012 to 2018.*

[37] Equity consist of: i) share capital, ii) Other paid in capital, iii) Treasury shares, iv) Other reserves, v) Accumulated deficit.
Payable and accrued expenses consist of: i) Trade and other payables (10%), ii) Deferred revenue (6%), iii) Accrued expenses and other liabilities (25%), iv) Provisions (1%)
non-current liabilities consist of: i) non-current Accrued expenses and other liabilities, ii) non-current Provisions, iii) non-current Deferred tax liabilities.
Other consist of: i) current Income tax payables, ii) current Derivative liabilities

4.4 Cash Flow Statement

Spotify's cash flow from operation and free cash flow[38] are significantly better than their operating income. Over the last three years they have been cash flow positive.

In 2018, Spotify had a cash flow from operations of €344 million, compared to Operating income which was at negative €43 million. This discrepancy can be explained by: i) Spotify has roughly €120 million in non-cash costs, such as depreciation & amortization, and share-based compensations. ii) Spotify has a positive cash flow from the working capital, trade, and other liabilities, deferred revenues, and provisions are increasing faster than the trade receivables and other assets. The positive working capital changes are due to that Spotify pays their supplier roughly three months after the cost arises. In 2018, working capital changes lead to a positive cash flow effect of €251 million. iii) other items affected the cash flow positively with €16 millions.

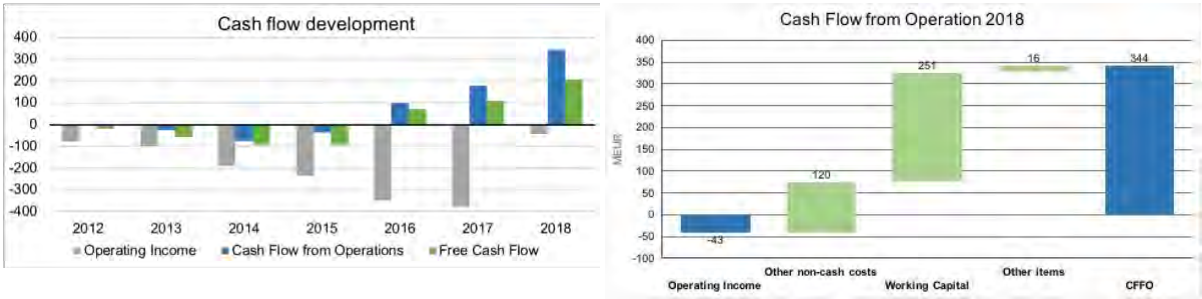


Figure 4.16: *a) differences between Operating income, cash flow from operations and free cash flow for Spotify from 2012 to 2018, b) from Operating income to cash flow from operations for 2018 for Spotify.*

[38] Spotify define free cash flow as cash flow from operating activities + purchases of property and equipment + change in restricted cash.

Chapter 5

5. Valuation analysis

5.1 Spotify

This section will focus on answering the question: what's the value of Spotify based on a user valuation approach. First, an appropriate E(CLV) equations will be suggested for the different types of user Spotify has, followed by the calculation of E(CLV) for the different types of user Spotify has by suggesting appropriate values and distributions for the input variables. Thereafter, present value of current users, new and future users, and corporate expenses will be calculated. From this, we derived the value from operations, and adjust non-operational balance sheet items in order to calculate the suggestive market value and share price of the company.

5.1.1 E(CLV) Equations

Current Premium Subscriber Equation

Given that Spotify pays the royalty cost and other cost roughly three months after the cost incurred. This thesis proposes that the following equation, which is an extension of equation (2.29) represent the future value of an existing premium subscriber:

$$\begin{aligned} E(CLV) = {} & \frac{ARPU_1 * (1 - churn_1)}{1 + r} + .. + \frac{ARPU_n * (1 - churn_n)^n}{(1 + r)^n} \\ & - \frac{CPU_{-2} * x_{-2}}{1 + r} - \frac{CPU_{-1} * x_{-1}}{(1 + r)^2} - \frac{CPU_0}{(1 + r)^3} \\ & - \frac{CPU_1 * (1 - churn_1)}{(1 + r)^4} - \cdots \\ & - \frac{CPU_n * (1 - churn_n)^n}{(1 + r)^{n+3}} \quad where, \end{aligned} \tag{5.1}$$

$x_n = \ probability\ of\ current\ user\ existed\ at\ month\ n$
$CPU_n = \ cost\ per\ user\ at\ n, including\ CORPU\ and$
$any\ other\ subscriber\ related\ cost\ at\ month\ n$
$r = \ monthly\ discount\ rate$

If one assumes that n goes to infinity, and that all the ARPU, CPU and churn will be constant over time, one gets the following equation:

$$E(CLV) = \frac{ARPU * (1 - churn)}{r + churn} - \frac{1}{(1+r)^2} * \frac{CPU}{r + churn} - \frac{CPU * x_{-2}}{1 + r} - \frac{CPU * x_{-1}}{(1+r)^2} \tag{5.2}$$

New Premium Subscriber Equation

This thesis proposes that the following equation as an extension of equation (2.33), which delays the payment cost by 3 months, in order to calculate future value of a new Premium subscriber:

$$\begin{aligned} E(CLV) = -CAC + \ ARPU_0 \\ + \frac{ARPU_1 * (1 - churn_1)}{1 + r} + \ldots + \frac{ARPU_n * (1 - churn_n)^n}{(1+r)^n} \\ - \frac{CPU_0}{(1+r)^3} - \frac{CPU_1 * (1 - churn_1)}{(1+r)^3} - \ldots \\ - \frac{CPU_n * (1 - churn_n)^n}{(1+r)^{n+3}} \end{aligned} \tag{5.3}$$

Assuming that n goes to infinity and that all the ARPU, CPU and churn will be constant over time, one gets the following equation:

$$E(CLV) = -CAC + \frac{ARPU * (1 + r)}{r + churn} - \frac{1}{(1+r)^2} * \frac{CPU}{r + churn} \tag{5.4}$$

For future added users equation (5.4) can be adjusted by a factor of 1/(1+r)^g.

Current Ad-supported user Equation

Over 50% of a MAU cohort convert to premium from being an Ad-supported user. Therefore, one can say that an ad-supported subscriber has three options: churning out, staying in steady state, upgrades to premium[39].

[39] One could argue that a premium subscriber has the similar options. However, since Spotify has not mentioned anything about premium users going to the ad-supported service this has been excluded in the user path suggestions for premium users.

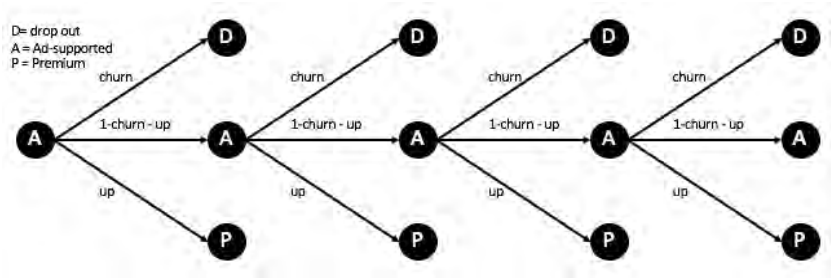


Figure 5.1: *Illustration over the user path for a ad-supported user for Spotify.*

Hence, this proposes the following equation which is an extension of equation (2.29) represent the future value of an existing ad-supported uses:

$$
\begin{aligned}
&E(CLV) \\
&= \frac{ADRPU_1 * (1 - churn_1 - up_1)}{1 + r} + .. + \frac{ADRPU_n * (1 - churn_n - up_n)^n}{(1 + r)^n} \\
&- \frac{ADCPU_{-2} * x_{-2}}{1 + r} - \frac{ADCPU_{-1} * x_{-1}}{(1 + r)^2} - \frac{ADCPU_0}{(1 + r)^3} \\
&- \frac{ADCPU_1 * (1 - churn_1 - up_1)}{(1 + r)^4} - \cdots - \frac{ADCPU_n * (1 - churn_n - up_n)^n}{(1 + r)^{n+3}} \\
&+ \frac{PVPU_1 * up_1}{1 + r} + \frac{PVPU_2 * up_2 * (1 - churn_2 - up_2)}{(1 + r)^2} + \cdots \\
&+ \frac{PVPU_n * up_n * (1 - churn_n - up_n)^{n-1}}{(1 + r)^n} \quad where,
\end{aligned}
\tag{5.5}
$$

$ADRPU_n = Ad\ revenue\ per\ user\ at\ month\ n$
$ADCPU_n = cost\ per\ user\ at\ n, including\ CORPU\ and$
$any\ other\ subscriber\ related\ cost\ at\ month\ n$
$up_n = Probability\ that\ user\ upgrade\ to\ premium\ at\ month\ n$
$PVPU_n = Preium\ Value\ per\ user\ if\ upgrating\ at\ month\ n$
$= Equation\ (VC) excluding\ CAC$

Assuming that n goes to infinity and that all the ADRPU, ADCPU, churn, up, and PVPU will be constant over time, one gets the following equation:

$$
\begin{aligned}
E(CLV) = &\frac{ADRPU * (1 - churn - up)}{r + churn + up} - \frac{1}{(1 + r)^2} * \frac{ADCPU}{r + churn + up} \\
&- \frac{ADCPU_{-2} * x_{-2}}{1 + r} - \frac{ADCPU_{-1} * x_{-1}}{(1 + r)^2} \\
&+ \frac{PVPU * up}{r + churn + up} \quad where,
\end{aligned}
\tag{5.6}
$$

$$
PVPU = \frac{ARPU * (1 + r)}{r + churn_{preium}} - \frac{1}{(1 + r)^2} * \frac{CPU}{r + churn_{preium}}
$$

New Ad-supported user Equation

$$
\begin{aligned}
&E(CLV) \\
&= -CAC + ADRPU_0 \\
&+ \frac{ARPU_1 * (1 - churn_1 - up_1)}{1 + r} + \ldots + \frac{ARPU_n * (1 - churn_n - up_1)^n}{(1 + r)^n} \\
&- \frac{ADCPU_0}{(1 + r)^3} - \frac{ADCPU_1 * (1 - churn_1 - up_1)}{(1 + r)^3} - \cdots \\
&- \frac{ADCPU_n * (1 - churn_n - up_n)^n}{(1 + r)^{n+3}} + \frac{PVPU_1 * up_1}{1 + r} \\
&+ \frac{PVPU_2 * up_2 * (1 - churn_2 - up_2)}{(1 + r)^2} + \cdots \\
&+ \frac{PVPU_n * up_n * (1 - churn_n - up_n)^{n-1}}{(1 + r)^n}
\end{aligned}
\tag{5.7}
$$

Assuming that n goes to infinity and that all the ADRPU, ADCPU, churn, up, and PVPU will be constant over time, one gets the following equation:

$$
\begin{aligned}
E(CLV) = -CAC + \frac{ADRPU * (1 + r)}{r + churn + up} - \frac{1}{(1 + r)^2} * \frac{CPU}{r + churn + up} \\
+ \frac{PVPU * up}{r + churn + up} \; where, \\
PVPU = \frac{ARPU * (1 + r)}{r + churn_{preium}} - \frac{1}{(1 + r)^2} * \frac{CPU}{r + churn_{preium}}
\end{aligned}
\tag{5.8}
$$

For future added users, which started using the service in beginning of period g, equation (5.8) can be adjusted by 1/(1+r)^g.

5.1.2 Estimation of Customer lifetime value

This section will calculate the E(CLV) for the 4 types of users identified at section 5.1.1 E(CLV) Equations and their E(CLV) equations (5.2), (5.4), (5.6), and (5.8).

The following input values and distributions were used as variables for the functions:

Category	Notation	Input Data
Premium	ARPU[40]	N (4.8, 1)
Premium	Gross Margin[41]	Unif (22%, 35%)
Premium	Churn current users[42]	N(3%,0.5%, -0.7)
Premium	Churn new users[43]	N(5%,0.5%, -0.7)
Premium	Current user existed 1/2 months ago[44]	95%, 90%
General	CAC[45]	€4.5
General	r[46]	0.72%
Ad	ADRPU[47]	N(0.4,0.1)
Ad	Gross Margin[48]	Unif (18%, 25%)
Ad	Churn user[49]	N(1%,0.2%, -0.4)
Ad	Upgrade to premium[50]	N(2%,0.45%, 0.4)
Ad	Current user existed 1/2 months ago[51]	99%, 98%

Table 5.1: *Input values and input distributions into equations (5.2), (5.4), (5.6), and (5.8)*

From this one can conclude that median E(CLV) for current premium subscribers is €27.3 and the most common outcome is between €22.3 and €24.6. For new premium subscribers the median E(CLV) is €20.6 and the most common outcome is between €19.2 and €20.4 (see *Figure 5.2*).

[40] Based on Q42018 ARPU for premium users, although Spotify said in Q42018 conference call that the expect ARPU to go down 5% by 2019, this Thesis assumes the long term mean value for ARPU is around current level, with a deviation of 1 Euro.
[41] Spotify have a long-term gross margin target of 30-35%, in Q4 2018 it was at 27%. However, in their guidance for 2019 they said it could be as low as 22%. Uniform distribution over 22% and 35%.
[42] As can see on Figure 4.4 the overall premium churn has gone down over time, and that churn is higher for new users than old users, hence this thesis suggest that the long-term churn for current users should be lower than the average. Normal Distribution with mean 3.5%, variance 0.5%, skewness -0.7.
[43] As can see on Figure 4.4 the churn for new customer is higher than the average, with the initial months having churn at roughly 15% m/m. However, after already 7 months the churn goes down to 3% for a cohort. Normal Distribution with mean 5%, variance 1%, skewness -0.7.
[44] Estimate based on churn levels and user growth.
[45] Based on Figure 4.10 b.
[46] Based on a yearly discount rate of 9%, converted into monthly by, (1+0.09)^(1/12)-1.
[47] Based on Figure 4.5. Normal Distribution with mean at €0.4 and variance at €0.1
[48] On Q4 it was at 22%, gross margin for ad-revenue has been significant in past. Uniform distribution over 22% and 35%.
[49] No data available for ad-supported users churn. Assumes it lower than for Premium and that it is the same for new and current users. Normal Distribution with mean 1%, variance 0.2%, skewness -0.4.
[50] Estimated that there is a 2% probability that an ad-users convert to premium each period. Normal Distribution with mean 2%, variance 0.5%, skewness 0.4.
[51] Rough Estimate.

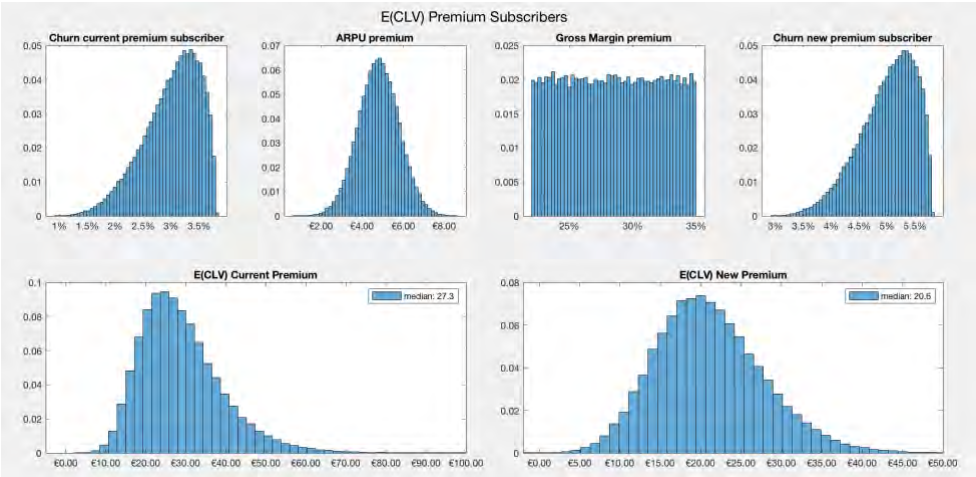
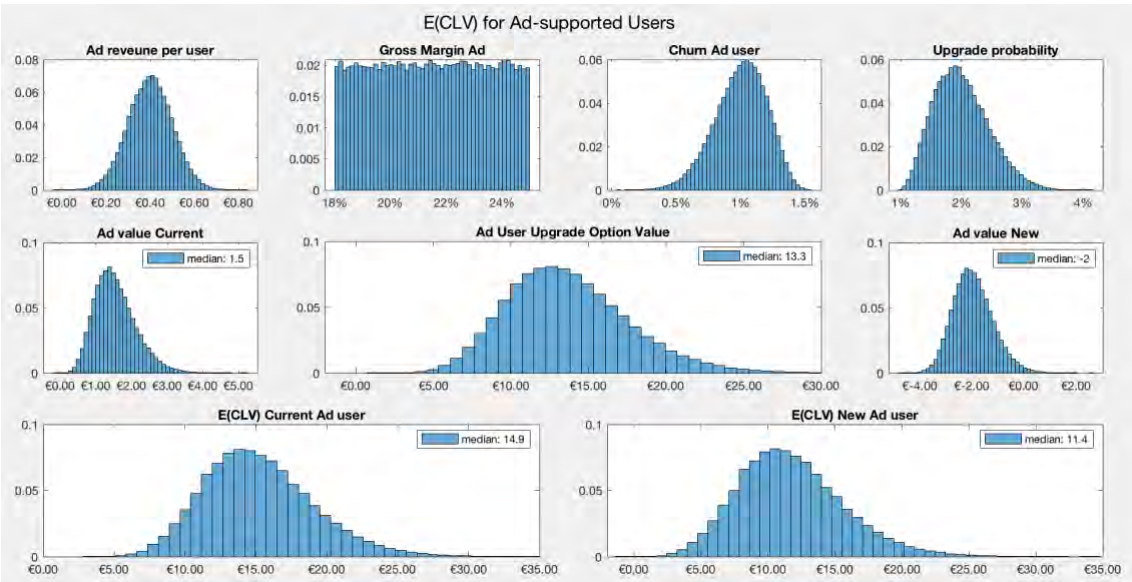


Figure 5.2: *E(CLV) distribution for current and new premium subscribers for Spotify*[52]

For current ad-supported users the median E(CLV) is €14.9 and the most common outcome is between €13.4 and €14.2, and for new ad-supported users the expected E(CLV) is €11.4 and the most common outcome is between €10.2 and €10.9. What is primarily driving this value is the so-called option value for a user to convert to a premium subscriber. This option value expected value is €13.3, and the most common outcome is in between €12.3 and €13.0. The expected value from the ad business stand alone is low, €1.5 for current users and €-2.0. for new users (see *Figure 5.3*).



[52] Based on equations (5.2), and (5.4), and input data from Table 5.1.

Figure 5.3: *E(CLV) distribution for current and new ad-supported users for Spotify*[53]

5.1.3 Value of Current Subscribers

The total value of current subscribers and users can be done by multiplying the user base with the E(CLV) equations *(5.2),*and *(5.6),* the estimated E(CLV) distribution for current premium subscribers can be seen at *Figure 5.2*, and the estimated E(CLV) distribution for the current ad-supported users can be seen at *Figure 5.3*. By end of 2018 the total premium subscribers were 96 million and the number of Ad-supported MAU's were 116 million.

The expected present value for current premium subscribers is €2.62 billion and the most common outcome is between €2.11and €2.34 billion. The expected present value for current ad-supported users is €1.72 billion and the most common outcome is between €1.64 and €1.73 billion. This gives the expected present value of all current subscribers and users €4.39 billion and the most common outcome is between €4.00 and €4.28 (see *Figure 5.4*).

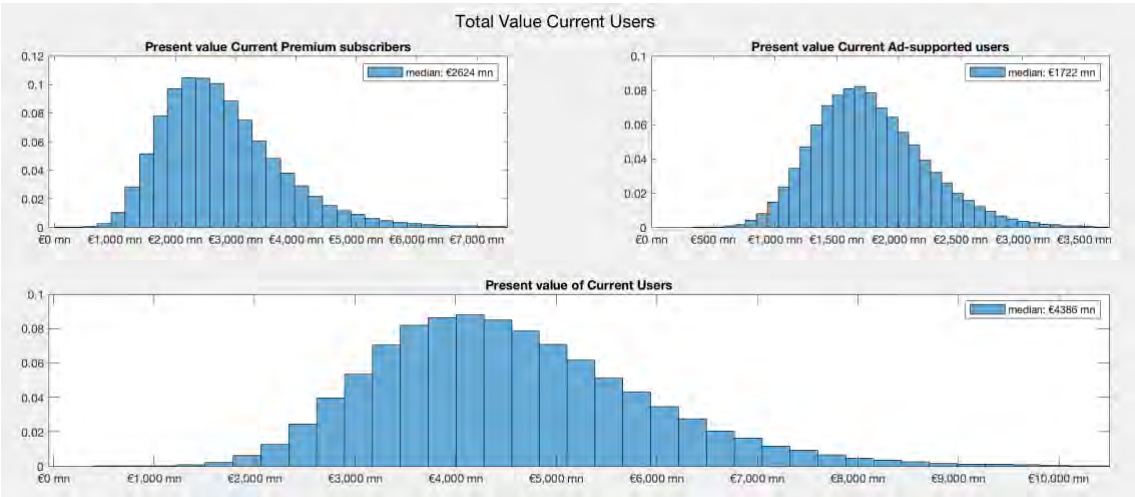


Figure 5.4: *Proposed present value distribution for all current users for Spotify.*

5.1.4 Value of Future Subscribers

In order to estimate the present value of future users, one has to estimate the number of new users Spotify is adding in the future, estimate how many of these new users will

[53] Based on equations (5.6) and (5.8), and input data from Table 5.1

start as premium subscribers and how many as an ad-supported user, discount it to the present, and multiply it with the E(CLV) equations *(5.4),* and *(5.8).*

There exist multiple ways to estimate the future growth. One simple way of estimating the future customer additions is to assume that the customer additions will be constant for infinity going forward.

From this one can calculate the present number of future user additions by applying the following equation:

$$PVAllnewU = \frac{newU * (1 + r)}{r} \tag{5.9}$$

For Q4 2018 this thesis estimated that Spotify added roughly 13 million new users per month (see *Table B.2*). If one applies this number into equation (5.9) one gets the number 1818 million. The interpretation of this number is that adding 13 million users every month going forward is the equivalent of adding 1.8 billion users today.

Another equation one could use in case one expects that the user additions will follow an "S" curve is by applying a Sigmoid function, for example:

$$newU(t) = \frac{K * newU_o * e^{s*n}}{K + newU_o * (e^{s*n} - 1)} \; where, \tag{5.10}$$

$newU_o = gross\ new\ User\ addition\ at\ month\ 0,$
$K = Uppler\ capasity\ of\ monthly\ user\ addiitons$
$s = steapness\ of\ the\ curve\ initially$
$n = the\ time$

Figure 5.5 and *Table 5.2* displays the effect *K* and *s* has on the discounted present number of future user additions.

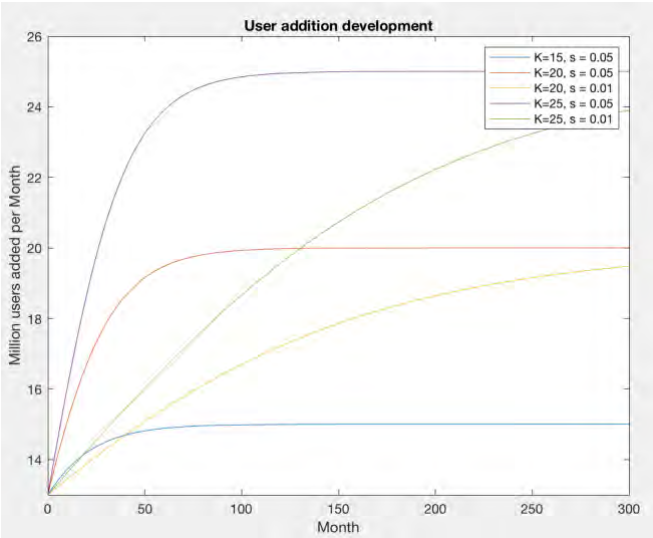


Figure 5.5: *Change of parameter K and s, and its effect on the curve for the Smigot function* (5.10*)*

$newU_o$	K	s = steapness	r = discount rate	PVAllnewU
13	15	0.05	0.72%	2089 million
13	20	0.05	0.72%	2685 million
13	20	0.01	0.72%	2358 million
13	25	0.05	0.72%	3262 million
13	25	0.01	0.72%	2666 million

Table 5.2: *Change of parameter K and s and its effect of the discounted value of future users.*

One constraint these two methods do not take into consideration is that there is an upper limit of the amount of users Spotify can add to their service. One loose constraint is that Spotify can't add more users to their service than there are people in the world. One could narrow this number down by doing proposition such as Spotify won't be able to penetrate the Chinese population[54], Spotify will not have 100% market share, etc.

Furthermore, this thesis suggests that one has to also think about the reasonability of the output numbers from these user addition functions. Is it reasonable to assume that the future users added is equivalent to Spotify adding 3.3 billion users today (see *Table 5.2*), ~43% of the world's population? This thesis would suggest that that is not reasonable.

[54] Given their deal with Tencent Music

Hence, an alternative proposed here is to introduce a distribution that displays the present user addition number, which is the equivalent of discounting the future user additions.

The following input values and distributions were used as variables for the functions:

Category	Notation	Input Data
General	Future user discounted to present[55]	N (1000[56],300, 0.5)
General	% user to direct to premium[57]	N (10%,3%, 0.7)

Table 5.3: Distribution of the *discounted value of future users added for Spotify and its segmentation between ad-supported users and premium users.*

From this one can conclude that the median present value of future users signing up directly to premium is €1.87 billion, and the most common outcome is between €1.26 and €1.55 billion. The median present value for all future ad-supported users is €9.72 billion, and the most common outcome is between €7.4 and €8.6 billion (see *Figure 5.6*).

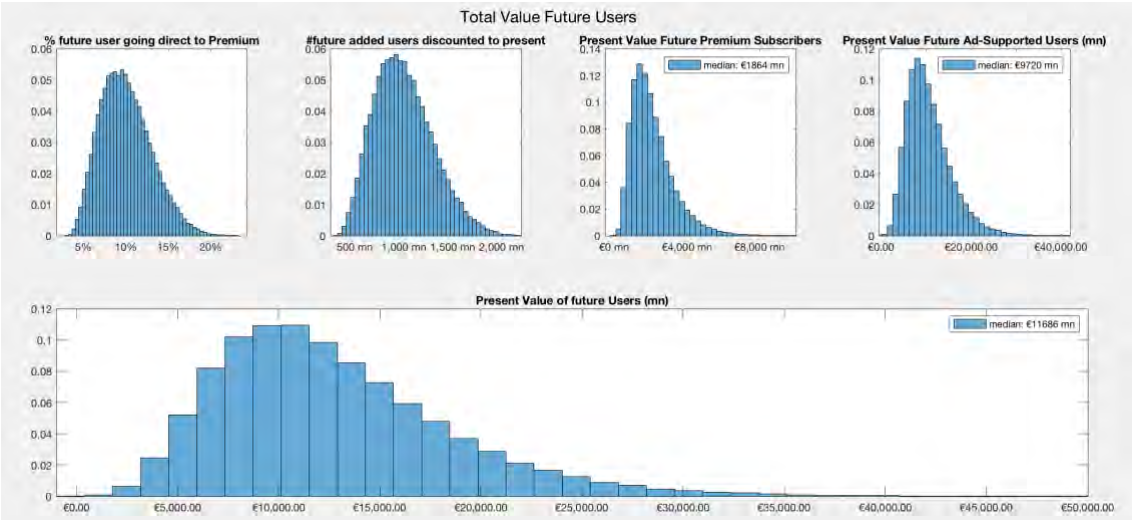


Figure 5.6: *Present value of future users added for Spotify,*

5.1.4 Value of future Corporate Cost

In 2018 the total R&D costs were €283 million, and the G&A costs were €493 million.

[55] Estimation that the future users discounted figure is equivalent to 4 times the number of users today.
[56] This is a fairly optimistic number given that the current global subscription music market is 250 million.
[57] A bit more optimistic view than *Figure A.2*, which Spotify disclosed during investor day presentation.

Category	Notation	Input Data
G&A	G&A Growth[58]	N (1%, 1%, 0.5)
R&D	R&D Growth[59]	N (1.5%, 1%, 0.5)

Table 5.4: *Growth development for R&D and G&A costs for Spotify.*

Assuming indefinite growth based on *Table 5.4* one gets that the median present value of future corporate expenses is €10.3 billion, and the most common outcome is between €9.9 and €10.2 billion (see *Figure 5.7*).

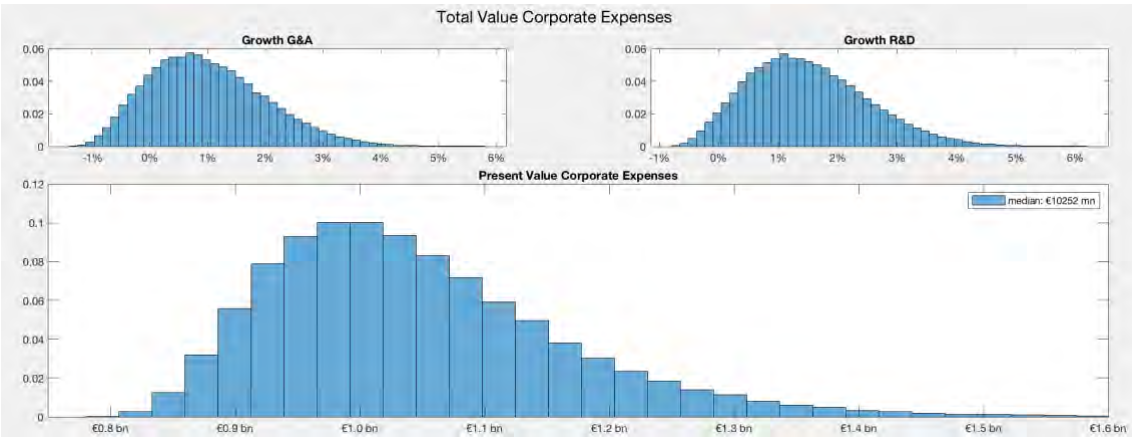


Figure 5.7: *Present value of future G&A and R&D costs for Spotify.*

5.1.5 Value of Equity and Indicative Share Price.

Table 5.5 show the adjustments made in order to calculate value of equity and share price.

Component	Value
Operational Value	PV of Current Subscribers + PV of future subscribers – PV corporate Expenses
+Cash	€891 mn
+short-term investment	€915 mn
+long-term investments	€1 646 mn
-debt	€0 mn
=Value of Equity	
/ Number of Shares	177.15 mn[60]
*EUR/USD	1.13
Share Price	

Table 5.5: *Adjustments made to calculate the Value of equity and Share price value from the Operational value for Spotify.*

[58] The following is based on an annual basis, not monthly, the discount rate has been adjusted to 9%.
[59] The following is based on an annual basis, not monthly, the discount rate has been adjusted to 9%.
[60] This excludes any share options Spotify has given out. In one takes into account future dilution the total numbers of shares would be 181.2 mn. Bas

From this one gets that the median Value of equity is €9.28 billion, and the most common outcome is between €7.52 and €8.98 billion.

The median Share price is $59.5, and the most common outcome is between $48 and $57.3. The share price distribution has a standard deviation of $38.8 (see *Figure 5.8*). This can be compared to the current share price, which is traded around $135. The share price distribution suggests that there is a 5.4% probability that the present value of future cash flows per share will be above $135. Hence, this thesis suggests that there is a high probability that Spotify's share price is overvalued.

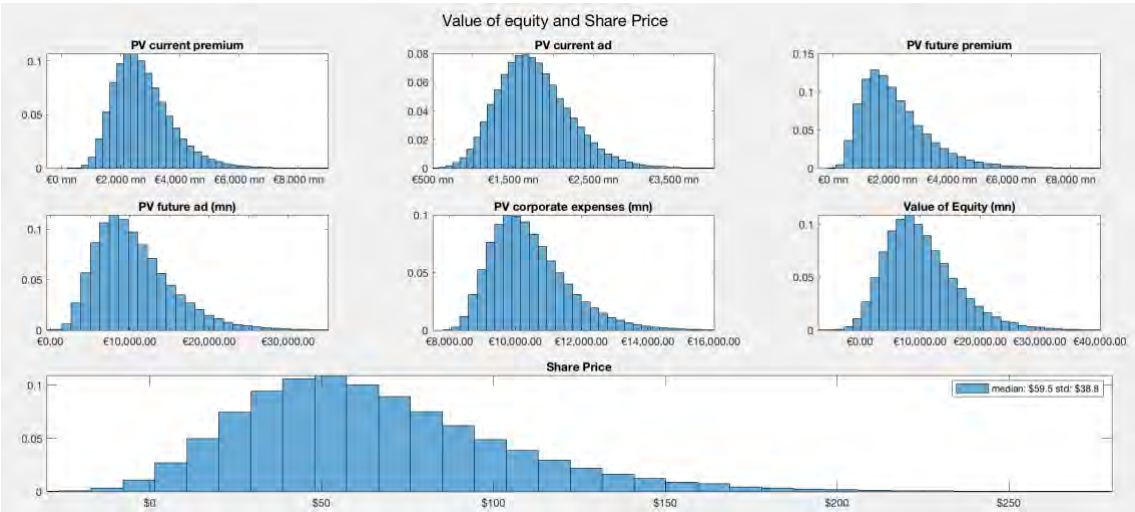


Figure 5.8: *Value of Equity and Share Price distribution and the underlying value drivers for Spotify.*

5.2 Netflix

This section will focus on answering the question: what's the value of Netflix based on a user valuation approach. The section clarifies ways to view content related financial items for Netlix and how the inclusion of these data in a user valuation approach. The following sections will follow the same structure as 5.1 Spotify.

5.1.1 Content

Netflix's cashflow is quite different than Spotify's (see *Figure 3.19* and Figure 4.16). Instead of paying a share of revenue to IP provides, Netflix is investing in IP rights and years-long licensing rights upfront, and 75% to 80% of its cost of revenue (see Figure 3.6) is associated to amortization of content assets and is a function of the historical content assets investments made (see Figure 3.7). Given this one can question whether the content related cash flows should be taken into account when calculating E(CLV) or whether they should instead be viewed as corporate related costs.

If one considers the content investments and cost as a per user-related costs, they would then need to be considered into an E(CLV) equation. One question one needs to answer then is, at what period should the cash flow related to content costs that are associated with the current period be measured? As one can see in Figure 3.7, the amortization of content is roughly lagging 18 months of the content additions made. One could, therefore, suggest that the content costs related to the user revenue today should have happened 18 months in the past. Given this, one could suggest that content associated costs and investments cannot be measured on a unit economics level and should, therefore, be viewed as corporate related items.

However, viewing content costs and investments as corporate related items instead of a direct user cost might seem a bit odd since it is the core of why a user is using the product. What would happen stopped investing in new content, would it have a direct impact on the current user base behavior? This thesis argues that the content investments and costs are to a certain degree directly related to the users and its development. Therefore, this thesis suggests that a certain percentage of the content

investments made should be taken into account when calculating the E(CLV) and a certain amount should be viewed as corporate related cash flow affecting item.

Furthermore, in order to evaluate the value of Netflix different streaming segments one has to segment the content assets into the two groups. Netflix only presents the segmented amortization of content. An approximation over the segmented content additions can be seen in *Table B.3*.

5.1.2 E(CLV) Equation

Current Subscriber Equation

$$E(CLV) = \frac{(ARPU_1 - OCoRPU_1 - CAAPU_1) * (1 - churn_1)}{1 + r} + .. + \frac{(ARPU_n - OCoRPU_n - CAAPU_n) * (1 - churn_n)^n}{(1 + r)^n} \quad (5.11)$$

$OCoRPU_n = \ other\ Cost\ of\ Revenue\ per\ users\ at\ month\ n$
$r = \ monthly\ discount\ rate$
$CAAPU_n = \ content\ additions\ \ attibuted\ per\ user\ at\ month\ n$

If one assumes that n goes to infinity and that all the ARPU, OCoRPU, CAAPU and churn will be constant over time, one gets the following equation:

$$E(CLV) = \frac{(ARPU - OCoRPU - CAAPU) * (1 - churn)}{r + churn} \quad (5.12)$$

Future Subscriber Equation

$$E(CLV) = (ARPU_0 - OCoRPU_0 - CAAPU_0) + .. + \frac{(ARPU_n - OCoRPU_n - CAAPU_n) * (1 - churn_n)^n}{(1 + r)^n} - CAC \quad (5.13)$$

If one assumes that n goes to infinity and that all the ARPU, OCoRPU, CAAPU and churn will be constant over time, one gets the following equation:

$$E(CLV) = \frac{(ARPU - OCoRPU - CAAPU) * (1 + r)}{r + churn} \quad (5.14)$$

5.1.3 Estimation of Customer lifetime value

Category	Description	Notation	Input Data
Streaming Content	% Content Investments viewed as direct costs per user	ContentDistribution	Unif (0%, 50%)
Domestic DVD	ARPU for Domestic DVD	ARPUDD	N (10.2, 0.5)
Domestic DVD	Monthly churn for Domestic DVD	churnDD[61]	N(1.35%, 0.3%, -0.7)
Domestic DVD	Cost of Revenue per User % of ARPU	CORPUDDP[62]	N(35%, 3%, -0.5)
Domestic Streaming	ARPU for Domestic Streaming	ARPUDS	N($12.5, $1, 0.3)
Domestic Streaming	Monthly churn for current subscribers	churnDSC	N(1.5%, 0.3%, -0.7)
Domestic Streaming	Monthly churn for new subscribers	churnDSN	N(3%, 0.3%, -0.7)
Domestic Streaming	Content Cost per User % of ARPU assuming ContentDistribution =100%	CCPUDS100	N(45%, 5%, -0.5)
Domestic Streaming	Content Additions attributed per User	CCPUDS	CCPUDS100* ContentDistribution* ARPUDS
Domestic Streaming	Other cost of revenue per User % of ARPU	OCORPUDSP	N(14%, 2%, -0.7)
Domestic Streaming	CAC	CACDS	N($50, $5, 0.5)
International Streaming	ARPU for International Streaming	ARPUIS	N($9.5, $1, 0.5)
International Streaming	Monthly churn for current subscribers	churnISC	N(2%, 0.5%, -0.7)
International Streaming	Monthly churn for new subscribers	churnISN	N(3.5%, 0.5%, -0.7)
International Streaming	Content Cost per User % of ARPU assuming ContentDistribution =100%	CCPUIS100	N(60%, 10%, -0.5)
International Streaming	Content Additions attributed per User	CCPUIS	CCPUIS100* ContentDistribution* ARPUIS
International Streaming	Other cost of revenue per User % of ARPU	OCORPUISP	N(18%, 2%, -0.7)
International Streaming	CAC	CACIS	N($25, $5, 0.5)

Table 5.6: *Input values and distributions used in order to calculate E(CLV) for current and new subscribers within the different business segments.*

[61] Based on that the that the total user base declines by 4% every quarter and the assumption that the business segment does get any new customers.
[62] In Q4 2018 the cost of revenue as percentage of revenue were 40%. However, over time this margin has been improved.

Domestic DVD

Given the input data from the *Table 5.6* the median E(CLV) for the domestic streaming segment is $311, with a standard deviation of $61.7, and the most common outcome is between $278 and $291 (see *Figure 5.9*)[63].

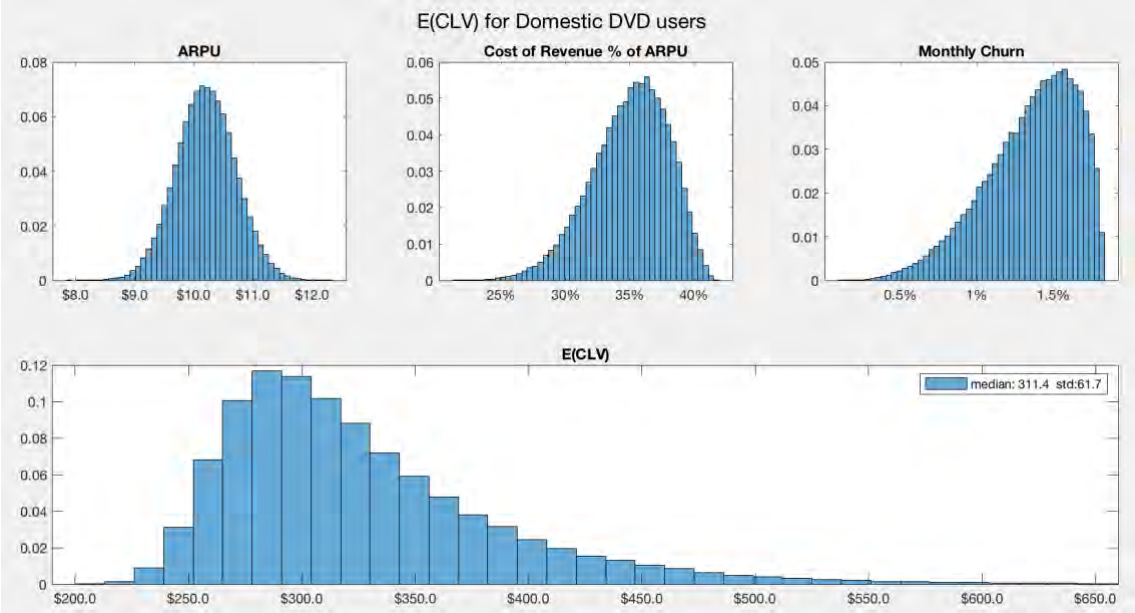


Figure 5.9: *E(CLV) distribution for Domestic DVD subscribers for Netflix*

Domestic Streaming

For the current users within the Domestic Streaming Segment the median E(CLV) is $412, the standard deviation is $87, and the most common outcome is between $389 and $407. For new users within the domestic streaming segment the median E(CLV) is $201, the standard deviation is $52.1, and the most common outcome is between $189 and $201 (see *Figure 5.10*).

[63] This thesis will assume that there are zero new customers within the business segment, this is not 100% true but given that they do not spend any marketing on the business segment the E(CLV) equation for new and current customers are relative similar.

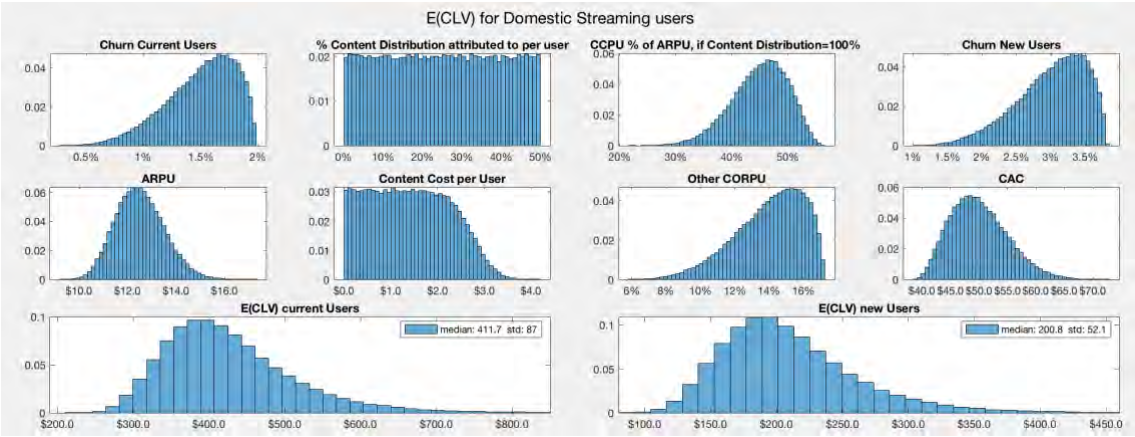


Figure 5.10: *E(CLV) distribution for the Domestic Streaming segment for Netflix and it's underlying assumptions.*

International Streaming

For the current users within the International Streaming Segment the median E(CLV) is $191, the standard deviation is $53.1, and the most common outcome is between $177 and $189. For new users within the domestic streaming segment the median E(CLV) is $126, the standard deviation is $34.9, and the most common outcome is between $115 and $122 (see *Figure 5.11*).

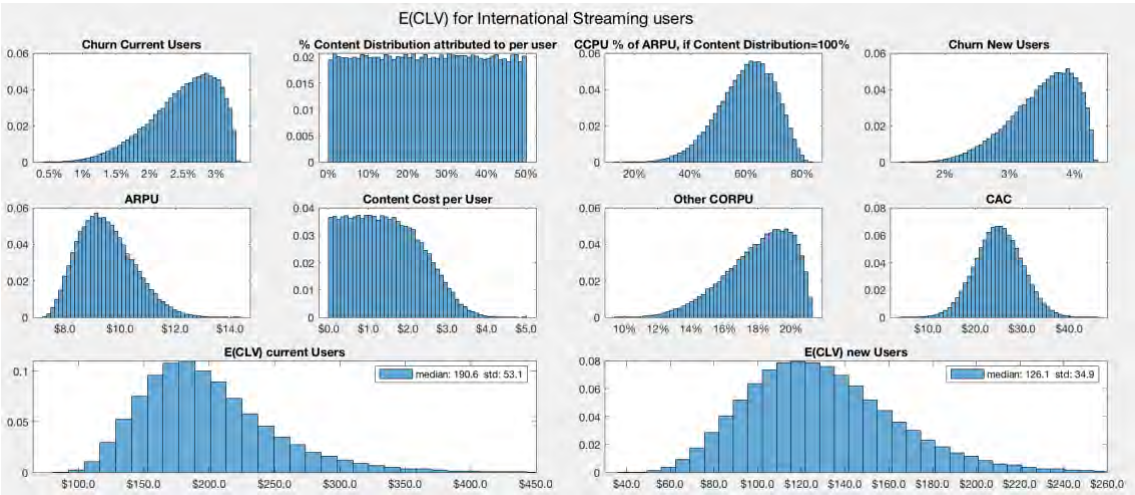


Figure 5.11: *E(CLV) distribution for the International Streaming segment for Netflix and it's underlying assumptions.*

5.2.4 Value of Current Subscribers

By multiplying the E(CLV) distributions for each business segment with their subscription base one gets the total present value of current subscribers. From this, one gets that the estimated median present value of current Domestic DVD subscribers is $842 million, with a standard deviation of $168 million, and the most common outcome is $743 to $777 million. For the domestic streaming segment, the estimated median present value for the current subscribers is $24.1 billion, with a standard deviation of $5.1 billion, and the most common outcome is $21.9 to $23.0 billion. Lastly for the international streaming segment, the estimated median present value for the current subscribers is $15.4 billion, with a standard deviation of $4.3 billion, and the most common outcome is $14.0 to $14.9 billion. Putting this together one gets that the median E(CLV) for all current users is $ 41.4 billion, with a standard deviation of $7.3 billion, and the most common outcome is $39.2 to $40.6 billion.

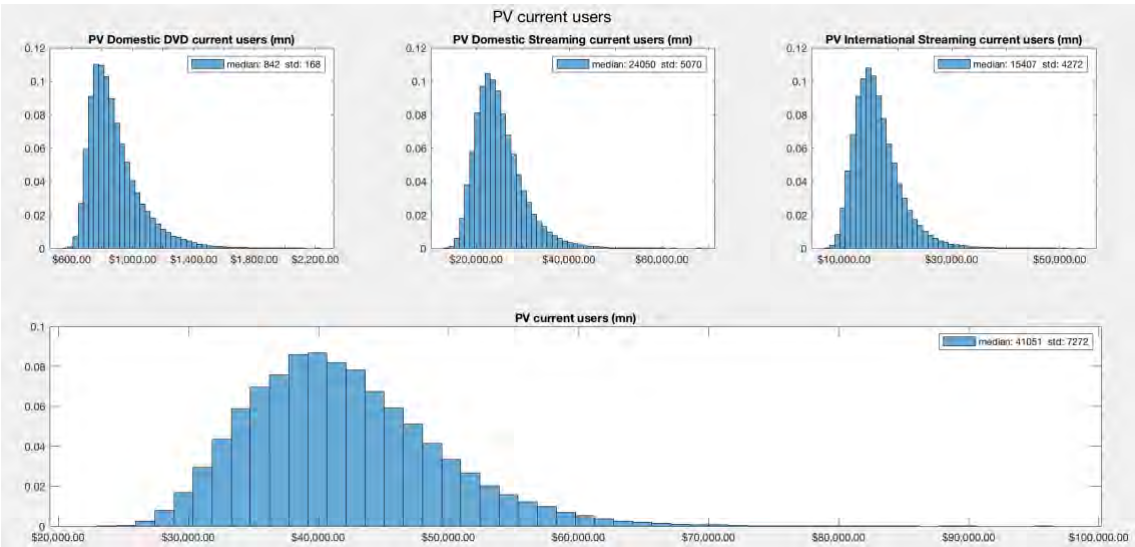


Figure 5.12: *Proposed present value distribution for all current users for Netflix.*

5.2.4 Value of Future Subscribers

Applying the same reasoning as the prior section 5.1.4 Value of Future Subscribers, this thesis suggests *Table 5.7* as base of the number of future users signed up discounted to the present.

Category	Description	Notation	Input Data
Domestic Streaming	Future users discounted to present	FUDPDS	N (50,20, 0.5)
International Streaming	Future users discounted to present	FUDPIS	N (1000[64],300, 0.7)

Table 5.7: Distribution of the *discounted value of future users added for Netflix for its business segment domestic streaming and international streaming.*

From this, one gets that the median present value for future users within the domestic streaming segment is $9.7 billion, with a standard deviation of $5.1, and the most common outcome is between $7.7 and $8.8 billion. For the International streaming segment, the median present value for future users is $119.8 billion, with a standard deviation of $53.4 billion, and the most common outcome is between $94.2 and $104.8 billion.

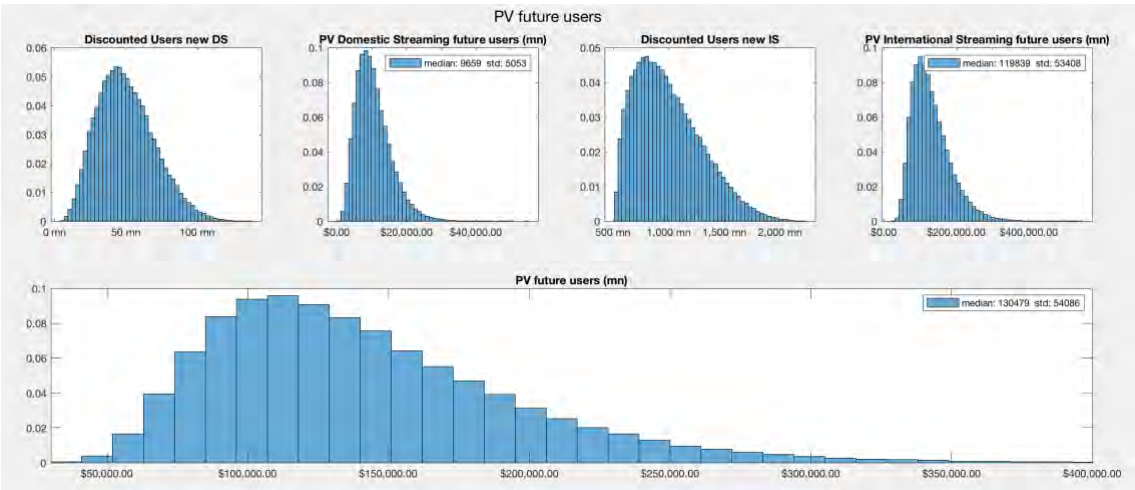


Figure 5.13: *Present value of future users added for Netflix.*

5.2.4 Value of future Corporate cash outflows

By end of 2018 Netflix had a G&A run rate cost of $702 million annually, and a R&D run rate cost of $1327 million. These numbers along with the one presented in *Table 5.8*, and the same methodology as in 5.1.4 Value of future Corporate Cost were used to calculate the present value of the future corporate cash outflow.

[64] Given that Spotify and Netflix measured number of subscribers differently, we have set a lower value of potential users added for Netflix than for Spotify

Category	Description	Notation	Input Data
Content Additions	Content Addition Base number	CABase	(1- ContentDistribution)*13000
Content Additions	Content Growth	CAgrowth	N (0%,1%, 0.5)
G&A	G&A growth	GAgrowth	N (1%, 0.5%, 0.5)
R&D	R&D growth	RDgrowth	N (1.5%, 0.5%, 0.5)

Table 5.8: *Content Addition initial input value and growth development for content addition, R&D and G&A costs for Netflix.*

Based on valued from *Table 5.8* one gets that the median present value of future corporate expenses is €135 billion, with a standard deviation of $25.9, and the most common outcome is between $138 and $144 billion. Majority of this is related to content additions, which had a median value of $108 billion, standard deviation of $25.8 billion, and the most common outcome is between $109 and $138 billion (see *Figure 5.14*).

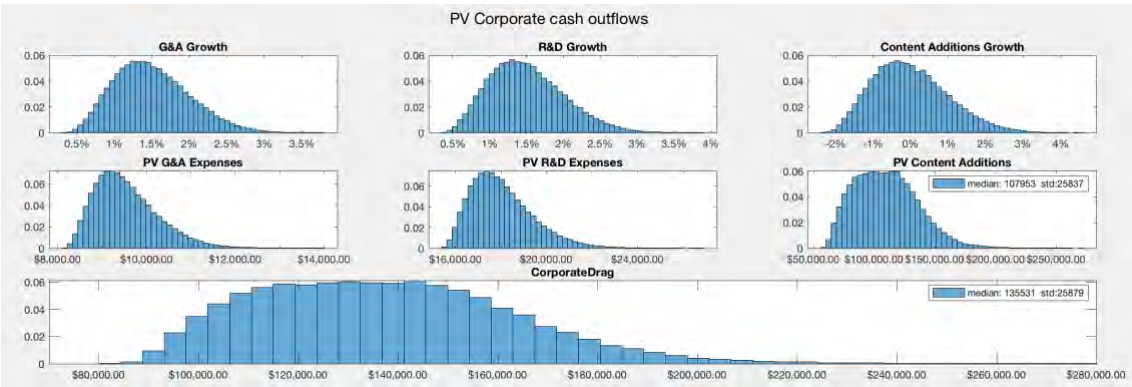


Figure 5.14: *Present value of future G&A and R&D costs and content additions for Netflix.*

5.1.5 Value of Equity and Indicative Share Price.

Table 5.9 shows the adjustments made in order to calculate value of equity and share price.

Component	Value
Operational Value	PV of Current Subscribers + PV of future subscribers – PV corporate Expenses
+Cash	$3 794 mn
-debt	$10 360 mn
=Value of Equity	
/ Number of Shares	436 mn[65]
= Share Price	

Table 5.9: *Adjustments made to calculate the Value of equity and Share price value from the Operational value for Netflix.*

The median Share price is $68, and the most common outcome is between $21 and $52.5. The share price distribution has a standard deviation of $121 (see *Figure 5.15*). This can be compared to the current share price, which is traded around $350. The share price distribution suggests that there is a 3.3% probability that the present value of future cash flows per share will be above $350. Hence, this thesis suggests that there is a high probability that Netflix share price is overvalued.

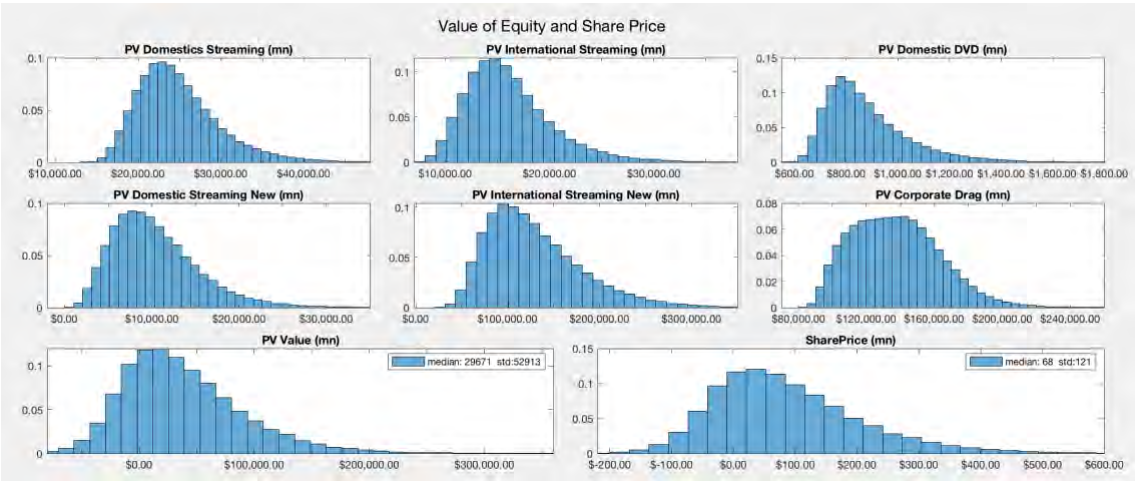


Figure 5.15: *Value of Equity and Share Price distribution and the underlying value drivers for Netflix.*

[65] This excludes any share options Netflix has given out. In one takes into account future dilution the total numbers of shares would be 451 million.

Chapter 6

6. Conclusion and Discussion

The results suggest that there is a very low probability that the future cash flow from Netflix and Spotify will justify their current valuations, hence indicating that both companies are trading above their *fair* value. In this analysis, this value was driven by three main parameters: the user economics for the different types of users, the number of current users and future users added, and corporate costs and cash outflows. Aligned with Professor Damodaran (2017) proposal when valuing user-based companies,

Among these three parameters, one could argue that this analysis has been overly optimistic in terms of future user additions and the corporate costs for the Spotify analysis. The analysis estimates that future user additions are equivalent to adding 1 billion[66] users today. Furthermore, the analysis assumes low future growth for the corporate expenses. Hence, in this analysis, one could suggest that the most significant value deriving opportunity for Spotify lies on the improvement of the user economics and the increase of customer lifetime value per user. The question one then has to ask is, how likely it is that Spotify will be able to increase ARPU? At the same as, i) larger tech companies with stronger cash position and cash generating core businesses are trying to gain a market share within music streaming, and ii) when the future users will come from region with lower purchasing power than their current penetrated market such as India, where the standard premium plan is priced at 17% of the US price. In terms of cost of sales, Spotify is dependent on a few large record labels. Spotify has a long-term goal of a gross margin of 30% to 35%, if one adjusts the gross margin distribution according to this at Table 5.1, the median expected value per share will increase to $76.4. At the same Spotify as they have this goal, Spotify stated that the gross margin for 2019 could be as low as 22%, down 3.7 % points since 2018. One can interpolate this as a considerable uncertainty with where the gross margin will be due to

[66] The mean value, from a distribution with positive skew.

their dependency of few big record labels. In terms to churn rate, Spotify currently has a high churn rate, on average the churn rate is 4.8%, and roughly 50% of new premium subscribers have churned within the first six months. If the churn rate would decrease by 1% point for both new and current premium subscribers the *fair* value per share would then go up to $89, a 50% increase. One question one might ask is what the likelihood of the churn is going down given that the increased competition within the market space.

For Netflix, one can also say that the analysis is optimistic about the future user additions. As well as for the corporate cash outflows, which assume low future growth, where the fixed content additions assume 0% growth on average, based on 2018 figures multiplied with a percentage distribution[67] attributed as corporate related costs. One could argue that given the historical trend, it is doubtful that the content additions will have 0% growth going forward, and that this scenario is only likely if content suppliers start pulling out their content from Netflix to release competitive services (see *Table 3.2*). However, if that would be the case, it would affect Netflix's service significantly, and most likely effects Netflix's unit economics negatively. Netflix currently enjoys good unit economics, and the analysis is estimating that it will slightly improve over time. Whether that will continue or not is worth questioning, given that companies such as Apple and other large media networks are entering the market. Given this, one can imagine that ARPU growth would be more limited for Netflix. In terms of content addition cost attributed per user, one can imagine the media networks will become more incentivized to remove their content from Netflix. This could result in either a higher price from Netflix, affecting negatively the content additions attributed to a user, or removal of content, which would affect content additions attributed to a user positively. In the case of increased competition and reduced premium content on Netflix, one can imagine that this would affect Netflix churn rate negatively, hence decreasing the customer lifetime value from the current estimated levels.

Furthermore, the results suggest that Netflix has a much higher expected customer lifetime value per user than Spotify. At the same time, Netflix has a much larger fixed

[67] Unif(50%,100%)

cost base than Spotify. This is due to their different business models of content acquisitions and payment to suppliers. Netflix purchases fixed-prices licensees, that they can use for a particular region at a certain time period, it is not tied up to the usage or the membership base. Whereas, Spotify pays a royalty fee of a percentage basis of revenue for the content they are displaying. The content costs are taken fully into account when calculating the E(CLV) for Spotify, but not so for Netflix where the majority of the content costs[68] are instead included as a corporate expense.

Hence, one can say that Netflix's business model is more scalable than Spotify's. Every new user added to Netflix will have a more significant impact on Netflix and its valuation compared to Spotify. This goes, of course, the other way around. If Netflix does not succeed in acquiring enough users, there would be more negative impact on Netflix's value than for Spotify, as Netflix's cost base is more fixed. This is something that is showed in the results where the standard deviation for the share price is much higher for Netflix than for Spotify.

Even though churn is one of the most important factors when calculating the E(CLV) for a subscription-based company, neither Netflix nor Spotify is reporting clearly about this figure. Netflix does not comment on this figure any more, and Spotify only reported the churn numbers in their F-1 and since then has commented the churn development to compared to the same quarter the previous year. If both companies would disclose the churn development for different types of customers clearer, it would be easier for investors to evaluate the value of the users and the company. However, the results of the study suggest that it might not be in the best interest to the management.

One weakness in the analysis is that all the E(CLV) calculations, were the assumption that once a user churn they will never re-subscribe. This is not always the case, and making the analysis 100% accurate. However, estimating this might be difficult and only lead to more ambiguity. One method to take into account these scenarios is to measure the re-subscribing user as a new customer and take them into account when estimating the future user additions. Furthermore, the analysis assumes that many of the

[68] Unif(50%,100%)

input variables will be constant over time, and this might not always be the case. As mentioned earlier, the expected churn rate is not expected to be the same over a lifetime, instead it is expected to decrease over time. As introduced in chapter two, people within academia usually suggests that the customer's retention follows a geometric distribution, whereas in reality customer's retention is following a distribution more similar to a lomax distribution. However, one could argue that in a situation where all the other parameters are being constant, and where there is no difference in terms of the cash flow between cost and revenue, this is not really a problem. Since one could interoperate the E(CLV) equation, excluding costs and revenue, as expected discounted customer lifetime, and as long as this value is the same between a lifetime estimation assuming constant churn and one assuming decreasing churn this does not affect the end results.

This thesis has only focused on Netflix's and Spotify's current business models. It has not considered the option value for any potential paradigm shift's in their business model on within their industry, or any potential hidden assets, such as the value of the data. One such paradigm shift for Spotify could be their increased focus on the podcasting business that could lead to new revenue as a publisher and reduce dependency from the big record labels. This could improve their gross margin from the current uniform distribution from 22% to 35%. Thus, one could argue that the results are distributed more negatively than reality.

This thesis has provided two examples where the revenue and costs on a user level, and the cash flow of theses revenues and costs are from different periods, and is therefore proposing that Pfeifer et al.'s (2005) definition of customer lifetime value should be used. At the same time, modeling the cash flow can lead to more complexities, especially when estimating the future value of a current customer, and hence, the valuation of the expected customer life time value based on a revenue and cost level might be a simpler, good enough proxy when measuring the E(CLV).

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Appendix A:
Figures

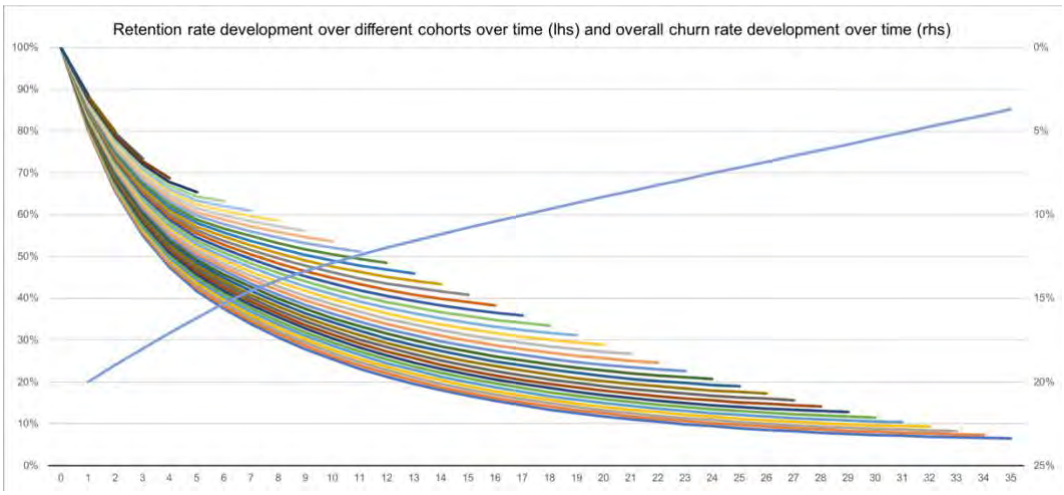

Figure A.1: *Illustrative example of how retention rate development over time for different cohorts and how it affects the overall churn rate.*

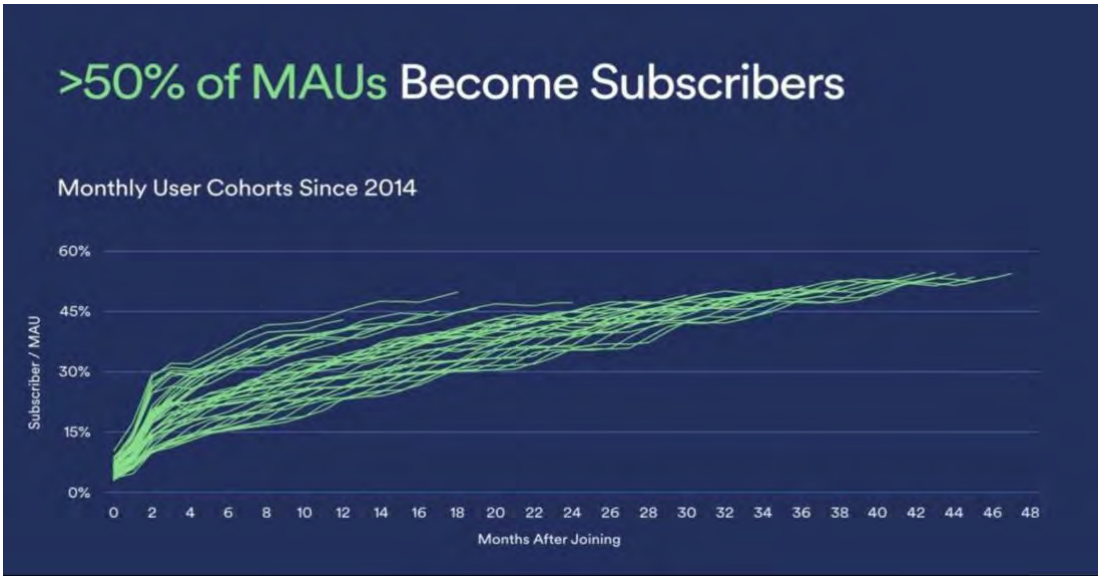

Figure A.2: *Ratio between number of premium subscribers over total MAUs for a cohort (Spotify, 2018-a)*

Appendix B:
Tables

USD	Company A	Company B
Revenue	20 000	20 000
CoS	10 000	25 000
Gross Profit	10 000	-5 000
S&A	15 000	0
Other Costs	5 000	5 000
Operating income	-10 000	-10 000
Total Users	1 000	1 000
New Users	300	0
Old Users	700	1 000
ARPU	20	20
CoSPU	10	25
CAC	50	NA
ARPU:CAC	2,5	NA

Table B.1: *Illustration of two companies with similar profits but different unit economics.*

	Index	Equation	Q116	Q216	Q316	Q416	Q117	Q217	Q317	Q417	Q118	Q218	Q318	Q418
Churn Rate														
Premium Churn	A		6,90%	7,00%	6,40%	6,00%	5,50%	5,90%	5,70%	5,10%	5,00%	4,90%	4,80%	4,80%
Ad churn	B		1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%
Ad upgrade	C		3,50%	3,50%	3,50%	3,50%	3,50%	3,50%	3,50%	3,50%	3,50%	3,50%	3,50%	3,50%
Churn (mn)														
Premium Churn	D	A*Q_t-1	5	6	6	7	7	9	10	9	10	10	11	12
Ad churn	E	B*R_t-1	2	2	2	2	2	2	2	3	3	3	3	3
Ad upgrade	F	C*R_t-1	6	7	7	8	8	8	8	9	9	10	10	11
Before Gross Aditions														
Premium	G	Q_t-1 -D	23	24	30	33	41	43	49	53	61	65	72	75
Ad	H	R_t-1 -E-F	56	58	61	65	67	72	71	79	80	86	88	95
Gross														
New to Premium	I		4	10	7	13	8	13	9	16	10	15	11	18
Ad to Premium	J	F	6	7	7	8	8	8	8	9	9	10	10	11
New to Ad	K		11	12	14	12	16	10	20	13	19	15	21	21
New Users	L	I+K	15	22	21	25	24	23	29	29	29	30	32	39
Churn Gross														
Premium	M	L*(1-(1-0,15)^2)	3	5	4	6	4	6	5	7	5	7	6	8
Ad	N	L*(1-(1-0,01)^2)	0	0	0	0	0	0	0	0	0	0	0	0
Output														
Premium	O	G+I+K - M	30	36	40	48	52	59	62	71	75	83	87	96
Ad	P	H + K -N	67	70	75	77	83	82	91	92	99	101	109	116
Actual														
Premium	Q	28	30	36	40	48	52	59	62	71	75	83	87	96
Ad	R	64	67	70	75	77	83	82	91	92	99	101	109	116
Marketing	S		63	95	84	126	110	146	138	173	138	173	146	163
CAC Estimate	T	S/L	4,2	4,3	4,0	5,0	4,6	6,3	4,8	6,0	4,8	5,8	4,6	4,2

Table B.2: *Estimate of CAC and Gross Customer intake per quarter for Spotify.*

Component	Index	Equation	Q415	Q116	Q216	Q316	Q416	Q117	Q217	Q317	Q417	Q118	Q218	Q318	Q418
Amortizaiton (Actual)															
Domestic Content	A		518	531	581	597	629	609	697	728	724	730	752	801	832
International Content	B		444	528	594	627	702	697	854	900	990	1 019	1 066	1 111	1 222
Total	C	A+B	962	1 059	1 175	1 224	1 331	1 306	1 551	1 627	1 714	1 749	1 818	1 912	2 054
Content Assets (Esimate)															
Total Streaming Content Assets	D		7 192	8 129	9 065	10 285	10 975	12 033	13 210	13 949	14 669	15 927	17 083	18 386	20 102
Domestic Content	E	(A_t+6/C_t+6)*D	3 231	3 495	3 828	4 295	4 540	5 041	5 352	5 512	5 650	5 975	6 238	6 530	6 939
International Content	F	(B_t+6/C_t+6)*D	3 961	4 633	5 238	5 991	6 435	6 992	7 858	8 437	9 019	9 952	10 845	11 856	13 164
Domestic Content %	G	D/F Q415-Q217; G_t = G_t-1 -1% Q317-Q418	45%	43%	42%	42%	41%	42%	41%	40%	39%	38%	37%	36%	35%
International Content %	H	E/F Q415-Q217; 1-G	55%	57%	58%	58%	59%	58%	59%	60%	61%	62%	63%	64%	65%
Domestic Revenue Distribution %	I		66%	65%	59%	58%	58%	55%	53%	52%	51%	50%	47%	46%	45%
International Revenue Distribution %	J		34%	35%	41%	42%	42%	45%	47%	48%	49%	50%	53%	54%	55%
Content Additions (Esimate)															
Domestic Content	K	E_t - E_t-1 + A		795	914	1 064	874	1 110	1 008	868	861	1 056	1 015	1 093	1 241
International Content	L	F_t - F_t-1 + B		1 200	1 198	1 380	1 147	1 254	1 719	1 479	1 572	1 951	1 959	2 122	2 530

Table B.3: *Estimated break down of Netflix streaming content assets movements for domestic streaming and international streaming.*