Equity Valuation

LinkedIn Corp

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LinkedIn Corporation (LNKD)

Bullish Market Outlook has led to bloated stock price

Current stock price, as of December 1st, is a direct consequence of market's optimistic outlook on LinkedIn's Marketing revenue. Resulting from a prolonged comparison with pure Social Networks such as Facebook (FB) and Twitter (TWTR).

The Good

LinkedIn is very diversified in terms of business, especially in comparison with other Social Networks. With revenue sources from Talent Solutions, Marketing Solutions and Premium Subscriptions. Which provide a less volatile income stream. Continued investments in new business areas place LinkedIn in the cutting edge of sectors such as e-Learning (through Lynda acquisition) and Sales Management (through Sales Navigator).

The Bad

LinkedIn has so far been unable to take advantage of Marketing Revenue, only showing ~2% market capitalization, while Talent Solutions is pushing ~8%.

The Ugly

Current market price on LinkedIn stocks is based on unrealistic expectations on unproven markets. Current and consensus target price (~$ 290) are based on Marketing having a major turnaround towards market leader and new businesses turning out extremely successful. A more bearish approach is recommended.
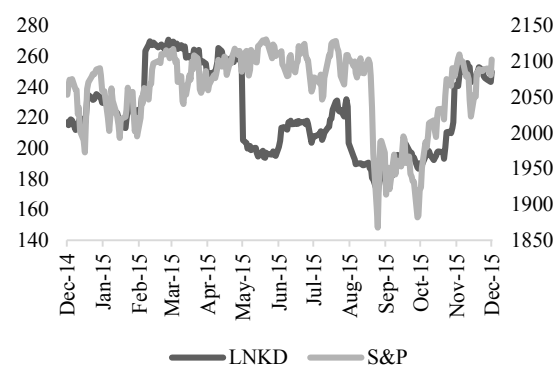
Recommendation:

SELL

Price Target:

$ 186,77

One-Year Price Evolution:

Market Data:

Current Price: $ 249,82

Stock Outstanding: 131M

52 Week Range: $ 169,94 - $ 270,76

Market Cap: $ 32,73B

Abstract

The aim of this dissertation was to reach LinkedIn's Equity Fair Value. Through an analysis of all methods available, the ones chosen were Adjusted Present Value and Relative Valuation through a combination of Equity Multiples, Transaction Multiples, Trading Multiples and Social Network Specific Multiples (Monthly Active Users).

Adjusted Present Value valuation yielded a per share value for LinkedIn of $ 186,77. As for Relative Valuation, Equity Multiplies showed an average price target of $ 143, Transaction Multiples gave a $ 87,57 valuation, Trading Multiples averaged $ 216,14 and Monthly Active Users a quite distant $ 6,35.

In order to achieve more robustness in this forecast, sensitivity analysis were run, including multiple scenario analysis, to test different revenue projections, and variations on specific variables.

Finally, a comparison was run against J. P. Morgan's report to measure up this dissertation's conclusions to an actual investment bank analysis. This dissertations final conclusion was to propose a Sell recommendation on LinkedIn who presented a closing price on December 1st 2015 of $ 249,82. Which is in contrast with J. P. Morgan's Buy recommendation of $ 300 price target.

O objectivo desta dissertação é o de apresentar o valor alvo da LinkedIn. Através de uma análise dos métodos disponíveis para o efeito os escolhidos foram Valor Actual Ajustado e Avaliação Comparativa, através duma combinação de Múltiplos de Capital Próprio, Múltiplos de Acquisição, Múltiplos de Preço e Múltiplos de Redes Sociais (Membros Activos por Mês).

Através do Valor Actual Ajustado obteve-se um valor por acção de $ 186,77. Pelo método de Avaliação Comparativa obtivemos valores diferentes consoante o conjunto de múltiplos analisado. Múltiplos de Capital Próprio resultaram num valor de $143, enquanto Múltiplos de Acquisição apresentam um valor de $ 87,57. Por outro lado Múltiplos de Preço apresentaram uma média de $ 216,14 e Membors Activos por Mês apresenta o valor contrastante de $ 6,35.

Para atingir maior robustez foi executada uma análise de sensibilidade incluindo análise de cenários múltiplos, com o fim de testar várias projecções de receitas, e variações em variáveis específicas.

Por fim, foi efectuada uma comparação com um relatório da J. P. Morgan para comparar os resultados desta dissertação com o de um banco de investimento. A conclusão final da dissertação foi de recomendar Venda sobre o LinkedIn, pois esta apresentou um preço de fecho no dia 1 de Dezembro de 2015 de $ 249,82. Em contraste a J. P. Morgan apresentou uma recomendação de Compra com preço alvo de $ 300.

Preface

This dissertation marks the culmination of my academic pursuits in the areas of Economics and Finance. I am extremely grateful to all the people I've met throughout my academic path who've in some way contributed to my past, present and future success.

I'd like to express a note of gratitude to my family who've supported me throughout my endeavors always striving to fuel my academic and professional interests.

To my friends and colleagues who I've met during university, and to the ones who've accompanied me even longer I express my sincerest appreciation. A special note to Ricardo Carvalho who pushed me in the toughest moments of the dissertation and Guilherme Neves for the debates in all maters statistical and mathematical.

Last but definitely not least, I must thank my thesis coordinator Professor José Carlos Tudela Martins, who pushed me to explore deeper into the subject of valuation and always provided prompt and valuable feedback to my doubts.

Contents

1   Literature Review

The cornerstone of finance lies in valuation. It is of the utmost importance for a company to be able to assess the return its decisions will bring to its stakeholders. Similarly, it is the role of a portfolio manager to find undervalued companies to present high yields to its clients.

Regardless of its central role in finance, valuation is not a straightforward subject. In fact, it is a very volatile topic, (Demirakos, Strong, & Walker, 2004) explore the different models used by analysts and one of their conclusions is that they "tailor their valuation methodologies to the circumstances of the industry". Yet, even when using the same methodologies for the same company two analysts can come up with very different results depending on the assumptions undertaken by each of them.

Therefore, the challenge presents itself, which are the optimal methodologies to use in order to correctly assess the value of LinkedIn?

In this chapter I will look at the different methods of valuing a company. (Damodaran A. , 2006) states there are 4 general approaches to this subject: discounted cash flow valuation, liquidation and accounting valuation, relative valuation and contingent claim valuation.

My goal will be to delve into each of these methods pointing out their strengths and weaknesses with the final intent of choosing the best methods to value LinkedIn.

1.1   Discounted Cash Flow Valuation

Discounted cash flow (DCF) models use future cash flow projections discounted at an appropriate rate to reach the present value for the firm. The models differ between each other through the discount factor and the assumptions taken to reach both the cash flow estimates and terminal value. There are "ten methods: free cash flow; equity cash flow; capital cash flow; APV (Adjusted Present Value); business's risk-adjusted free cash flow and equity cash flow; risk-free rate-adjusted free cash flow and equity cash flow; economic profit; and EVA."[1]

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[1] Fernandez, P. (2007). Valuing Companies by Cash Flow Discounting: Ten Methods and Nine Theories. *Journal of Management Science , 1* (1), 83-102.

For the purpose of this section I will look over the most important and widely used methods within DCF, focusing on the ones more relevant for LinkedIn.

1.1.1 Free Cash Flow

Free cash flow method states that the total value of a company – Equity plus Debt – is obtained from the present value of expected free cash flows (FCF) discounted at the weighted average cost of capital (WACC).

As can be seen in equation (1), FCF is the total cash a company has available after settling the maintenance and expansion of its asset base. It can be calculated from earnings before interest and taxes (EBIT) discounted by the tax rate (T) adding depreciation and amortization (D&A) and discounting the changes in net working capital and capital expenditures (CAPEX).

$$FCF = EBIT(1 - T) + D\&A - \Delta Working\ Capital - CAPEX \qquad (1)$$

Equation (2) shows that WACC takes into consideration all forms of capital, given their proportional weight. Therefore, the cost of equity (Re) and the cost of debt (Rd) are proportionally weighted through the percentage of financing that is equity (E/V) and debt (D/V), where debt takes into consideration corporate taxes (T).

$$WACC = \frac{E}{V} * Re + \frac{D}{V} * Rd * (1 - T) \qquad (2)$$

Therefore, the value of a firm through the FCF/WACC method is as given by equation (3). The second half of the equation is what is known as the terminal value, which is where the company is expected to be at steady state and to grow at a certain rate (g) in perpetuity.

$$V = \sum_{t=1}^{N} \frac{FCF_t}{(1 + WACC)^t} + \frac{\frac{FCF_{N+1}}{WACC - g}}{(1 + WACC)^N} \qquad (3)$$

1.1.2 Equity Cash Flow

"In equity valuation models, we focus our attention of the equity investors in a business and value their stake by discounting the expected cash flows to these investors at a rate of return that is appropriate for the equity risk in the company."[2]

Therefore, this method consists in regarding the true value of a company in respect to the cash generated towards common equity holders. As can be seen from equation (4) equity cash flow (ECF) is a function of net income (NI), depreciation and amortization (D&A), capital expenditure (CAPEX), change in working capital and net borrowing (NB).

$$ECF = NI + DA - CAPEX - \Delta Working\ Capital + NB \qquad (4)$$

In order to reach the value of the company we need to discount these cash flows by the cost of equity (Ke) which gives us the return demanded by investors from the company. Equation (5) shows us how to reach this value.

$$Ke = rf + (rm - rf) * \beta \qquad (5)$$

Where:

- rf = risk free rate
- $rm - rf$ = market risk premium
- β = unsystematic risk

Similarly, to the FCF method, the value of a company through the ECF method is therefore given, as seen in equation (6), by discounting the future cash flows and terminal value by the cost of equity.

$$V = \sum_{t=1}^{N} \frac{ECF_t}{(1 + Ke)^t} + \frac{\frac{ECF_{N+1}}{Ke - g}}{(1 + Ke)^N} \qquad (6)$$

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[2] Damodaran, A. (2006). *Valuation Approaches and Metrics: A Survey of the Theory and Evidence.* Stern School of Business, New York University.

1.1.3 Adjusted Present Value

"Today's better alternative for valuing a business operation is to apply the basic DCF relationship to each of a business's various kinds of cash flow and then add up the present values."[3]

The prevalence of WACC is directly correlated to its simplicity of use. However, its simplicity is both its strength and weakness. WACC agglomerates all sources of tax shields into one parameter – 1 minus corporate tax – and how many companies today can simplify their corporate tax structure in such a way? It is very limited in estimating the tax shields and is more appropriate for companies where the capital structure is expected to remain stable. This next model presents itself as a solid way to correct these issues and yield a more solid valuation.

Adjusted Present Value (APV) divides itself into three main sections; present value of cash flows discounted by the unlevered cost of equity (Ke), present value of interest tax shields (ITS) and expected bankruptcy costs (EBC) as can be seen in equation (7).

$$V = \sum_{t=1}^{N} \frac{FCF_t}{(1 + Ke)^t} + ITS + EBC \qquad (7)$$

Therefore, the first step is to calculate the value of the company as if it was fully financed through equity, then adding the ITS and EBC.

Regarding the tax shields "there are several theories regarding which are the fundamental determinants behind this tax shield formula" (Fernandéz, 2007). However, for the purpose of this literature review, I will focus on Myers theory that discounts the costs of financing by the cost of debt (Kd) which is given by equation (8).

$$ITS = \frac{D \times T \times Kd}{Kd} \qquad (8)$$

$$EBC = PD \times BC \qquad (9)$$

Finally, in regards to bankruptcy costs, this can be calculated by simply multiplying the probability of default (PD) by the bankruptcy costs (BC) as seen by equation (9). The

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[3] Luerhman, T. A. (1997). What's It Worth? A General Manager's Guide to Valuation. *Harvard Business Review* , 132-142.

issue is the vagueness of the equation itself in regards to probability of default. To answer this issue Damodaran suggests using the corporate bond rate if applicable.

1.1.4 Economic Value Added

"The value of a business depends on its return on invested capital (ROIC) and growth."[4]

The fundamental theory behind Economic Value Added (EVA) is that the true value of a company can be measured by correctly estimating its surplus value created. This model is derived from the DCF model and is a good measure for the return an investor can expect from financing a company.

Therefore, as can be seen in equation (10), the value of a company calculated through EVA is given by multiplying the difference between ROIC and the cost of capital (Ka) by the total invested capital (IC).

$$EVA = (ROIC - Ka) \times IC \tag{10}$$

The company's enterprise value is then reached by adding the "capital invested in assets in place, (plus) the present value of the economic value added by these assets and the expected present value of the economic value that will be added by future investments"[5].

The main issues with this model is the fact that it favors assets in place in regards to future growth prospects, thus limiting in certain company analysis.

1.2 Dividend Discount Model

The Dividend Discount Model (DDM) is a cash flow based model which uses issued dividends as inputs to value a company's stock. The model proposed by Gordon et al. (1956) states that given knowledge of a company's price, dividend and future growth rate we can reach a valuation showing whether a company is undervalued or otherwise in the markets.

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[4] Koller, T., Goedhart, M., & Wessels, D. (2010). *Valuation: Measuring and Managing the Value of Companies.* John Wiley and Sons.

[5] Damodaran, A. (2002). *Investment Valuation, Tools and Techniques for Determining the Value of Any Asset* (2nd ed.). New York: John Wiley & Sons.

The issue with this model is that it requires that a company be expected to issue dividends, which is not the case for LinkedIn and making it unfeasible to use as a means of valuing it. Moreover, it doesn't take in consideration the effects of investments by the company and requires quite stable conditions in order to lead to solid results, since even small changes in the assumptions can have drastically different values.

1.3 Relative Valuation

Relative or Multiples Valuation is, in addition to discounted cash flow models, one of the most popular company valuation tools. As (Baker & Ruback, 1999) state, "it applies the only the most basic concept in economics: perfect substitutes should sell for the same price." The idea behind this method is exactly that, to reach a company's value by applying its fundamentals to average industry ratios. Its ease of use and simplicity are the main reasons it is so popular among industry professionals. Furthermore, being easily understood by all levels of financial knowledge has truly consolidated its place in valuation.

In effect, (Suozzo, Cooper, Sutherland, & Deng, 2001) state that the main advantages of multiples valuation are simplicity (easy to calculate and interpret), usefulness (can provide useful information about relative value) and relevance (focuses on main statistics that most investors follow).

Furthermore, as (Goedhart, Koller, & Wessels, 2005) state, "a properly executed multiples analysis can make financial forecasts more accurate." By combining multiples analysis to an already existing DCF valuation one can check for inconsistencies and could even serve as basis to know the range of values one is expected to reach. Therefore, multiples valuation always adds more value and robustness to a valuation report.

However, as with all models, there are some drawbacks. According to (Suozzo, Cooper, Sutherland, & Deng, 2001) the mains disadvantages are: simplicity (dilution of information), static ("snapshot of where a firm is in time") and difficult to compare (no two companies are truly the same).

On top of that (Goedhart, Koller, & Wessels, 2005) add another issue, we have to be wary when analyzing multiples as different multiples can present different conclusions about the same company, therefore a more comprehensive analysis of the company is necessary to truly find the relevant multiples.

(Suozzo, Cooper, Sutherland, & Deng, 2001) separate multiples into two basic groups, enterprise multiples, which are connected to the value of the entire business, and equity multiples, which only values a company's equity (the shareholder's claim to the company).

The main multiples of the enterprise group are Enterprise Value (EV) / Sales, which is a very simple multiple but less vulnerable to accounting differences. EV / EBITDA which is the most used enterprise multiple due to being unaffected by both differences in depreciation policy and capital structure. Finally, we have EV / EBIT which is better than EBITDA when capital intensities are different within the industry.

Regarding equity multiples, the main ones are Price / Earnings (PER), which is incredibly popular especially due to the ease of access to the required historical data. Price / Book Value is commonly used when the main source of value generation stems from the business's tangible assets. To conclude we have Price / Cash Earnings that is usually an addition to existing valuation methods due to the simplified manner in which Cash Earnings are defined that leave out many possible value generation indicators.

Additionally, we can also refer to Transaction Multiples which are taken from actual acquisitions. The idea behind these multiples is that the companies were valued at fair value and therefore are a good estimate for the price at which the company we're studying would be sold for. With an appropriately sized peer group of relevant (similar) types of acquisitions we reach multiples that should portray the value which the market would be willing to pay for the company.

Finally, we have a specific group of multiples for Social Media and Internet based companies regarding industry specific operating indicators, which can prove relevant in estimating LinkedIn's true Enterprise Value. These multiples are, among others, Price/Active Monthly Users (MAU).

1.4   Contingent Claim Valuation

Contingent Claim Valuation or Option Pricing has two main applications, as presented by (Schwartz, 2013), which are in the natural resources industry (for example mining) and Research and Development (R&D).

In its essence this method strives to fully appraise the different options or decisions within a business. This is clearer in the case of natural resources, as it takes into account the different outcomes regarding output and price fluctuation, even adding the risk of closing the mine by calculating minimum price for production.

However, there are many drawbacks to this method, namely the amount of different variables that are necessary in order to calculate it thoroughly and the difficulty in obtaining said values (namely volatility). Given these conditions and the difference between LinkedIn's industry and the main businesses where Option Pricing can be effective other methods will be preferred in order to reach its value.

1.5   Liquidation and Accounting Valuation

The overall idea of this method is that "the value of a business is the sum of the values of the individual assets owned by the business."[6] This model presents two different approaches: Book Value Based Valuation and Liquidation Valuation.

Book Value Based Valuation is firmly based upon a thorough analysis of a company's balance sheets and income statements. Various issues arise from this method, namely; do historical accounts present a strong approximation for future cash flows? Can we easily compare market and book values? Yet this hasn't stopped many investors from calculating underpricing by comparing market values to book values of businesses. The best use of this method is "for mature firms with predominantly fixed assets, little or no growth opportunities and no potential for excess returns"[6], which is not the case of LinkedIn.

In regards to Liquidation Valuation, this method is "based upon the presumption that they have to be sold now."[6] The main difference between this model and a DCF method is that it implies a sense of urgency and can lead to either a discount due to a "fire-sale" effect or can lead to a premium depending on demand from potential buyers that might result in and auction situation.

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[6] Damodaran, A. (2006). *Valuation Approaches and Metrics: A Survey of the Theory and Evidence.* Stern School of Business, New York University.

Overall the main use of this type of valuation is for companies that are in distress and methods which imply terminal values and continuous growth rates are not a realistic approach. Once again it is not the case that best fits with LinkedIn.

1.6   Conclusion

After a detailed analysis of the various methods available for the valuation of LinkedIn I believe that the best course of action is to proceed with a combination of 2 of the methods presented in the literature review.

The first method I will use is Relative Valuation, since it provides a good basis for further valuation methods and gives more robustness to a valuation report. The main multiples I will use are PER and EV/EBITDA given that they are the most commonly used multiples in valuation and complement the analysis with others to increase the robustness of the results. My goal with this step is to reach values that can provide guidelines for the rest of the process, with the intent of setting a base value of comparison. I will then compliment these base multiples with more specific and industry specific indicators such as MAU users and Transaction Multiples.

Finally, I will perform an APV valuation, I choose this method over WACC or ECF due to LinkedIn's recent capital structure changes due to continued acquisition and investment strategies which are expected to continue. It is stated in the company's annual report that LinkedIn intends to continue its acquisition strategy and R&D expenses and will look to finance them with more equity issues and debt if necessary. Adding to this information the issued convertible senior notes and employee stock-based compensation plans up until 2021 it is guaranteed that the company will experience capital structure shifts in the coming years.

2   Industry Overview

To fully evaluate LinkedIn, it is necessary to consider the industry where the company operates and which sectors it influences. Moreover, the analysis of historical data and the features of its market will allow making educated predictions about future perspectives as well as understand its evolution.

On the other hand, it is fundamental to, after having studied the industry overall, analyze LinkedIn in particular in terms of evolution, strategy and the actions that allowed the company to be so successful as it is.

Finally, data from the US market will be very relevant, since the company is North American and it has the highest per-capita rate of users (close to 30%), despite United Kingdom and Canada having very high rates as well (around 22 and 26%, respectively).

2.1   Global Overview

LinkedIn is included in the Social Network Market, which is an Industry of close to $25 Billion Dollars (in 2015) in terms of revenues, encompassing advertising revenues as well as other sources and it is predicted to keep growing exponentially, reaching $80 Billion Dollars by 2020 worldwide. Moreover, the number of users has also increased throughout the years, from 2.177 Billion in 2015, to an expected 2.5 Billion in 2017, with North America having the most users, and Asian-Pacific the highest increasing market. Besides being a very attractive market, due to its exponential growth (in terms of revenues and users) over the course of the last decade and its future expectations, Social Networks provide benefits for both individuals and companies, which reinforce the Industry's importance and assure present (and future) investment of both time and financial resources into developing and customizing the different social media platforms to people's goals and objectives.

For companies, benefits include: the increased knowledge and familiarity with organizations/products/services (which can translate into more visits to the company's website for instance), feedback about hypothetical future products/services, customer appreciation and suggestions for improvement, better focused marketing campaigns, understanding the positive and negative comments and where products/services are struggling or being successful and why, improve a company's external perception,

identify new opportunities and allow companies to find suitable talent for available positions. As for individuals, it can increase one's technological understanding and make them feel more comfortable with it; it helps bring people closer to one another and the opportunity to meet people that in regular circumstances would not be possible; increase knowledge about subject matters that users might not be initially interested or simply did not know about; it helps individuals present themselves by referring personal achievements, features and preferences; it can help people launch businesses, part-time hobbies or have companies/organizations seeing their profile and increasing their chances to be hired.

In summary, the Social Network Industry has been increasingly growing in terms of revenues, importance and number of users worldwide, benefitting both individuals and companies in professional and personal aspects. The next sub-topic will address the Porter's Five Forces analysis to further understand the industry's features and attractiveness.

2.2   Porter's Five Forces Analysis

2.2.1 Rivalry between competitors

When considering Professional/Business-oriented networks, LinkedIn is the leader, being ahead of companies such as Viadeo and XING, by having a global database of skilled and/or experienced individuals as well as being available in more than 24 languages, and more than 200 countries, leading to a more internationalized strategy and be more globally expanded. On the other hand, LinkedIn was able to keep a strong position as a leader in the hiring industry, by fulfilling companies' needs. Moreover, LinkedIn also operates as a SNS (Social Networking Service) where it provides the possibility for clients to engage and view people's profiles, based on general professional interests. This leads to the ability to find suitable opportunities for job seekers, while keeping a social interactivity, meaning that companies can address candidates primarily, before, and decide to hire the best candidate afterwards.

Although LinkedIn has been able to maintain a position of leadership in the Professional Networking Service (PNS), while competing with organizations such as Monster and CareerBuilder, it also ends up entering the market and suffering competition from Social Networking Services, such as Facebook and Twitter. On the other hand, although

LinkedIn is a leader in the PNS environment, the market is very volatile, jeopardizing its position, and the fact that consumer preferences can change very unexpectedly. Finally, although LinkedIn offers a wide variety of features and options (free and premium) attract a lot of different segments (organizations, professionals and marketing agencies), there is not much product differentiation that allows LinkedIn to breathe comfortably in this type of environment. Having stated this, the competition and rivalry in the industry is moderate.

2.2.2 Threat of Substitutes

The threat of new substitutes is always related to the appearance of new Professional Networking Services features in existing websites and Social Networking Services (either new, or existing ones evolving into this segment too). Having said that, individuals can also search job offers in other platforms such as Facebook, for example, if the company involved does not use PNS. Other substitutes include the traditional hiring channels and online job advertisement. Due to possible entrance of new service substitutes and the existing ones in the market, the threat of substitutes can be considered moderate.

2.2.3 Threat of New Entrants

One can argue that the difficulty in creating a global network such as LinkedIn was able to create over the years can minimize to some extent the possibility of new entrants. On the other hand, established companies in this market, which are now more comfortable with fixed costs and enjoying economies of scale, enjoy a clear advantage, in the case a new entrant decides to come forth. Moreover, companies such as LinkedIn had the opportunity to build strong and trustful relationships with both companies and professionals as well as become a well-known multi-lingual brand on the PNS sector (in which switching costs for companies is high). These previous factors managed to create a high barrier of entry for newcomers.

However, the initial investment to enter this market is relatively low, being moderately easy to find investors, especially if a newcomer wants to take its activity to developing countries, where the potential growth of this market is even higher. Also, existing SNS have economies of scope over PNS, adding to the fact that SNS are traditionally used to having much more users (Facebook, for example) and dealing with the more demanding Internet traffic (in both terms of cost efficiency and performance). These SNS can

constitute a threat if they develop features specifically for this market or by aligning themselves with new players and take advantage of their large database. Finally, there is also the probability of new job services and companies deeply related to technology (Microsoft, for instance) that can take advantage of their financial resources and experience in dealing with huge databases and traffic. Therefore, the threat of new entrants is moderate-to-high.

2.2.4 Bargaining Power of Buyers

Customers in PNS are mainly individuals/professionals and companies and neither segment is concentrated. On the other hand, in the PNS sector, LinkedIn is leading rather comfortably, which makes it more famous and reliable than its competitors, helping the current users to stay. Also, LinkedIn, by providing innovative services and showing adaptability to market trends, allows it to keep leading this market.

However, the good reputation that companies such as LinkedIn enjoy took many years to build, but it can end very swiftly with a small decrease in performance or quality. Therefore, taking everything into consideration, the bargain power in the customer side is low-to-moderate.

2.2.5 Suppliers' Bargaining Power

In this industry there are many suitable service providers. There are database services, mobile and applications that can fulfill companies' requirements and that can be ultimately bought (LinkedIn acquired Bizo and Refresh.io, for example). On the other hand, professionals and companies can build their own network and connect to each other worldwide. Therefore, the suppliers' bargaining power is relatively low.

2.3 Company Overview

LinkedIn is a Professional Networking Service and it is mostly used for professional networking. It was founded in 2003 and most of its revenues come from access to information about users by recruiters. Nowadays it has over 400 Million users, evolving from 20 Million in (2006) and it is present in more than 200 countries. In 2013 it had 184 Million unique visitors worldwide and revenues in 2014 hit 2.2 Billion Dollars mark. It is the undisputed leader in the PNS sector, although it also competes in some aspects with

the SNS sector. To further understand the company's capabilities and downfalls, a SWOT Analysis will be presented in the next sub-topic.

2.4 SWOT Analysis

2.4.1 Strengths

First of all, the company has enough financial resources to fund their projects and investments, which means that they do not require external investment or incurs in debt. Secondly, LinkedIn is a reliable and premium professional networking service, where a study from ROI research shows that 59% of the answers stated that LinkedIn was their most useful and main social network account, and 87% used LinkedIn as a tool to decide between candidates, job offers and companies. Thirdly, the company has several different revenue streams such as premium accounts, advertisements and job postings. Fourthly, it enjoys the position of first-mover and undisputed leadership in the market, which allows it to watch trends worldwide and try to establish some of their own. Finally, it is present in more than 200 countries (globally) and encompasses a wide range of professionals.

2.4.2 Weaknesses

The first weakness is related to privacy concerns and security issues: since users share personal information, this information must be secured. However, in 2012, 6.5 Million passwords were posted online by hackers, showing a considerable security breach. Secondly, the cultural differences and weak acceptance outside United States, Canada and the UK show a weak penetration of LinkedIn, with special attention being placed in China and India (7.72% in India for example). Also, the tradeoff between LinkedIn and SNS is not very solid (only 2% of Facebook users have LinkedIn accounts, but 40% of LinkedIn users have Facebook accounts) as well as the amount of time spent (LinkedIn averages 6.5 minutes/user/day, while Facebook averages more than 55 minutes/user/day).

2.4.3 Opportunities

Everyone is a potential customer.

Any person (or organization) looking for a job (or a candidate), respectively, is a potential customer. On the other hand, LinkedIn being the leader in the PNS industry, is the most qualified to tap into the Asian and Indian market, where it is currently struggling in terms of users. Moreover, professional videos, training and experience feedback can be

presented in the website, exploring more of the Social Networking Service (despite still being business-oriented) sector. Finally, using Internet in everyday activities has increasingly become more and more popular: candidates can be chosen more often from PNS than by sending CVs and motivational letters.

2.4.4 Threats

The possibility of new competition either thanks to new services or social networks bridging the gap between social and professional oriented can lead to a much more competitive market for LinkedIn. On the other hand, as previously mentioned, the good reputation acquired by LinkedIn can disappear very swiftly. Furthermore, many candidates could be hired by other methods than PNS. Also, users can state unreliable information and inaccurate data, undermining the whole hiring process. Finally, XING can have easier access to the Asian market and when LinkedIn tries to focus on both companies and individuals/professionals, it can unintentionally alienate one or the other.

2.5   Future Expectations

LinkedIn aspires to create a comprehensive display of all job positions available worldwide, the skills needed to apply for that position and what expected from candidates, making the work environment more transparent. In terms of investments, they will be applied in technology structure (performance, security, etc.), product development (better features and more innovative products); sales and marketing; international expansion to enlarge the member database; legal and accounting expenses due to its global presence and being a public company.

3   Methodology

In this chapter I will present the data and methodologies relevant for the development of my model and subsequent valuation. The next 4 chapters will be divided as follows; the first chapter focuses on the forecasts and assumptions made in order to achieve the necessary data about LinkedIn's future prospects[7]; the following chapter is the model results, through both the multiples and APV approaches; the third chapter is focused on sensitivity analysis, the possible variations in the outcomes of the aforementioned approaches; finally the fourth chapter compares the results of this thesis with those of an equity research report on LinkedIn by J. P. Morgan.

3.1   Forecasts

This section is a fundamental part of the valuation process. In order to achieve a robust price target for a company you must be able to accurately forecast its future prospects to understand their value today. The goal of the next few pages is to explain the assumptions and thought process behind the forecasts by going over the main figures of both the income statement and balance sheet that impacted the final values obtained.

3.1.1 Revenues

Revenues are the key item in most forecasts as they impact the entire income statement and are the first step in the cash flow estimation. Therefore, reaching a robust revenue estimation is a major part of obtaining a well-rounded valuation.

For the specific case of LinkedIn there are several points to take into consideration. Firstly, LinkedIn has only been publicly traded for a few years, so there isn't much in terms of historical data so as to infer future growth prospects or performance.

Secondly, it is experiencing high growth therefore we cannot take the average of the last few years as a reasonable growth rate for the future and furthermore implies that we need to have a relatively wide window of estimation in order to look towards LinkedIn's stabilization period.

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[7] For LinkedIn's historical and forecasted Income Statements, Balance Sheets and Cash Flow Statements refer to the Appendix.

Finally, LinkedIn is the most mature company (in terms of market penetration and product development) in its specific market, therefore we cannot look towards similar companies' history to infer a possibly similar evolution for LinkedIn.

To address the issue of LinkedIn's current growth the forecast period will take place until 2025 to take into consideration a high growth and stabilization period. Which will allow for an appropriate calculation of the company's terminal value.

LinkedIn's revenue sources were broken down to allow easier analysis. The company's revenues stem from 3 sources: Talent Solutions, Marketing Solutions and Premium Subscriptions.

■ Talent Solutions ■ Marketing Solutions ■ Premium Subscriptions
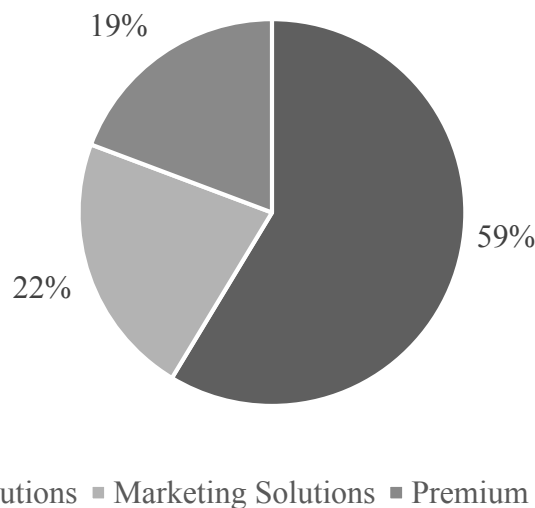
Figure 1 - Revenue Breakdown in 2015 by source

Talent Solutions "aim to be the most effective way for enterprises and professional organizations to efficiently identify and acquire the right talent for their needs."[8] It comprises all products LinkedIn has available for companies and individuals in terms of job postings and search engines within the platform.

LinkedIn's Learning department, which was started with the acquisition of Lynda.com a web-based learning platform, is also included in Talent Solutions. Its goal is to provide users with the tools to develop new skills and reach a wider student market.

Historically speaking Talent Solutions has represented more than half of total revenues. It is expected that this source of revenue maintains its status as main cash flow provider,

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[8] From LinkedIn Annual Report 2014

given the investments made by the company in sales force and training and the future prospects set forth in the annual report.

Marketing Solutions (which are usually the main revenue source in Social Media companies) is expected to grow more rapidly due to the shift in focus towards advertising. The company has the goal to truly take advantage of advertising spaces (up to 2014 the mobile app was poorly optimized for advertisement – a major deterrent to possible clients).

Premium Subscriptions are broken down into two sources: LinkedIn's subscription Service and the new Sales Navigator product. The company's subscription packages are "designed for general professionals to manage their professional identity, grow their networks and connect with talent."[9] Whereas Sales Navigator is a tool for users to quickly manage and take advantage of new opportunities within LinkedIn's user database.

Premium Subscriptions are the lowest revenue source and given its specificity the company hasn't presented any plans to leverage these results so it is expectable that it grows constantly with the user base.

Sales Navigator is a diversification move for LinkedIn and, while it still represents a relatively small portion of total revenues, presents high synergy potential with the platform. Since it is quite recent, future growth can only be estimated based on potential future market capitalization.

As for the growth rates applied to the revenue forecast, it was not reasonable to estimate this figure from past results nor are there mature peers from whom to extrapolate these values. Furthermore, given lack of information disclosed regarding number of clients and revenue per client, growth through client growth would be far too speculative.

Hence, the path chosen was to look at LinkedIn's potential market by revenue source (made available by LinkedIn) and estimate the company's market capitalization per market in steady state.

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[9]From LinkedIn Annual Report 2014
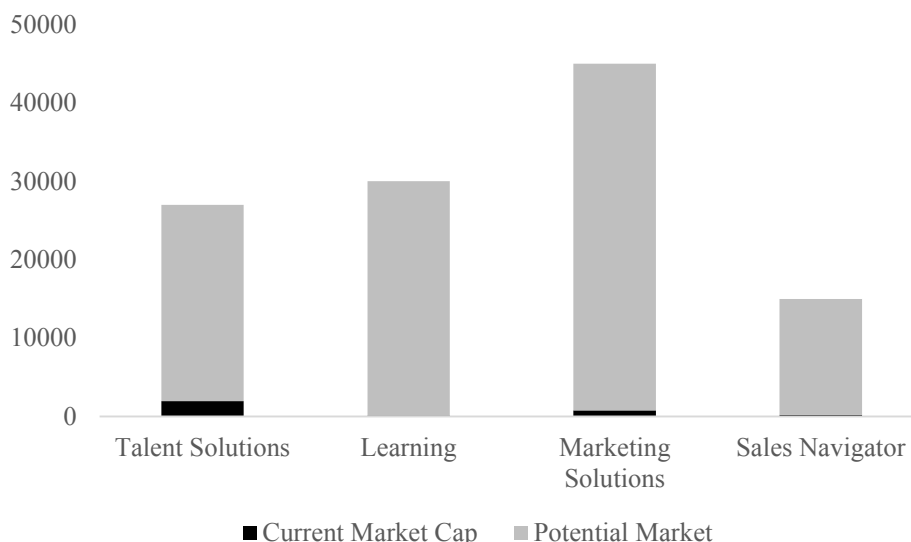
Chart 1 - LinkedIn Current and Potential Market, in millions of dollars as of 2015

The potential and current market of premium subscriptions isn't represented in Chart 1 due to it not being linked to a dollar weighted market cap. Potential market in terms of membership is total world labor force, currently at 3,4 billion, of which LinkedIn has around 400 million registered members representing a ~12% market penetration.

Talent Solutions	Learning	Marketing Solutions	Sales Navigator
7,35%	0,45%	1,77%	1,50%

Table 1 – Current Market Cap as percentage of Potential Market

Table 1 shows that the most mature market segment for LinkedIn is Talent Solutions. It is of note that Sales Navigator and Learning have only existed for a year.

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Talent Solutions	27000	27756	28533	29332	30153	30998	31866	32758	33675	34618	35587
Learning	30000	30840	31704	32591	33504	34442	35406	36398	37417	38464	39541
Marketing Solutions	45000	46260	47555	48887	50256	51663	53109	54596	56125	57697	59312
Sales Navigator	15000	15420	15852	16296	16752	17221	17703	18199	18708	19232	19771

Table 1 - Potential Market Per Year in Millions of Dollars

Table 2 was built taking potential market value estimated by LinkedIn in 2015 and applying the average World GDP up until 2025.

For member growth we assume that LinkedIn will continue its current growth ratio effectively doubling its current 400million user base to 800million by 2025. This growth's direct impact will be in percentage of users signing up for premium subscriptions, doubling current value up until 2025.

However, in order to achieve more robustness with this sort of analysis, 3 different revenue scenarios will be studied in the sensitivity analysis section so as to cover a wider range of outcomes.

For the purposes of this chapter only one scenario will be analyzed – the Base Case. This scenario will be a mix between optimistic and realistic assumptions on the future revenue streams of LinkedIn.

This Base Case estimates that by maturity LinkedIn will achieve the following market capitalizations:

Talent Solutions	Learning	Marketing Solutions	Sales Navigator
25%	5%	5%	10%

Table 2 - Market Cap by Maturity, as percentage of potential market

In the Base Case it is expected that LinkedIn become a market leader in the Talent Solutions market and a relevant player in the remaining markets. Learning shows a lower level than Sales due to being a very recent and unproven market. Marketing Solution has proven a difficult market for LinkedIn to take a part of, and with the strong competition of other social networks will be difficult to become a leading player.

Chart 2 - Revenue Projections (in millions $)

3.1.2 Operating Expenses

These costs are divided, within LinkedIn, in two: General and Administrative and Sales and Marketing. An analysis of past results shows these values to be at a comparatively high percentage of total revenues when compared to peers. This is due to high costs of training, sales and marketing for the implementation and market penetration phase of LinkedIn.

General and Administrative includes all employee compensations, except marketing and sales departments, as well as outside consulting, legal and accounting services. It is expected to remain in line with revenue for 2015 and in this scenario expected to increase with revenue albeit with a lower margin.

Sales and Marketing include employee compensations for all marketing and sales departments. Furthermore, includes costs with branding, public relations and advertising commissions payed to outside agencies in order to increase global footprint of the company, a major focus for the future. Growth in line with General and Administrative.

Another key driver of these costs is employee stock-based compensation, a very common expense given the maturity level of the company. This compensation scheme is scheduled to end by 2021 and from that point onwards it is expected to see a compensation in the work remuneration to make up the difference.

In steady state it is an industry standard to aim for a total margin of around 38% so it is visible through the model a gradual shift from the current 48% of revenues towards that much lower value around stabilization.
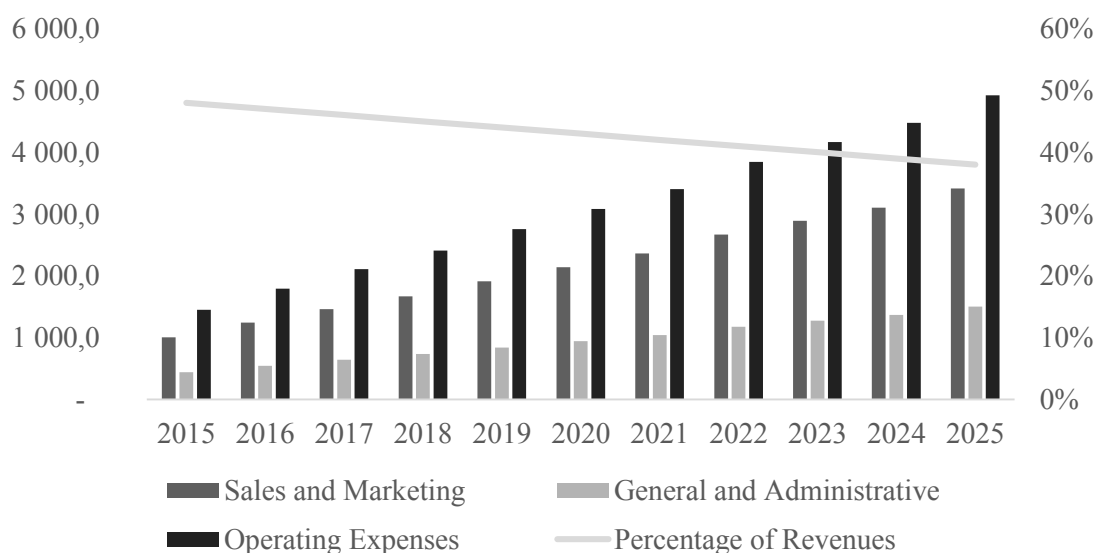
Chart 3 - Operating Expenses in millions of dollars, and percentage of revenues

3.1.3 Capex and Property, Plant and Equipment (PP&E)

In regards to Capex, this variable was calculated as the difference between current year PP&E minus current accumulated depreciations and previous year PP&E minus previous year depreciations. In effect Capex is the increase in PP&E from one year to the other minus accumulated depreciations.

PP&E increase was estimated as a constant percentage of revenues, as it was believed to be the necessary investment in fixed assets to ensure growth and a certain level of revenues. This conclusion was derived from the constant growth rate in PP&E of the last few years for LinkedIn, which were in line with its revenues.

Similarly, depreciation was calculated on a percentage base given the values and growth rate of past years in these values.

3.1.4 Debt

LinkedIn has very little debt consisting solely of bonds issued in 2014 maturing in 2019. For the purposes of this model it is assumed that LinkedIn will strive to always hold the optimal level of debt, as a function of interest tax shields gain and probability of default incurred with each level of debt, in order to maximize firm value.

Given the market rating towards the current bonds LinkedIn has issued it is not beneficial for LinkedIn to incur in more debt until the bonds mature in November 2019. This model assumes that LinkedIn only increases its debt to optimal levels in 2020, when the rating is a synthetic rating given by LinkedIn's ratio between EBIT and Interest Expense (interest coverage ratio).

As is explained in the interest tax shields section, interest expenses include operating lease expenses.
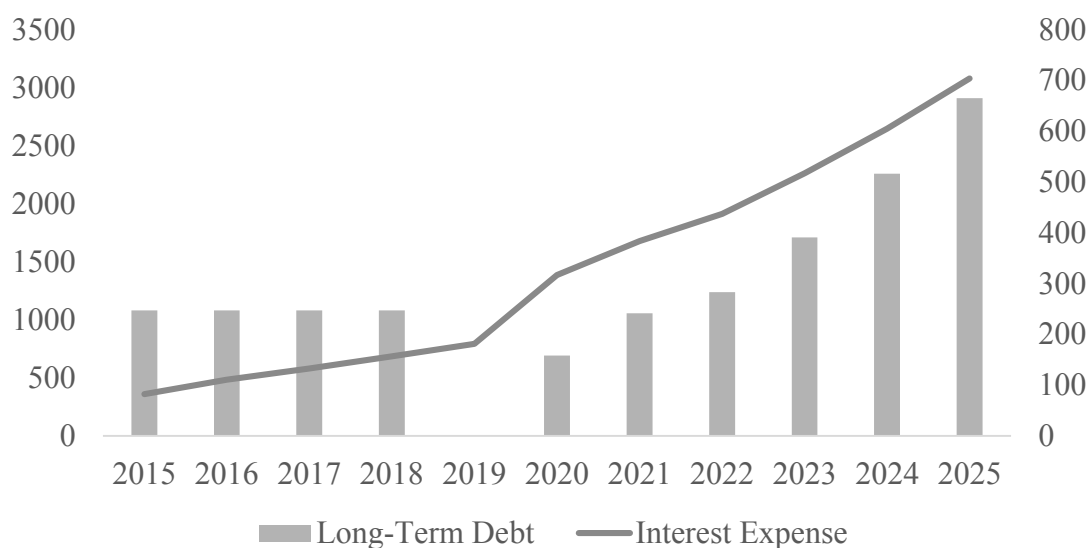
Chart 4 - Long-Term Debt and Interest Expenses in millions ($)

3.1.5 Working Capital

Working Capital is the difference between current assets and current liabilities of a company and is an important figure to value a company's health and to compute its DCF.

It is explained in the company's annual report that all historical changes in working capital were a result of increased sales and operations. Therefore, for the purpose of this forecast, it was established that this value would increase accordingly with the company's revenues.

We look at current assets (current liabilities) in terms of days of sales (days of costs) which are based on total revenues (cost of sales) divided by 365 days. This value is then taken and we divide the different constituents of current assets (current liabilities) by it and it gives you the average amount of days it takes for the company to receive (pay) its rights (obligations).

In the case of LinkedIn, the values of the past 2 years have rather stabilized and in regards to current assets it is close to peers such as Microsoft and Facebook, standing at 92 days compared to 100-110. Therefore, in total current assets it was estimated that this ratio would maintain in perpetuity.

However, in the case of current liabilities the value, although also stable for the past 2 years, is almost double the figures presented by Microsoft and Facebook. In the end it was decided that given LinkedIn's specific revenue sources and operating characteristics (and since the values have recently stabilized) it was also assumed that these values would maintain in perpetuity.

3.1.6 Margins

A company's operating and gross margins are of the utmost importance in forecasting cash flows and future earnings. In the case of LinkedIn, it is expected to suffer some shifts in these margins as it matures.

In regards to gross margin, by 2014 it was around 87% which is in line with more mature companies and, as stated in the company's report, is not expected to suffer large shifts.

Contrarily, LinkedIn's EBITDA margin of 12.3% it is quite low in comparison to its peers. As stated by the company and other specialists we can expect this value to shift

towards the market standard of around 27% in maturity, as a result of decreasing operating expenses.

3.1.7 Taxes

Although LinkedIn operates at a multinational level with operations and offices across the globe, in order to simplify (and also due to the volatility of the company's effective tax rate over the past few years) for the purpose of the model the tax rate was set at 35% which is the corporate tax rate faced in the United States where the headquarters are located.

3.1.8 General Assumptions

All values up to 2014 are retrieved from the company's annual reports and Thomson Reuters Eikon. 2015 values are based on the company's estimates for the end of the year from their third quarter report. Finally, all values from 2016 to 2025 are forecasts based on the model's assumptions and calculations.

Given that LinkedIn has a no-dividend policy no pay-outs are included in the estimations and net income transitions towards retained earnings of the following year.

Marketable securities are considered by the company to be extremely liquid and therefore they treat them internally as Cash and equivalents. The company justifies their increase in Cash and marketable securities due to a certain ratio towards the working capital requirements, therefore in the model these figures are calculated based on this ratio compensated by the increase in retained earnings.

Additional paid-in capital and goodwill are expected to remain at last levels reported by the company due to the uncertainty of their shifts and changes.

4   Valuation

4.1   Multiples Approach

As stated in the Literature Review, Multiples is the most commonly used valuation method by analysts. However, further research showed that very few analysts used this approach for LinkedIn. The reasons for this became quite clear as this approach was further developed.

The key to a robust multiples valuation resides in selecting the right peer group. Not only do you need to find companies within the same sector, preferably competitors, but also that have similar operating and financial results.

This, however, proved impossible for the particular case of LinkedIn. On the one hand LinkedIn is considered a Social Networking Service (SNS) in the likeness of Facebook, Twitter and even Alphabet's Google+, however its revenue source and general operating strategy is completely different.

Whereas other SNS rely on advertising for their revenues, capitalizing on unique visitors and website traffic, LinkedIn's Marketing Solutions account for less than a third of revenues. On the other hand, as a Professional Networking Service (PNS) such as Viadeo or Xing, most of its revenues stem from direct sales to companies interested in the Talent Solutions product, yet LinkedIn's completely different market position and positioning place make its results not comparable to either of these two companies.

In order to show a broad range of results of using multiples as an approach to value LinkedIn I will present 4 tables with the summary results for Equity Multiples, Enterprise Value Multiples, Transaction Multiples and Monthly Active Users (MAU) Multiples. These values where reached by choosing a combined peer group of SNS and PNS companies: Alphabet, Facebook, Twitter, Xing, Viadeo, Monster Worldwide and Salesforce.com.

Alphabet, Facebook and Twitter where chosen given their focus on advertising (LinkedIn's Marketing Solutions) and capitalize well on their member base as social networks by converting them into operating results (a characteristic in common with LinkedIn).

Xing, Viadeo, Monster Worldwide and Salesforce.com where chosen due to representing (besides LinkedIn) the most mature and developed companies in the PNS and Talent Solutions market and therefore to give some weight to LinkedIn's major source of income for this approach.

Multiples	Median	Price Per Share ($)
PER	42,7x	184,89
P/BV	8,1x	88,98
P/S	9,2x	155,12

Table 3 - Equity Multiples

Equity Multiples provide the largest disparity within multiples classes. PER which is usually a reliable multiple here shows a large disparity towards LinkedIn's value due mostly to low earnings expectations in comparison to its peers.

Multiples	Median	Price Per Share ($)
EV/EBITDA	33,0x	207,15
EV/SALES	8,8x	218,94
EV/EBIT	56,1x	222,32

Table 4 - EV Multiples

In contrast EV Multiples have a much lower dispersion in terms of values, however LinkedIn's EBITDA, Sales and EBIT values are not in line with any of its peers and therefore the validity of these results is questionable.

Multiples	Median	Price Per Share ($)
EBITDA	12,2x	88,30
Sales	3,0x	86,84

Table 5 - Transaction Multiples

Transaction multiples were obtained through a Goldman Sachs report on acquisitions within LinkedIn's industry (some acquired by LinkedIn itself).

Multiples	Median	Price Per Share ($)
P/MAU	0,1x	6,35

Table 6 - MAU Multiples

This multiple is a great example of the disparity towards some of LinkedIn's "peers". Although classified as a SNS, LinkedIn's P/MAU is around 2.43 whereas other SNS companies from the peer group range close to 0.06. Which just shows that LinkedIn's value as an SNS does not stem from traditional sources.

To summarize the results, given LinkedIn's stock price as of the 1st of December 2015 of $249.82, all multiples point towards it being overpriced. However, as previously stated, the discrepancies in terms of fundamental operations, revenue sources, strategies and operational and financial results do not provide a peer group robust enough for a truly comparable multiples valuation.

4.2 Adjusted Present Value Approach

In this section the steps and results of the DCF approach through the APV method will be presented. As stated before, the main reason APV was chosen over WACC was due to the company's commitment to pursue its investment and acquisition strategy through equity issues and debt. Therefore, shifts in capital structure are expected although difficult to forecast with precision.

4.2.1 Unlevered Cost of Equity

The first step is to reach LinkedIn's unlevered firm value. Hence, we must start by finding what the discount rate applicable is. The method used to calculate the unlevered cost of equity is CAPM. Therefore, we needed three key inputs: risk-free rate, unlevered Beta and market risk premium.

The risk-free rate chosen is the 10 year US Treasury Bond which, as of the 1st of December 2015, was trading at 2,15%.

For the unlevered beta the method chosen was to run a regression between LinkedIn's stock price variations and corresponding returns of the S&P. The regression yielded a levered beta of 1,61. In order to reach the unlevered value we had to apply the following formula:

$$\beta_{unlevered} = \frac{\beta_{levered}}{1 + (1 + t)\frac{D}{E}} \tag{11}$$

Where t represents the effective tax rate, which we assume to be equal to the corporate tax rate of 35%. Lastly D/E represents the debt-to-equity ratio of the firm. Running this equation leads us to an unlevered beta for LinkedIn of 1,54.

Lastly, market risk premium was based on the average return of the S&P for the past 10 years deducted by the risk-free value which lead do a market risk premium of 4,99%.

Running the CAPM with all the variables yielded an unlevered cost of equity of 9.82%.

4.2.2 Discounted Cash Flows

In order to reach the unlevered firm value, we had to take the discount factor and apply it to the FCFF forecasted for LinkedIn up to 2025 and subsequently add the terminal value of the company at steady state.

The main factor in the growth of FCFF, as can be seen in the Appendix, is due to increasing operating results. Since NWC isn't expected to suffer major changes, and Capex and other factors are linked to growth in revenues, the growth is therefore sustained on the increase of the EBITDA and, subsequently, the EBIT margin.

4.2.3 Terminal Value

The company's terminal value represents the value a company has in perpetuity after reaching steady state (constant and close to GDP growth rate). The value is obtained by applying the growth rate in perpetuity to the FCFF of the last year in analysis and taking the constant growth rate in consideration in the discount factor with the following equation:

$$TV = \frac{FCF_{n+1}}{Ke - g} \tag{12}$$

Given LinkedIn's global spectrum of operations the value used to represent growth in perpetuity was the average global GDP growth rate of the past 5 years of 2.8%.

4.2.4 Unlevered Firm Value

LinkedIn's unlevered value, as presented in the literature review, is therefore obtained by adding the discounted cash flows up to steady state and its discounted terminal value. The following table presents a summary of those results.**FCF**	6 938,56

Terminal Value	15 027,01
Unlevered Firm Value	21 965,56

Table 7 - Breakdown of unlevered firm value (in millions)

4.2.5 Tax Benefits from Debt

As discussed in the literature review the net value of tax benefits is debt times the tax rate applicable to the company.

The tax rate, as previously presented, will be the corporate tax rate of the United States of America which is set at 35% for LinkedIn.

LinkedIn's current long-term debt, as stated in its balance sheet, comprises a bond issue of a total of $ 1.322,5 million. However, looking just at the company's bonds doesn't provide a full picture of LinkedIn's interest expenses. A common practice of most companies is to camouflage their debt as operating leases, hiding these interests expenses as operating expenses and providing a much healthier perspective of its fundamentals.

Therefore, in order to fully evaluate LinkedIn's debt its operating leases had to be converted to net debt. The first step was to calculate the company's cost of debt, which is gathered by adding the company's default spread to the risk-free rate. The default spread is obtained given the corporate debt rating of BB+, which puts its spread at 3.25%[10]. This value added to the risk-free rate leads to a cost of debt of 5.40%.

By applying this discount factor to operating lease information supplied by the company we reach a debt value of leases of $ 1.065,13 million, as can be seen on the following table.

Year	Commitment	Present Value
1	$114,58	$108,71
2	$135,83	$122,27
3	$135,72	$115,91
4	$133,98	$108,56
5	$132,76	$102,06
6 and beyond	$131,76	$507,62
Debt Value of leases		$1.065,13

Table 8 - Operating Leases converted to Net Debt (in millions)

The sum of these two parts of total debt of the company brings us to a total amount of approximately $ 2.390 million.

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[10] Table in Appendix.

With the interest expenses of each year, of both long term debt and operating leases we use the cost of debt to obtain the present value of these tax shields for each year and in perpetuity (in a method equal to DCF). This yields a total value of tax shields of $ 1.606,45 million.

4.2.6 Expected Bankruptcy Costs

The final component in order to obtain LinkedIn's levered firm value is the expected bankruptcy costs. As mentioned in the literature review, although the probability of bankruptcy can be obtained with some ease, bankruptcy costs are not so direct.

For probability of bankruptcy the corporate bond default rate was the chosen method. Given a rating of BB+ this places LinkedIn at a default rate of 10% according to (Altman & Kishore, 1996).

In regards to costs of bankruptcy these can be divided in two groups: direct and indirect costs. Direct costs relate to lawyer and accounting fees and all expenses related to the administration of the bankruptcy. It is noteworthy to mention that according to (Warner, 1977) larger firms have considerably lower relative direct costs of bankruptcy. Whereas indirect costs refer to "lost profits that a firm can be expected to suffer due to significant bankruptcy potential"[11]. These costs are associated with higher costs of financing due to probability of default, loss of sales and in general all costs brought upon due to the bankruptcy scenario.

It is clear that calculating direct and indirect costs of bankruptcy is open to interpretation and varies sizably with industry and company size. For direct costs of bankruptcy, I refer to (Altman, 1984) where an empirical analysis of direct bankruptcy costs of retail and industrial companies yielded a range between 4% and 11%. Since relative direct costs have an inverse correlation with the size of the company, it is expectable that LinkedIn fall within the larger category and have around 5% direct costs.

The real challenge comes when assessing LinkedIn's indirect cost of bankruptcy. Going by the same source we are pushed towards around a 10% indirect cost of bankruptcy, yet in this sense LinkedIn fits into a very different market segment from retail and industrial. In fact, it is quite expected that LinkedIn have much higher indirect costs. A clear example

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[11] Altman, E. I. (1984). A further empirical investigation of the bankruptcy cost question. *Journal of Finance*, 1067-1089.

of this is the dot com crash and subsequent near total value loss of a large portion of internet companies at the time.

Having no real fixed assets on which to rely on and no production, an internet company in an unproven market segment, with mostly intangible assets and, fundamentally, a service provider is expected to lose most its value in a bankruptcy scenario.

However, given the lack of empirical evidence in this regard in the following chapter a sensitivity analysis will be shown where several costs of bankruptcy are tested to see the impact on the price of LinkedIn's stock. For the purpose of this chapter an average indirect cost of bankruptcy of 55% was chosen.

In conclusion, with a probability of default of 10% and cost of bankruptcy of 60% the expected bankruptcy costs are given by the product of these two ratios and the unlevered value of the firm. This yields expected bankruptcy costs of $ 1.317,93 million.

4.2.7 Enterprise Value

LinkedIn's enterprise value is thusly obtained, as presented in the literature review, by adding the discounted cash flows (DCF), the terminal value, the interest tax shields (ITS) and subtracting the expected bankruptcy costs (EBC).
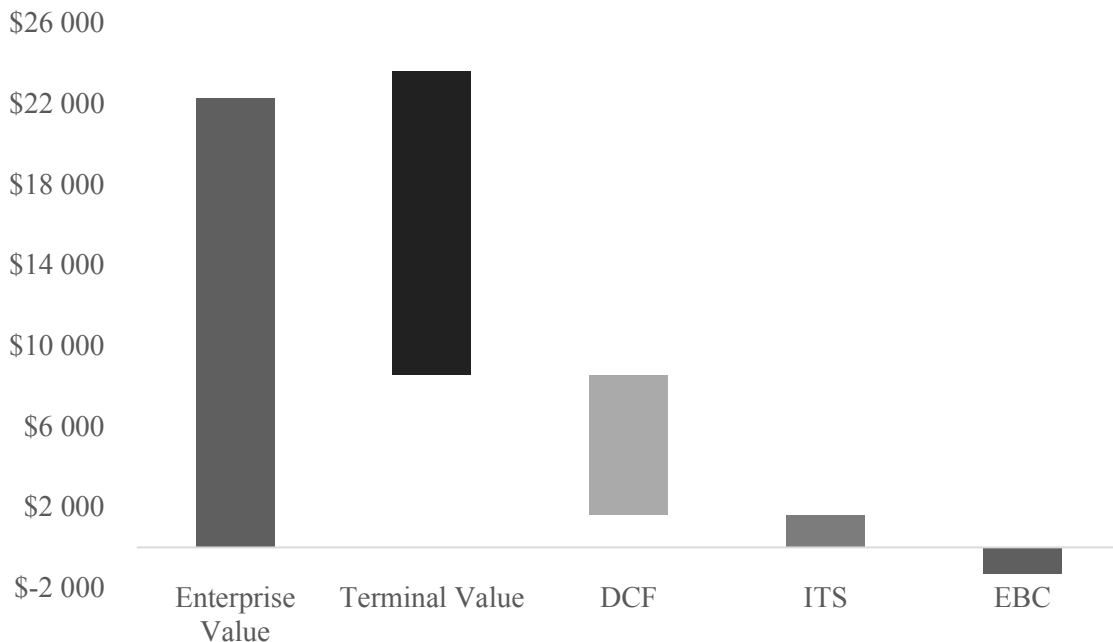
Chart 5 – EV breakdown (in millions)

As can be seen from the previous chart the value obtained is $ 22.254,08 million. From the breakdown of the enterprise value we can assess that the main component of this result

is the terminal value, which accounts for 62% of the total. This puts most of LinkedIn's value after its stabilization and dependent on its growth prospects and continued innovation in its sector.

4.2.8 Equity Fair Value

Having calculated LinkedIn's Enterprise Value, the next task is to reach its fair equity value (EFV), so that we can then compute its price per share.

The function is quite simple, just add cash and cash equivalents minus net debt (ND) to enterprise value (EV) to reach the equity fair value. As can be seen in the following equation:

$$EFV = EV + ND \qquad (13)$$

Given cash and cash equivalents (short-term investments were also included given their liquidity and the company's own statements that for all intents and purposes they consider those investments cash) total value of $ 4.559,3 million and a debt level (long term debt plus operating leases converted to debt) of $ 2.390 million, this yields a EFV of $ 24.364,8 million. This value translates into a 4.8x terminal EBITDA multiple.
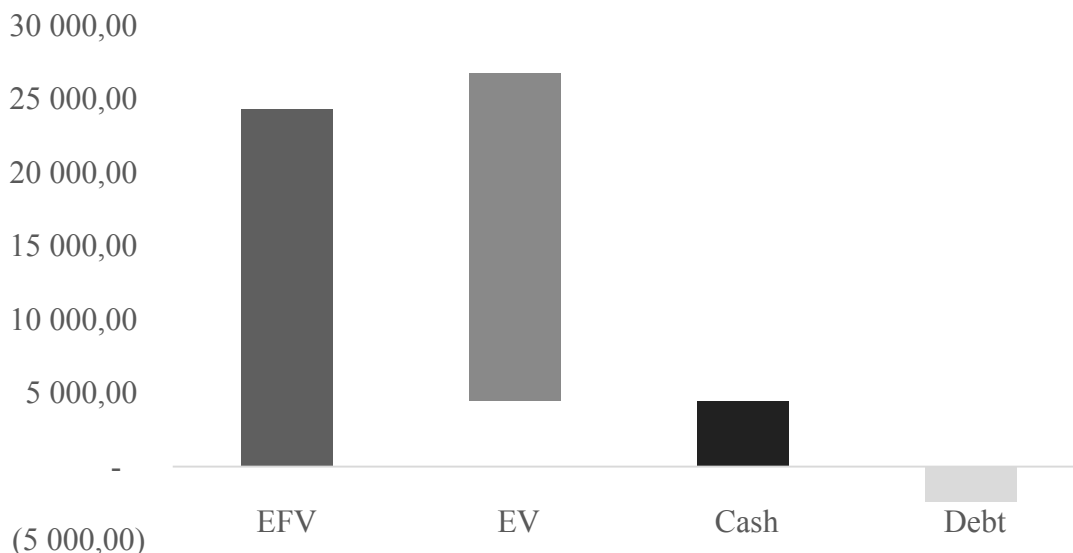
Chart 6 - EFV breakdown (in millions)

Chart 3 shows the breakdown in EFV. The main factor of note is that Net Debt is positive and therefore the EFV is actually higher than the EV. This comes from LinkedIn's large cash reservoirs that are justified by the company as essential for its operations. Its low debt is related to low operating income (due to high investments) and therefore its optimal

debt ratio is quite low (due to it being linked to its interest coverage ratio which for higher interest expenses requires higher operating income).

In order to obtain the EFV per share we divide this result by the total shares outstanding of around 130 million. This yields a result of $ 186,77 per share estimated for December 2016.

5   Sensitivity Analysis

Given the uncertain nature behind the assumptions required for the valuation process it is standard process to run sensitivity analysis. Theses analysis consist in seeing the impact on the valuation of certain changes in relevant inputs. The aim is to give the investor a wider understanding of underlying risks faced by the recommendation and to be able to take them into account for his decision given his own risk profile.

Throughout this section several variables will be tested for the impact they have in the overall valuation in order to bring more robustness to this valuation and present the investor with possible outcome scenarios different from the base case presented in previous sections. On the one hand, these tests will serve to justify some assumptions made on the model. On the other hand, they also aim to study what can be considered possible and expectable variations, given the specific characteristics of certain variables.

This section will be concluded with analysis of the three scenarios mentioned in the revenues section. All sensitivity analysis before that section will be run on the Base Case.

5.1   Expected Bankruptcy Costs

As explained in previous sections expected bankruptcy costs are difficult to estimate due to unpredictability in forecasting the impact of distress on a firm. The value chosen for bankruptcy costs was 60% and in this section we can see on table 7 the impact of variations on this factor.

Prob/Cost	40,00%	50,00%	60,00%	70,00%	80,00%
10,0%	$ 190,14	$ 188,46	$ 186,77	$ 185,09	$ 183,40
20,0%	$ 183,40	$ 180,04	$ 176,67	$ 173,30	$ 169,93

Table 9 - Probability of default and cost of bankruptcy sensitivity analysis

Within 10% probability of default, which is the most robust of the two percentages given its empirical basis, variations of 20% up or down have only a $ 6 impact on the price. In the Appendix a full table of sensitivity analysis shows that significant impact on the price only comes when both variables change. In comparison to the base case of 60% and with 10% probability of default it can fluctuate from plus $ 8 dollars to minus $ 6, or plus or minus 5% of the base case value.

5.2   Cost of Equity and Growth Rate

Arguably the factors that have the largest impact (with the smallest change) are the discount factors for the model. In the following table we will analyze the impact of a shift in both those factors simultaneously.

g/Re	8,82%	9,32%	9,82%	10,32%	10,82%
1,8%	$ 198,65	$ 185,08	$ 173,27	$ 162,91	$ 153,75
2,3%	$ 207,67	$ 192,58	$ 179,57	$ 168,25	$ 158,31
2,8%	$ 218,18	$ 201,24	$ 186,77	$ 174,30	$ 163,43
3,3%	$ 230,60	$ 211,32	$ 195,08	$ 181,21	$ 169,24
3,8%	$ 245,49	$ 223,24	$ 204,76	$ 189,18	$ 175,88

Table 10 - Sensitivity analysis of cost of equity and stable growth

This scenario shows much more drastic fluctuations in the valuation then the previous case. The valuation shows more sensitivity to changes in cost of equity then stable growth. Keeping growth at 2,8% and changing cost of equity yields variations between plus $ 32 and minus $ 23. It is also interesting to note that increases in valuation due to decrease in cost of equity is relatively larger than the negative changes from increased cost of equity. The same can be said of the growth rate as can be seen from table 9.

g/Re	8,82%	9,32%	9,82%	10,32%	10,82%
1,8%	6%	-1%	-7%	-13%	-18%
2,3%	11%	3%	-4%	-10%	-15%
2,8%	17%	8%	0%	-7%	-12%
3,3%	23%	13%	4%	-3%	-9%
3,8%	31%	20%	10%	1%	-6%

Table 11 - Sensitivity analysis of cost of equity and stable growth in relative terms

Therefore, the biggest impact to LinkedIn's value comes from the return demanded from its equity and not so much the impact on its steady state growth rate. A perception of riskier or less proven strategies from management or taking in much more debt than its current level could lead to investors requiring a higher return from LinkedIn and as can be seen from these tables that could lead to significant drops in the per share price of LinkedIn.

5.3   Normal Distribution

Given the range of possible values and combinations from the previous sensitivity analysis it makes sense to run statistical analysis within the ranges believed more probable.

With a range's mean and standard deviation several Monte Carlo simulations can be run. A Monte Carlo simulation is (among other uses) a way to generate results within a probability distribution and therefore making it possible to take statistical conclusions.

In this particular case, and with the aforementioned data, various sets of 10000 results were generated. Such large samples were chosen in line with the Central Limit Theorem which states that given a sufficiently large pool of results its arithmetic mean will be approximately normally distributed. Therefore, allowing for our analysis regardless of the underlying distribution.

5.3.1 Cost of Equity

First range of values analyzed were a variation of 1% plus and minus the base cost of equity of 8%, given the same stable growth rate of 2,8%. Since this variable has the largest impact on the per share value of equity it is relevant to test an acceptable level of possible short term variation and its impact on the value of LinkedIn.

Mean	StDev	Loss	Gain
188,78	21,66	99,5%	53,6%

Table 12 - Summary results Cost of Equity distribution

Table 10 shows some simple statistics related to this normal distribution, namely its mean and standard deviation. Assuming the 2,8% stable growth rate, the mean value expected with this variation actually puts the per share price of LinkedIn higher than the base case. However, its high standard deviation is also a relevant factor to take into consideration, given that it represents nearly 12% of the base case prediction value.

Loss refers to the probability of, given this 1% fluctuation of the company's cost of equity, that the per share value be lower than the closing price on December 1st. This result is relevant due to the fact that it points to close to 100% probability of losing value. Gain refers to the probability of the per share value be higher than the model prediction of $ 186.77. The percentage of 54% for this statistic implies that the base case prediction actually stands on the bottom half of possible outcomes given the sensitivity analysis being run. However as stated previously this is a result of a decrease of 1% in the cost of equity having a relatively higher impact on the price than a similar change in the opposite direction.

5.3.2 Cost of Equity and Stable Growth

A further test added a possible fluctuation in stable growth rate of 0,5% positive and negative added to the previous cost of equity variation. This test's purpose was used to further analyze the impact on the value with a wider range of outcomes from the table and put into perspective a large possible result pool.

Mean	StDev	Loss	Gain
190,00	23,68	99,0%	55,1%

Table 13 - Summary results Cost of Equity and Stable Growth distribution

Of note in this scenario is the increase in all statistics, in comparison to the previous section. Although this scenario included more outcomes, both positive and negative, the overall conclusion would be the same as the previous scenario. Clear current overpricing of LinkedIn's stock.

5.4 Multiple Scenario Approach

As stated in the revenue projection section, three scenarios were estimated for LinkedIn's possible future revenue stream. The Base Case, which was followed throughout this dissertation.

The Bad Case Scenario analyzes how LinkedIn's value would change if LinkedIn essentially failed as a SNS and converted completely to a PNS or job board. With little income coming from Marketing and no income from Learning.

Talent Solutions	Learning	Marketing Solutions	Sales Navigator
20%	0%	2%	5%

Table 14 - LinkedIn Market Cap in Bad Case

Without synergy from LinkedIn's SNS aspect Talent Solution wouldn't increase as much, neither Sales Navigator.

Everything else constant except revenue projection shift, the target value for the Bad Case is $ 120,5. This represents a steep $ 66 drop in value in comparison to the base case. Yet it reflects the doubts regarding LinkedIn's inability to take advantage of its marketing solutions and uncertainty towards the future of the Learning department.

Furthermore, it can also represent the possibility of larger players entering LinkedIn's markets (Facebook and Alphabet). Or a fragmentation of the market into smaller more

specific job boards and PNS, leaving a smaller space for large "one-size-fits-all" players as LinkedIn.

The Good Case looks at LinkedIn as if most of its plans and management decisions achieved all goals by steady state. It represents a market leader position in Talent Solutions and an extremely relevant position in all other business sectors (especially given its competitors).

Talent Solutions	Learning	Marketing Solutions	Sales Navigator
30%	10%	10%	15%

Table 15 - LinkedIn Market Cap in Good Case

This shift in revenues would lead to a per share price of $ 284,14. This price is much more line with the market consensus and the investment note that will be analyzed in the next section.

However as mentioned above this scenario firmly sits in LinkedIn coming out on top as the market leader of the PNS sector and becoming a major online player. In sum it is very optimistic. Especially given the tremendous shifts in market cap it expects in a 10-year time frame.

With these three different scenarios, representing three different looks at LinkedIn's forecasted revenues, a consensus value can be obtained by applying different probabilities of outcome to each price target.

Given the extreme nature of both the Bad and Good Case this dissertation applies a 20% probability to each and a 60% probability to the Base Case. This therefore leads to a weighted average of approximately $ 193.

A Monte Carlo approach to these values, as in the previous sensitivity analysis, yields the following histogram seen in chart 7.

Therefore, applying a uniform distribution to this sample of 3 values points towards a same probability of occurrence between a value within the $ 115 to $ 198 bracket as between the $ 198 to $ 280 bracket. These large brackets are a symptom of the large standard deviation of this small sample and therefore any analysis of these results must take this is consideration.
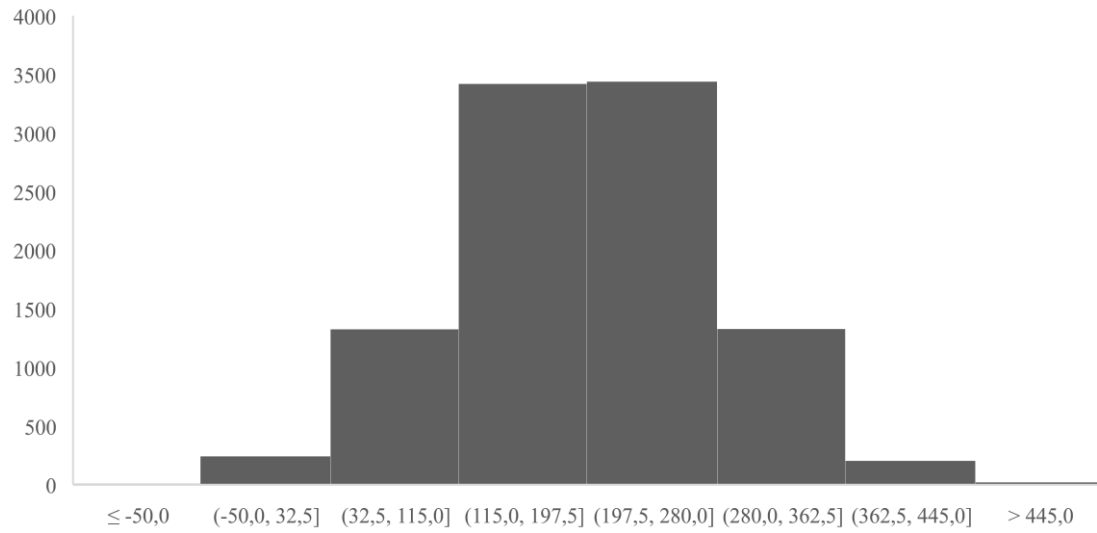
Chart 7 - Histogram of Monte Carlo Simulation between the three scenarios

6   Comparison with Investment Note

In this section the valuation achieved will be compared to that of an investment bank in order to add more depth to this analysis. The report chosen was published by J. P. Morgan (JPM) on October 30th 2015. The goal is to compare methodologies, forecasts and outcomes so as to ascertain the robustness of the valuation obtained in the thesis.

6.1   Methodology

As with this thesis JPM's report is based on a DCF analysis. Furthermore, the report relies solely on this method, presenting no other valuation alternative as relative valuation, which further solidifies the conclusions in this thesis regarding the value of a relative valuation for LinkedIn.

However, JPM's report uses a different DCF approach. While the model used throughout this thesis was the APV based DCF model, JPM used the FCF based on WACC. This should not present an issue since theoretically both models should yield the same results, however the same assumptions where not used.

A fundamental factor of difference between the two valuations is the forecast horizon. While in this thesis a 10-year window was used in order to account for the current high growth period, JPM opted for a window until 2021.

6.2   Discount rate and stable growth rate

As seen previously in the sensitivity analysis section, small fluctuation in the discount factors have extremely relevant impacts in the overall valuation. In the case of the APV model valuation the discount factor used was the unlevered cost of equity of 9,82%. JPM opted for using a WACC of 10% for the range in analysis.

It is of note however that running the WACC with the assumptions in the model of this thesis the discount factor obtained would be in fact 9,4%. Therefore, the key difference here can be in the rest of the CAPM equation (or other method) that JPM used in order to reach its discount factor. The key distinctive variables in this case can be Debt to Equity ratio, cost of equity, cost of debt and effective tax rate. However, given LinkedIn's debt level in comparison to equity, the main reason is most probably the cost of equity obtained by JPM, which must be higher than 10%.

The stable growth rate represents the value at which we expect the company to grow at maturity, when market is fully capitalized and the product is fully innovated and explored. For this reason, the thesis opted for the average GDP of the past 5 years of 2,8%. Yet in JPM's report the value chosen was 3,5%, which given its narrower scope of analysis may have intended to leave a wider growth potential for the future and be more in line with growth rate of mature companies in similar sectors.

6.3 Forecasts

The key difference in approaches in this area was that while in this thesis the chosen method was to look at LinkedIn's long-term potential market capitalization. JPM looked at the macro conditions of the market LinkedIn operates in and results and margins shown by the company's reports, which showed not only absolute growth but also better efficiency.

For the period in JPM's report they estimated a CAGR of 23% in revenues and 30% in EBITDA. In the same period the forecast developed in this thesis expects a CAGR of 19,85% in revenues and 26,55% in EBITDA.

6.4 Overall comparison summary

The following table presents the key factors of both valuations.

	Thesis	JPM
Method	APV	WACC
Discount rate	9,82%	10%
Stable growth rate	2,8%	3,5%
Period in analysis	2015-2025	2015-2021
Price Target	$ 186,77	$ 300,00

Table 16 - Summary comparison of both valuations

Hence the valuation discrepancy, in per share values, is around $113 between this thesis' $187 valuation and JPM's $300 valuation. What is clear is JPM's much more bullish position towards LinkedIn's stock performance. Much higher expectations towards its revenue growth and margins improvement. Two different positions can be taken from this.

Either JPM expects LinkedIn to be much more of a market leader in the business sectors it operates. Or it estimates far larger growth of LinkedIn's potential markets (whereas this thesis' approach took a bearish approach of growth in line with world GDP).

7   Conclusion

Given the volatile and unpredictable nature of tech companies such as LinkedIn, this dissertation clearly presented the need to run several different methods of valuation. Since each method requires specific assumptions, running just one method would effectively cripple a valuation and result in a biased outcome.

Although hard to present a conclusive result, by presenting several scenarios and different approaches to the valuation of LinkedIn, this dissertation hoped to present an unbiased and complete look at the foreseeable development of LinkedIn's share price.

One of the main difficulties was to point out LinkedIn's market and peers, given the company's diverse business model and unique approach to the social network and professional network universe. This forced a compromise in peer selection for multiples analysis, which had to include companies that specialized in each of LinkedIn's markets.

Furthermore, while being in the cutting-edge is usually a synonym with success and high margins, it also brings about many valuation issues. The new markets LinkedIn is exploring make any future revenue stream forecast very dependent on assumptions on its success. Therefore, an analyst more bullish and confident will reach a value far from an internet-sceptic analyst.

Thus was it of such importance to run a multiple scenario analysis, this put in contrast different looks at LinkedIn's future success (or lack thereof). The goal was to present a truly unbiased final outcome, leaving the choice to the investor's risk profile.

By excluding the extreme results of Transaction and MAU multiples, chart 8 shows summary results from this dissertation. Although Multiple analysis in the specific case of LinkedIn has the limitations already mentioned in previous chapters, the average between the results of Enterprise Value and Equity Multiples yields an average of $ 179,57, which is remarkably close to the base case scenario price.

The comparison with J. P. Morgan put in contrast a more optimistic outlook on LinkedIn's future. With similar assumptions (in terms of variables such as discount rate and growth rate in perpetuity) J. P. Morgan reached a much higher expected price for LinkedIn due to its expectations on revenues.
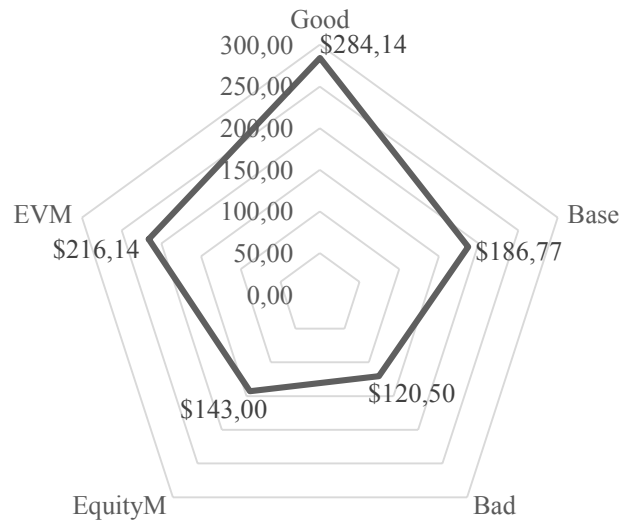
Chart 8 - Summary Results

Therefore, it is the conclusion of this dissertation that LinkedIn is currently (as of December 1st 2015) Overvalued and the recommendation is of a Sell rating (based on the Base Case scenario developed in this dissertation's model). Hence it is expected that until December 2016 LinkedIn's per share price is to drop from it's current $ 249,46 to the dissertation's prediction of $ 186,77.

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Appendices

Appendix 1 – Reported Income Statements 2006-2014

in millions ($)	2006	2007	2008	2009	2010	2011	2012	2013	2014
Revenue	9,80	32,50	78,80	120,10	243,10	522,20	972,30	1.528,50	2.218,80
Cost of Sales	2,00	7,40	18,60	25,90	44,80	81,40	125,50	202,90	293,80
Gross Profit	7,80	25,10	60,20	94,30	198,30	440,70	846,80	1.325,60	1.925,00
Gross Margin	*80%*	*77%*	*76%*	*79%*	*82%*	*84%*	*87%*	*86,7%*	*86,8%*
Operating Expenses	3,80	11,80	30,00	46,30	94,00	239,60	453,09	747,44	1.116,06
Operating Margin	*39%*	*36%*	*38%*	*39%*	*39%*	*46%*	*47%*	*48,9%*	*50,3%*
R&D	4,40	11,60	29,40	39,40	65,10	132,20	257,20	395,60	536,20
EBITDA	-0,40	1,70	0,80	8,60	39,20	68,90	136,51	182,56	272,74
EBITDA Margin	*-4%*	*5%*	*1%*	*7%*	*16%*	*13%*	*14%*	*11,9%*	*12,3%*
Depreciation/Amortization	1,00	2,10	6,40	11,90	19,60	43,10	79,80	134,50	236,90
EBIT	-1,40	- 0,40	- 5,60	- 3,30	19,60	25,80	56,71	48,06	35,84
Taxes	-	-	0,30	0,80	3,60	11,00	19,85	16,82	46,50
Interest	-	-	1,30	0,40	- 0,30	- 2,80	0,20	1,40	- 4,90
Net Income	-1,40	- 0,40	- 4,60	- 3,70	15,70	12,00	37,06	32,64	- 15,56

Appendix 2 – Reported Balance Sheet 2009-2014

in millions ($)	2009	2010	2011	2012	2013	2014
Assets	**148,6**	**238,2**	**873,8**	**1.382,4**	**3.352,8**	**5.427,3**
Cash and Equivalents	89,98	92,95	577,51	749,55	2.329,30	3.443,3
Accounts Receivable	24,30	58,30	111,40	203,60	302,20	449,0
Deferred Commissions	3,0	8,7	13,6	30,2	47,5	66,6
Prepaid Expenses	2,2	4,9	10,8	14,3	32,1	53,0
Other Current Assets	1,74	7,42	12,71	21,07	44,40	110,2
Total Current Assets	**121,2**	**172,3**	**726,0**	**1.018,8**	**2.755,5**	**4.122,1**
Property and Equipment	25,7	56,7	114,9	186,7	361,7	740,9
Goodwill	-	-	12,20	115,20	150,90	356,7
Intangible Assets	0,3	5,2	8,1	32,8	43,0	131,3
Other Assets	1,4	4,0	12,6	28,9	41,7	76,3
Liabilities	**51,5**	**114,0**	**248,7**	**473,9**	**718,3**	**2.096,4**
Accounts Payable	4,90	12,90	28,20	53,60	66,70	100,3
Accrued Liabilities	18,40	27,60	58,60	104,10	183,00	260,2
Deferred Revenue	26,0	65,0	139,8	257,7	392,2	522,3
Total Currrent Liabilities	**49,3**	**105,5**	**226,6**	**415,4**	**641,9**	**882,8**
Long Term Debt	-	-	-	-	-	1.081,6
Deferred Tax Liabilities	0,5	6,6	18,6	27,7	14,9	-
Other Long Term Liabilities	1,7	1,9	3,5	30,8	61,5	132,1
Stockholder's Equity	**97,0**	**124,2**	**624,9**	**908,5**	**2.634,3**	**3.330,8**
Noncontrolling Interest	-	-	-	-	5,00	5,4
Additional Paid-in capital	13,70	25,10	617,60	879,30	2.573,40	3.285,7
Accumulated Other Comprehensive Income	-	-	0,1	0,3	0,3	- 0,2
Accumulated Earnings	- 20,10	- 4,70	7,20	28,90	55,60	39,9

Appendix 3 – Forecasted Net Working Capital 2015-2025

in millions ($)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Current Assets	804,68	1.042,63	1.284,13	1.538,55	1.806,44	2.088,38	2.384,96	2.696,79	3.024,52	3.368,82	3.730,37
Accounts Receivable	646,12	837,17	1.031,08	1.235,37	1.450,47	1.676,85	1.914,99	2.165,37	2.428,52	2.704,97	2.995,28
Other Current Assets	158,57	205,46	253,04	303,18	355,97	411,53	469,97	531,42	596,00	663,85	735,09
Current Liabilities	518,69	672,06	827,73	991,73	1.164,41	1.346,14	1.537,31	1.738,31	1.949,56	2.171,49	2.404,55
Accounts Payable	144,31	186,99	230,30	275,93	323,97	374,53	427,72	483,65	542,42	604,17	669,01
Accrued Liabilities	374,37	485,08	597,43	715,80	840,44	971,61	1.109,59	1.254,67	1.407,14	1.567,32	1.735,54
Net Working Capital	286,00	370,56	456,40	546,82	642,03	742,24	847,65	958,48	1.074,96	1.197,32	1.325,83
Variation	87,23	84,57	85,83	90,43	95,21	100,20	105,41	110,83	116,48	122,37	128,50

Appendix 4 – Forecasted Base Case Revenue 2015-2025

in millions ($)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Talent Solutions	1.872,6	2.503,7	3.143,2	3.816,5	4.525,1	5.270,4	6.053,9	6.877,1	7.741,7	8.649,3	9.601,6
Marketing Solutions	704,5	866,0	1.024,6	1.191,4	1.366,8	1.551,0	1.744,5	1.947,6	2.160,8	2.384,3	2.618,6
Premium Subscriptions	615,5	766,9	926,9	1.096,1	1.275,0	1.464,1	1.663,8	1.874,6	2.097,2	2.332,0	2.579,8
Total	3.192,5	4.136,6	5.094,7	6.104,1	7.167,0	8.285,5	9.462,2	10.699,4	11.999,6	13.365,6	14.800,0

Appendix 5 – Forecasted Bad Case Revenue 2015-2025

in millions ($)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Talent Solutions	1.872,6	2.245,0	2.611,3	2.996,4	3.401,0	3.825,9	4.271,9	4.739,9	5.230,7	5.745,4	6.284,7
Marketing Solutions	704,5	743,4	772,6	802,9	834,3	866,7	900,4	935,2	971,3	1.008,7	1.047,5
Premium Subscriptions	615,5	698,8	786,9	880,3	979,2	1.083,9	1.194,8	1.312,2	1.436,4	1.567,8	1.706,9
Total	3.192,5	3.687,2	4.170,9	4.679,6	5.214,4	5.776,5	6.367,1	6.987,3	7.638,5	8.321,9	9.039,0

Appendix 6 – Forecasted Good Case Revenue 2015-2025

in millions ($)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Talent Solutions	1.872,6	2.762,4	3.675,1	4.636,7	5.649,3	6.715,0	7.835,9	9.014,4	10.252,7	11.553,2	12.918,6
Marketing Solutions	704,5	1.070,2	1.444,5	1.838,9	2.254,3	2.691,5	3.151,4	3.634,9	4.143,1	4.676,9	5.237,3
Premium Subscriptions	615,5	835,0	1.066,9	1.312,0	1.570,9	1.844,2	2.132,7	2.437,0	2.757,9	3.096,2	3.452,6
Total	3.192,5	4.667,6	6.186,5	7.787,6	9.474,5	11.250,7	13.120,0	15.086,3	17.153,7	19.326,3	21.608,5

Appendix 7 – Forecasted Balance Sheet 2015-2025

in millions ($)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Assets	**7.257,4**	**7.891,1**	**8.602,9**	**9.424,9**	**9.294,7**	**11.044,9**	**12.621,3**	**14.194,7**	**16.250,4**	**18.600,5**	**21.288,8**
Cash and Equivalents	4.559,3	4.500,7	4.509,8	4.591,5	3.681,8	4.611,7	5.325,1	5.991,2	7.093,3	8.441,6	10.078,0
Accounts Receivable	646,1	837,2	1.031,1	1.235,4	1.450,5	1.676,9	1.915,0	2.165,4	2.428,5	2.705,0	2.995,3
Deferred Commissions	95,8	124,1	152,8	183,1	215,0	248,6	283,9	321,0	360,0	400,9	444,0
Prepaid Expenses	76,2	98,8	121,6	145,7	171,1	197,8	225,9	255,5	286,5	319,1	353,4
Other Current Assets	158,6	205,5	253,0	303,2	356,0	411,5	470,0	531,4	596,0	663,8	735,1
Total Current Assets	**5.536,0**	**5.766,2**	**6.068,4**	**6.458,9**	**5.874,4**	**7.146,5**	**8.219,9**	**9.264,4**	**10.764,3**	**12.530,5**	**14.605,7**
Property and Equipment	1.066,1	1.381,3	1.701,3	2.038,3	2.393,2	2.766,8	3.159,7	3.572,8	4.007,0	4.463,1	4.942,1
Goodwill	356,7	356,7	356,7	356,7	356,7	356,7	356,7	356,7	356,7	356,7	356,7
Intangible Assets	188,9	244,7	301,4	361,1	424,0	490,2	559,8	633,0	710,0	790,8	875,6
Other Assets	109,7	142,2	175,1	209,8	246,3	284,8	325,2	367,7	412,4	459,3	508,6
Liabilities	**2.624,4**	**3.080,6**	**3.543,6**	**4.031,4**	**3.463,5**	**4.695,2**	**5.627,9**	**6.407,4**	**7.507,1**	**8.716,6**	**10.060,5**
Accounts Payable	144,3	187,0	230,3	275,9	324,0	374,5	427,7	483,6	542,4	604,2	669,0
Accrued Liabilities	374,4	485,1	597,4	715,8	840,4	971,6	1.109,6	1.254,7	1.407,1	1.567,3	1.735,5
Deferred Revenue	751,5	973,7	1.199,3	1.436,9	1.687,1	1.950,4	2.227,4	2.518,6	2.824,7	3.146,2	3.483,9
Total Currrent Liabilities	**1.270,2**	**1.645,8**	**2.027,0**	**2.428,6**	**2.851,5**	**3.296,5**	**3.764,7**	**4.256,9**	**4.774,2**	**5.317,7**	**5.888,4**
Long Term Debt	1.081,6	1.081,6	1.081,6	1.081,6	-	691,1	1.055,2	1.236,8	1.708,1	2.257,6	2.908,2
Deferred Tax Liabilities	82,6	107,0	131,7	157,8	185,3	214,3	244,7	276,7	310,3	345,6	382,7
Other Long Term Liabilities	190,1	246,3	303,3	363,4	426,7	493,3	563,3	637,0	714,4	795,7	881,1
Stockholder's Equity	**4.632,5**	**4.810,7**	**5.059,1**	**5.393,7**	**5.830,7**	**6.349,5**	**6.993,1**	**7.786,9**	**8.743,7**	**9.883,8**	**11.228,7**
Noncontrolling Interest	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4	5,4
Additional Paid-in capital	4.405,9	4.405,9	4.405,9	4.405,9	4.405,9	4.405,9	4.405,9	4.405,9	4.405,9	4.405,9	4.405,9
Accumulated Other Comprehensive Income	- 0,3	- 0,4	- 0,5	- 0,5	- 0,6	- 0,7	- 0,8	- 1,0	- 1,1	- 1,2	- 1,3
Accumulated Earnings	221,5	399,7	648,2	982,9	1.420,0	1.938,9	2.582,6	3.376,6	4.333,4	5.473,7	6.818,7

Appendix 8 – Forecasted FCFF Base Case 2015-2025

in millions ($)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Revenue	3.192,54	4.136,56	5.094,69	6.104,10	7.166,95	8.285,53	9.462,18	10.699,36	11.999,61	13.365,58	14.800,03
Cost of Sales	422,74	547,74	674,61	808,27	949,00	1.097,12	1.252,92	1.416,74	1.588,91	1.769,79	1.959,73
Gross Profit	2.769,80	3.588,82	4.420,08	5.295,83	6.217,95	7.188,41	8.209,25	9.282,61	10.410,69	11.595,79	12.840,30
Gross Margin	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*
Operating Expenses	1.450,46	1.834,06	2.210,97	2.590,59	2.972,28	3.245,98	3.590,48	3.949,63	4.283,12	4.607,68	4.920,37
Operating Margin	*48,0%*	*47,0%*	*46,0%*	*45,0%*	*44,0%*	*43,0%*	*42,0%*	*41,0%*	*40,0%*	*39,0%*	*38,0%*
R&D	700,00	906,99	1.117,07	1.338,39	1.571,44	1.816,70	2.074,69	2.345,95	2.631,05	2.930,55	3.245,07
EBITDA	619,35	847,77	1.092,04	1.366,85	1.674,23	2.125,74	2.544,09	2.987,03	3.496,52	4.057,56	4.674,86
EBITDA Margin	*19,4%*	*20,5%*	*21,4%*	*22,4%*	*23,4%*	*25,7%*	*26,9%*	*27,9%*	*29,1%*	*30,4%*	*31,6%*
Depreciation/Amortization	340,87	441,66	543,96	651,73	765,21	884,64	1.010,27	1.142,36	1.281,19	1.427,04	1.580,19
EBIT	278,48	406,11	548,09	715,12	909,02	1.241,09	1.533,82	1.844,67	2.215,33	2.630,52	3.094,67
Taxes	97,47	142,14	191,83	250,29	318,16	434,38	536,84	645,63	775,37	920,68	1.083,13
Interest	- 81,96	- 110,12	- 132,59	- 156,26	- 181,18	- 316,80	- 383,64	- 437,11	- 516,72	- 604,90	- 703,65
Net Income	99,05	153,85	223,67	308,57	409,69	489,91	613,34	761,92	923,24	1.104,94	1.307,89
Depreciation/Amortization	340,87	441,66	543,96	651,73	765,21	884,64	1.010,27	1.142,36	1.281,19	1.427,04	1.580,19
Net Working Capital	87,23	84,57	85,83	90,43	95,21	100,20	105,41	110,83	116,48	122,37	128,50
CAPEX	429,14	416,03	422,25	444,84	468,40	492,95	518,55	545,22	573,02	601,98	632,16
FCFF	98,01	264,05	431,21	605,88	801,71	981,81	1.210,47	1.469,90	1.747,90	2.052,36	2.384,42

Appendix 9 – Forecasted FCFF Bad Case 2015-2025

in millions ($)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Revenue	3.192,54	3.687,23	4.170,88	4.679,58	5.214,42	5.776,52	6.367,07	6.987,29	7.638,46	8.321,91	9.039,04
Cost of Sales	422,74	488,24	552,28	619,64	690,46	764,89	843,09	925,21	1.011,44	1.101,94	1.196,90
Gross Profit	2.769,80	3.198,99	3.618,60	4.059,94	4.523,96	5.011,63	5.523,98	6.062,07	6.627,02	7.219,98	7.842,15
Gross Margin	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*
Operating Expenses	1.450,46	1.586,01	1.702,60	1.809,17	1.956,73	2.051,58	2.163,19	2.357,81	2.462,27	2.557,43	2.640,80
Operating Margin	*48,0%*	*46,0%*	*44,0%*	*42,0%*	*41,0%*	*41,0%*	*40,0%*	*40,0%*	*39,0%*	*38,0%*	*37,0%*
R&D	700,00	808,47	914,51	1.026,05	1.143,32	1.266,57	1.396,05	1.532,04	1.674,82	1.824,67	1.981,91
EBITDA	619,35	804,52	1.001,48	1.224,72	1.423,90	1.693,49	1.964,74	2.172,23	2.489,93	2.837,87	3.219,44
EBITDA Margin	*19,4%*	*21,8%*	*24,0%*	*26,2%*	*27,3%*	*29,3%*	*30,9%*	*31,1%*	*32,6%*	*34,1%*	*35,6%*
Depreciation/Amortization	340,87	393,68	445,32	499,64	556,74	616,76	679,81	746,03	815,55	888,53	965,09
EBIT	278,48	410,83	556,16	725,08	867,16	1.076,73	1.284,93	1.426,20	1.674,37	1.949,35	2.254,34
Taxes	97,47	143,79	194,66	253,78	303,51	376,86	449,73	499,17	586,03	682,27	789,02
Interest	- 81,96	- 110,12	- 132,59	- 156,26	- 181,18	- 316,80	- 383,64	- 437,11	- 516,72	- 604,90	- 703,65
Net Income	99,05	156,92	228,92	315,05	382,48	383,08	451,57	489,92	571,62	662,18	761,68
Depreciation/Amortization	340,87	393,68	445,32	499,64	556,74	616,76	679,81	746,03	815,55	888,53	965,09
Net Working Capital	87,23	84,57	85,83	90,43	95,21	100,20	105,41	110,83	116,48	122,37	128,50
CAPEX	429,14	368,05	371,59	391,38	412,02	433,54	455,97	479,35	503,72	529,11	555,57
FCFF	98,01	267,12	388,49	513,73	622,41	666,50	780,81	867,43	999,94	1.143,96	1.299,70

Appendix 10 – Forecasted FCFF Good Case 2015-2025

in millions ($)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Revenue	3.192,54	4.667,57	6.186,47	7.787,61	9.474,49	11.250,72	13.120,03	15.086,34	17.153,69	19.326,28	21.608,48
Cost of Sales	422,74	618,05	819,17	1.031,19	1.254,55	1.489,75	1.737,28	1.997,64	2.271,39	2.559,07	2.861,26
Gross Profit	2.769,80	4.049,52	5.367,29	6.756,43	8.219,94	9.760,96	11.382,76	13.088,70	14.882,30	16.767,21	18.747,21
Gross Margin	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*	*86,8%*
Operating Expenses	1.450,46	2.036,96	2.589,46	3.114,54	3.703,36	4.295,99	4.864,38	5.597,43	6.173,21	6.739,09	7.291,49
Operating Margin	*48,0%*	*46,0%*	*44,0%*	*42,0%*	*41,0%*	*41,0%*	*40,0%*	*40,0%*	*39,0%*	*38,0%*	*37,0%*
R&D	700,00	1.023,42	1.356,45	1.707,52	2.077,39	2.466,85	2.876,72	3.307,85	3.761,14	4.237,51	4.737,90
EBITDA	619,35	989,14	1.421,38	1.934,36	2.439,19	2.998,12	3.641,67	4.183,42	4.947,95	5.790,62	6.717,82
EBITDA Margin	*19,4%*	*21,2%*	*23,0%*	*24,8%*	*25,7%*	*26,6%*	*27,8%*	*27,7%*	*28,8%*	*30,0%*	*31,1%*
Depreciation/Amortization	340,87	498,35	660,53	831,48	1.011,59	1.201,23	1.400,82	1.610,76	1.831,49	2.063,46	2.307,12
EBIT	278,48	490,79	760,85	1.102,88	1.427,60	1.796,89	2.240,85	2.572,66	3.116,46	3.727,16	4.410,70
Taxes	97,47	171,77	266,30	386,01	499,66	628,91	784,30	900,43	1.090,76	1.304,51	1.543,74
Interest	- 81,96	- 110,12	- 132,59	- 156,26	- 181,18	- 316,80	- 383,64	- 437,11	- 516,72	- 604,90	- 703,65
Net Income	99,05	208,89	361,97	560,62	746,76	851,18	1.072,91	1.235,12	1.508,97	1.817,76	2.163,31
Depreciation/Amortization	340,87	498,35	660,53	831,48	1.011,59	1.201,23	1.400,82	1.610,76	1.831,49	2.063,46	2.307,12
Net Working Capital	87,23	84,57	85,83	90,43	95,21	100,20	105,41	110,83	116,48	122,37	128,50
CAPEX	429,14	472,72	482,12	508,02	535,02	563,17	592,50	623,07	654,92	688,10	722,67
FCFF	98,01	319,09	626,21	974,50	1.318,54	1.589,45	1.986,64	2.333,64	2.802,02	3.315,48	3.876,26

Appendix 11 – Forecasted Operating Expenses 2015-2025

in millions ($)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Sales and Marketing	1.006,8	1.244,3	1.463,9	1.671,0	1.913,8	2.138,0	2.360,8	2.667,2	2.889,6	3.105,4	3.415,2
General and Administrative	443,7	548,4	645,2	736,4	843,4	942,3	1.040,4	1.175,5	1.273,5	1.368,6	1.505,1
Operating Expenses	1.450,5	1.792,7	2.109,1	2.407,5	2.757,3	3.080,3	3.401,2	3.842,6	4.163,1	4.474,0	4.920,4
Percentage of Revenues	48%	47%	46%	45%	44%	43%	42%	41%	40%	39%	38%

Appendix 12 – Forecasted Long-Term Debt 2015-2025

in millions of $	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Long-Term Debt	1082	1082	1082	1082	0	691	1055	1237	1708	2258	2908
Interest Expense	81,96	110,12	132,59	156,26	181,18	316,80	383,64	437,11	516,72	604,90	703,65
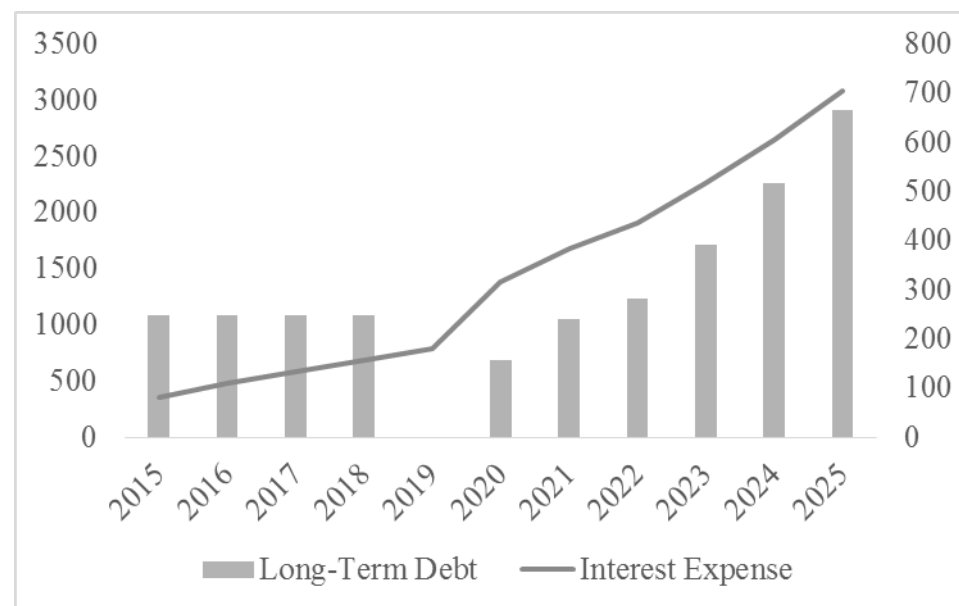
Appendix 13 – Forecasted Operating Leases 2015-2025

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
0	$ 114,58	$ 141,47	$ 197,76	$ 242,68	$ 290,00	$ 339,83	$ 392,27	$ 447,43	$ 505,43	$ 566,39	$ 630,43
1	$ 141,47	$ 197,76	$ 242,68	$ 290,00	$ 339,83	$ 392,27	$ 447,43	$ 505,43	$ 566,39	$ 630,43	$ 697,67
2	$ 150,09	$ 209,81	$ 257,46	$ 307,67	$ 360,53	$ 416,16	$ 474,68	$ 536,21	$ 600,88	$ 668,82	$ 740,16
3	$ 177,46	$ 248,08	$ 304,42	$ 363,78	$ 426,29	$ 492,07	$ 561,26	$ 634,02	$ 710,48	$ 790,81	$ 875,16
4	$ 181,52	$ 253,75	$ 311,39	$ 372,11	$ 436,04	$ 503,33	$ 574,11	$ 648,53	$ 726,74	$ 808,91	$ 895,20
5	$ 175,73	$ 245,65	$ 301,45	$ 360,23	$ 422,12	$ 487,25	$ 555,77	$ 627,82	$ 703,53	$ 783,08	$ 866,61
over 5 years	$ 993,73	$1.389,15	$1.704,66	$2.037,06	$2.387,06	$2.755,41	$3.142,88	$3.550,28	$3.978,46	$4.428,27	$4.900,64
Total	$1.820,00	$2.544,20	$3.122,06	$3.730,85	$4.371,86	$5.046,49	$5.756,14	$6.502,29	$7.286,48	$8.110,31	$8.975,45

Appendix 14 – Sensitivity Analysis Tables

g/Re	7,82%	8,32%	8,82%	9,32%	**9,82%**	10,32%	10,82%	11,32%	11,82%
0,8%	$211,62	$196,85	$183,99	$172,72	$ 162,76	$153,91	$146,00	$138,89	$132,47
1,3%	$221,42	$204,99	$190,84	$178,52	$ 167,71	$158,16	$149,67	$142,08	$135,25
1,8%	$232,84	$214,39	$198,65	$185,08	$ 173,27	$162,91	$153,75	$145,60	$138,32
2,3%	$246,34	$225,35	$207,67	$192,58	$ 179,57	$168,25	$158,31	$149,52	$141,70
2,8%	$262,52	$238,29	$218,18	$201,24	**$186,77**	$174,30	$163,43	$153,90	$145,47
3,3%	$282,28	$253,81	$230,60	$211,32	$ 195,08	$181,21	$169,24	$158,82	$149,67
3,8%	$306,95	$272,77	$245,49	$223,24	$ 204,76	$189,18	$175,88	$164,40	$154,40
4,3%	$338,64	$296,44	$263,68	$237,53	$ 216,19	$198,47	$183,53	$170,77	$159,76
4,8%	$380,82	$326,83	$286,39	$254,98	$ 229,91	$209,45	$192,45	$178,12	$165,88

Table 17 - Steady State Growth and Cost of Equity

Prob/Cost	10,00%	20,00%	30,00%	40,00%	50,00%	60,00%	70,00%	80,00%	90,00%	100,00%
10,0%	$195,19	$193,51	$191,82	$190,14	$188,46	**$186,77**	$185,09	$183,40	$181,72	$180,04
20,0%		$190,14	$186,77	$183,40	$180,04	$176,67	$173,30	$169,93	$166,57	$163,20
30,0%			$181,72	$176,67	$171,62	$166,57	$161,52	$156,46	$151,41	$146,36
40,0%				$169,93	$163,20	$156,46	$149,73	$142,99	$136,26	$129,52
50,0%					$154,78	$146,36	$137,94	$129,52	$121,10	$112,68
60,0%						$136,26	$126,16	$116,05	$105,95	$ 95,85
70,0%							$114,37	$102,58	$ 90,80	$ 79,01
80,0%								$ 89,11	$ 75,64	$ 62,17
90,0%									$ 60,49	$ 45,33
100,0%										$ 28,49

Table 18 - Probability of Default and Cost of Default

Appendix 15 – Debt Rating and Default Probability Tables

greater than	≤ to	Rating is	Spread is	Bankruptcy Probability
-100000	0,499999	D2/D	12,00%	100%
0,5	0,799999	C2/C	10,00%	85%
0,8	1,249999	Ca2/CC	8,00%	70,00%
1,25	1,499999	Caa/CCC	7,00%	59,01%
1,5	1,999999	B3/B-	6,00%	45,00%
2	2,499999	B2/B	5,00%	36,80%
2,5	2,999999	B1/B+	4,00%	25,00%
3	3,499999	Ba2/BB	3,25%	16,63%
3,5	3,9999999	Ba1/BB+	2,75%	10,00%
4	4,499999	Baa2/BBB	1,75%	7,54%
4,5	5,999999	A3/A-	1,20%	2,50%
6	7,499999	A2/A	1,00%	0,66%
7,5	9,499999	A1/A+	0,90%	0,60%
9,5	12,499999	Aa2/AA	0,70%	0,51%
12,5	100000	Aaa/AAA	0,40%	0,07%

Table 19 - Debt Rating and Default Probability based on Interest Coverage Ratio