UNIVERSITY OF LJUBLJANA
SCHOOL OF ECONOMICS AND BUSINESS

MASTER'S THESIS

VALUATION OF ZYNGA AT INITIAL PUBLIC OFFERING

Ljubljana, September 2021 ANDREJ DOLENC

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LIST OF ABBREVIATIONS

- ARPDAU – Average Revenue per Daily Active User
- CAGR – Compound Annual Growth Rate
- CEO – Chief Executive Officer
- CPC – Cost-per-click
- DAU – Daily Active Users
- DCF – Discounted Cash Flow
- D/E – Debt to Equity
- EBIT – Earning Before Interest and Tax
- EBITDA – Earning Before Interest, Tax, Depreciation and Amortization
- ERP – Equity Risk Premium
- EV – Enterprise Value
- F2P – Free-to-play
- FCFF – Free Cash Flow to the Firm
- IPO – Initial Public Offering
- LTM – Latest Twelve Months
- MAU – Monthly Active Users

- MMO – Massively Multi-Player Online Games
- MMOG – Massively Multiplayer Online Game
- MUU – Monthly Unique Users
- P2P – Pay-to-play
- PPE – Property, Plant and Equipment
- SEC – Security and Exchange Commission
- US GAAP – United States Generally Accepted Accounting Principles
- WACC – Weighted Average Cost of Capital
- WC – Working Capital

INTRODUCTION

On July 1, 2011, Zynga Inc. announced to the Securities and Exchange Commission (SEC) that it was soon going to initiate an initial public offering (IPO). The documents submitted to the SEC revealed that Zynga was at the time a barely 4-year old social gaming company with incredible revenue growth rates and an impressive user base, but at the same time with a low EBITDA margin in comparison to the industry averages, a dependency on the then start-up called Facebook and a relatively unknown business model. All of these factors made it difficult to model the company's cash flows, as well as compare Zynga to other companies. To complicate things even more, the management did not explicitly say what the reason for the IPO was (for example, the unexplained use of cash proceeds can be interpreted as a payout for the founders and early investors), further, the user metrics reported by the company seemed to be in a downward trend, while the IPO sentiment was unfavorable, making it hard to go public, since hardly any IPOs were reported in the year prior to the Zynga's IPO. Due to the large amount of conflicting information, a fair IPO offer price was naturally hard to evaluate. Zynga's IPO price was initially set at a value of US$ 10 and a surge in the price of Zynga shares was recorded already in the first few months after the IPO, reaching the value of US$ 14.7 as at 27.2.2012. However, shortly after, the share price nosedived and reached the lowest point at US$ 2.21, shedding almost 85% of its value and thus becoming one of the poorest performing IPOs of the decade.

The primary goal of the thesis is to evaluate if the price of Zynga at an Initial Public Offering was fair. In order to do that, we must first identify and describe the environment in which Zynga operates, second, value Zynga with the use of three methods (i.e. the Discounted Cash Flow Method, Guideline Public Company Method and Guideline Company Transaction Method), and last, comment on the possible reasons for the overvaluation at the time of the IPO in relation to the calculated value in the thesis.

In the Chapter 1 and 2, we aim to understand the history of Zynga, its business model and business environment, and continue by touching upon the industry Zynga is in, namely online social gaming, and the competition the company is faced with. We also perform in detailed analysis of Zynga's financial statements in Chapter 3.

Based upon the collected observations concerning the company in question and its environment, we then apply two methods of valuation, namely the Discounted Cash Flow Method in Chapter 4 and Guideline Public Companies/Transactions Method in Chapter 5, for the purposes of valuing the company.

For the first valuation method, we select all the value drivers and determine the parameters used in the valuation. Since Zynga was at the time a startup with a short history of existence and a yet unproven business model, many challenging yet critical assumptions were made

in the process of valuation, such as are setting the revenue growth, the number of daily active users, average revenue per user, operating margin, capital expenditures and working capital, among others. These assumptions were based on a detailed scrutiny of Zynga financial reports and financial reports of its peer companies.

The valuation section is completed with a multiple-based valuation, based on both comparable firms and comparable transactions. For a better understanding and comparison, a sample of the available comparable companies is divided into two groups, namely Tier 1 and Tier 2.

Further, we provide a calculation of the market value of Zynga at the time of the IPO at a value between US$ 3.4 and US$ 6.8 per share (based on the DCF method), with the upper range of US$ 11 per share (based on the EV/EBIT multiple for Tier 1 companies).

Zynga opened its trading with the value of a share at US$ 10, which is an amount close to the calculated upper range of US$ 11 per share. In Chapter 6 we identify three possible reasons for the high IPO price, the first being a conflict of interests of the lead underwriter, the second, no apparent reasons to raise additional funds with an exception of providing liquidity for the founders and VCs, in combination with stagnating user metrics and insider trading, and the third, the difficulty of valuing a young company with a limited history and an innovative business model.

The main limitation of the thesis is surely its subjectivity regarding the future performance of the company. Of course, we do our best to estimate the company's future cash flows as objectively as possible by creating two distinct scenarios, both of which proved in our opinion viable for the research purposes. Another obvious limitation of the thesis lies in the time disparity between the IPO and the completion of the thesis, since looking back and making predictions turns out to be far easier than making predictions in real time, in this case, at the time of the Zynga IPO).

1 COMPANY PROFILE

In this section of the paper, we first present the necessary information and provide a description of the company together with its vision and mission. We then continue by introducing the inception of Zynga, including its history and previous funding rounds, and finish off with an analysis of the Zynga business model, comprising its business environment, as well as its future opportunities and the possible pitfalls.

1.1 Basic Information and Description of the Company

Zynga is a software company headquartered in San Francisco, California, with its main activity in the business of developing social video games played on the internet. Zynga

games are accessible and most widely played on Facebook, other social networks and mobile platforms. And since all of Zynga games are free to play, the company generates revenue through the in-game sale of virtual goods and advertising.

Zynga has, consistent with the SEC filing report, a large community of players worldwide, with 60 million average Daily Active Users (DAUs) and 232 million average Monthly Active Users (MAUs) in 166 countries (Zynga, 2011), making Zynga the most prominent social game developer in the world. According to the SEC filing and AppData, the company has more DAUs than the next 30 social game developers combined. To date, the company has developed five hugely successful online social games: CityVille, FarmVille, Mafia Wars, Words with Friends, and Zynga Poker, which occupied the top five social games on Facebook at the time of the IPO filing (Zynga, 2011). Zynga games typically achieve widespread audience due to their imbedded virality. For example, FarmVille grew to 43 million MAUs in its first 100 days, while CityVille increased to 61 million MAUs in its first 50 days (Zynga, 2011). In June 2011, Zynga launched a new mobile phone game called Hanging with Friends, which became the most downloaded game in the Apple App Store already during the first week of its availability (Zynga, 2011). Much of the Zynga success arises also from combining data analytics with creative game designing, which enables the company to keep creating a superior player experience. Overall, since its inception in 2007, the company has generated over US$ 1.5 billion in cumulative bookings, that is revenues and deferred revenues.

Zynga was founded with the vision that play—namely search, share, and shop—would become one of the core activities on the internet (Zynga, 2011). In a sense, Zynga succeeded to do just that, of course, with the help of other game developers. Games have grown to become the second most popular online activity in the United States by time spent, surpassing even email (Zynga, 2011). According to the Pop Cap Social Gaming Report, social gaming continues to grow even today in terms of frequency and hours played per week. Based upon a total of 289 million internet users in the US and UK in 2011, it is estimated that there are approximately 118.5 million social gamers (Information Solutions Group, 2011). In other words, 41% of all internet users in the US and the UK are also social gamers.

1.2 History

The company was founded by Marc Pincus, Eric Schiermeyer, Justin Waldron, Michael Luxton, Steve Schoettler and Andrew Trader in April 2007 under the name Presidio Media, which was later changed to Zynga.

The first game, named Texas Hold'Em Poker, that the company created in 2007 (Zynga, 2011) was released on the social platform Facebook. Due to the success of the game, the company raised US$ 10.9 million of equity in two seed rounds of funding, the first one in

January 2008 and the second one in February 2008 (Crunchbase Inc., n.d.). In July of the same year, Zynga raised even more capital with the second round of financing, led by Kleiner Perkins Caufield & Byers, and managed to raise US$ 25 million, implying a post-money valuation of US$ 222 million (Crunchbase Inc., n.d.).

After the second round of financing, in late 2008, Zynga started looking outwards in search of ideas and prospecting companies in the social games sector and ended up buying YoVille, a browser-based social network game with 150 thousand daily active users (Zynga, 2011). YoVille was Zynga's first game in the -Ville series.

While screening the market for the best viral social games, Zynga stumbled upon Happy Farm, a Chinese social network farming game. According to Wired magazine, Happy Farm was ranked as number 14 among "The 15 Most Influential Games of the Decade" (Kohler 2009). It also had 70 million active users at the time, with users predominantly from China and Taiwan. Either way, the game became an inspiration for the future Zynga games. As Kohler (2009) puts it, »Happy Farm's blend of planting, growing and harvesting crops turned out to be the simple game-design formula that had gigantic repercussions«. Not long after, FarmVille, copying the game design of Happy Farm, was conceived and launched in 2009, and just within six weeks, due to its virality, it reached an astonishing 10 million DAU.

By 2010, Zynga continued developing its -Ville games series until it introduced FrontierVille (June 2010) and CityVille (December 2010), which worked on similar principles as FarmVille, however, with slight variations in the theme of the game. CityVille, with the biggest game launch in the company's history, became the most popular application on Facebook, managing to surpass Zynga's previous hit game FarmVille. Within its first 50 days, CityVille grew to an incredible amount of 61 million monthly active users (Zynga Inc., 2011).

Some of the growth in the number of daily active users and bookings of Zynga can also be attributed to the numerous acquisitions of smaller game developers. As a matter of fact, Zynga acquired 20 companies in its history up to the IPO. Among all, the most notable acquisitions were the following (Crunchbase Inc., n.d.):

- Acquisition of Newtoy Inc. on December 2, 2010, with which Zynga introduced the game "Words with Friends" in the repertoire of its games by renaming it to Zynga with Friends.
- Acquisition of game developer Area/Code, later renamed Zynga New York.
- In March 2011, Zynga acquired game developer Floodgate Entertainment.
- In April 2011, Zynga bought MarketZero, an online poker tracker company.

Due to the substantially widespread popularity of its games and many acquisitions, Zynga was soon faced with the need to expand its workforce. Accordingly, in 2011, Zynga hired

more than 800 people and by May 2011 had more than 1,500 full-time employees in 13 offices, spanning six countries (Swisher, May 2011).

In view of the tremendous success of its two most popular games, FarmVille and CityVille, Zynga was able to cumulatively raise an incredible amount of US$ 995.2 million in funding in approximately one year and a half, with the last series indicating a post-money valuation of US$ 11.990 million.

Table 1: Rounds of Financing of Zynga in the period 2008–2011

Deal type	Series	Date	Amount	Post money valuation	Raised to date
			mio $	mio $	mio $
Early stage VC	Series A	15.Jan.08	5.6	22.6	5.6
Early stage VC	Series A1	1.Feb.08	5.3	55.3	10.9
Early stage VC	Series B	23.Jul.08	25.0	222.2	35.9
Early stage VC	Series B1	17.Nov.09	15.2	3,226.0	51.1
Later stage VC	Series C	16.Dec.09	180.0	n/a	231.1
Later stage VC	Series B2	15.Jun.10	310.0	4.643,8	541.1
Later stage VC	Series C	1.Feb.11	490.0	11,990.0	1,031.1

Source: Crunchbase Inc., (n.d.).

1.3 Business Model

All Zynga games follow a »free-to-play« (F2P) revenue model, which means no fee is charged to play a Zynga game. The model was commonly applied in the early massively used multiplayer online games (MMOGs), in which large numbers of players play the game simultaneously, at the same time interacting with each other via the internet (Alha, Koskinen, Paavilainen, Hamari & Kinnunen, 2014).

Zynga games are typically built social networks that are open for third-party application developers (as is Facebook) or in a category of casual games.

There are three ways, in which Zynga monetizes its users, namely by:

- Selling **virtual goods** inside a game, which gamers then use as a currency within Zynga online games. It is also called a micro-transaction powered business model, where the player is continually offered in-game bonuses for seemingly small amounts of cash to progress faster or improve accomplishments in the game. According to the Zynga's management, players choose to pay for virtual goods for the same reasons they are willing to pay for other forms of entertainment. They enjoy the additional playing time or added convenience, the ability to personalize their game boards, the satisfaction of leveling up and the opportunity for sharing creative expressions (Zynga Inc., 2011).

- **Advertising**, which is most often in the form of:
  - Banner and video ads that are embedded into the game.
  - Engagement Ads, which are usually in the form of questionnaires about brand preferences and purchase behavior. Most often players get an in-game currency in exchange for the information provided.
  - Product placement (offers) inside the game. This type of advertising combines advertising and entertainment (Ginosar & Levi-Faur, 2010) and is typically in the form of branded virtual goods, which means that a company advertises its brand deeply into the gameplay. In the period before the IPO, Zynga had already run successful campaigns with 7-Eleven, American Express, DreamWorks, and McDonald's (Fast Company, 2011, as cited in Runge, 2014). In addition, the company has struck some high-profile branding deals with Lady Gaga and the makers of the upcoming animated movie "Kung Fu Panda 2," among others (Swisher, 2011).
- **Lead generation**, which is defined as the action of identifying and capturing interest for the purpose of selling a product. Zynga, just as with the engagement ads, offers in-game currency, if a lead (in this case a player) engages in a lead generation process. Lead generation has caused certain media outrage since it can also be used for scamming players into involuntary purchases. TechCrunch not only reported that most of these (lead generation) offers »are bad for consumers because it confusingly gets them to pay far more for in-game currency than if they just paid cash« (Arrington, 2009), but even went as far as calling the FarmVille game a 'ScamVille' (Arrington, 2009). One of the examples of the supposed fraud is the IQ survey. After the users answer all the questions about farming and crops, they need to enter a texted pin code to get their results via a text message. After they enter a pin code, they have subscribed to a $9.99/month subscription, without any notification. There is also no mention of any of these payments in the offer itself (Arrington, 2009). Andrew Trader, co-founder of Zynga, even made a public statement in 2009 saying that Zynga makes about a third of its revenue from lead generation. Founder and CEO of Zynga, Mark Pincus, quickly responded to the allegations by making a public statement, in the latter admitting that the problem does exist and that Zynga needs to revise its service level agreements with the providers, requiring them to filter and police offers before posting on their networks (Arrington, 2009).

When it comes to new users, Zynga attracts and acquires them in several ways. The most apparent one is through its viral game mechanics, allowing users to invite their friends to register with Facebook (or other social networks) in order to join or even challenge them to a game. Sometimes, with the permission of the user, Zynga contacts everybody in the user's address book on his/her behalf. Of course, the user gets virtual goods in return, making the offer more attractive. Besides offering virtual goods in return, Zynga can also apply social pressure to reach more users; for example, it may limit access to in-game resources. Martin (2011) states that "without a certain number of friends playing the game, you cannot access these resources. Even when a specific mission requires you to interact with the resource that

you do not have access to, it will stay restricted". With this kind of pressure, Zynga makes the player either invite friends to playing the games or spend money to advance in and enjoy the game fully.

Another big part of the user acquisition tactic is paid advertising. Zynga mostly advertises on social platforms as is Facebook, usually charging on a Cost-Per-Click (CPC) basis. An additional form of advertising that Zynga makes use of is banner advertising on the IAds (ads for iOS platform) or Google Ads (ads in Google search) platform.

Finally, due to its well-known brand, Zynga acquires its users also with referrals and organic search, which provides search results not influenced by paid advertising.

Zynga created two main options for the player. Either the player pays with money (in-app purchases of virtual goods) or with a media value (inviting friends to play the game, answering surveys, ad clicking or other forms). Fallarme (2011), a blogger, summed up the reasons for Zynga's success with the following words: "Advertising was free, users were cheap and achieving virality on a massive scale was easy. Zynga jumped on this, cloning and spamming their way to the top".

1.4 Business environment

For the social game developers to not only attract a big audience, but also make a game a genuine social experience and monetize it, they typically work closely with providers of specialized services, usually divided into four segments: Virtual currency providers, Payment service providers, Social gaming analytics, and In-game advertisers.

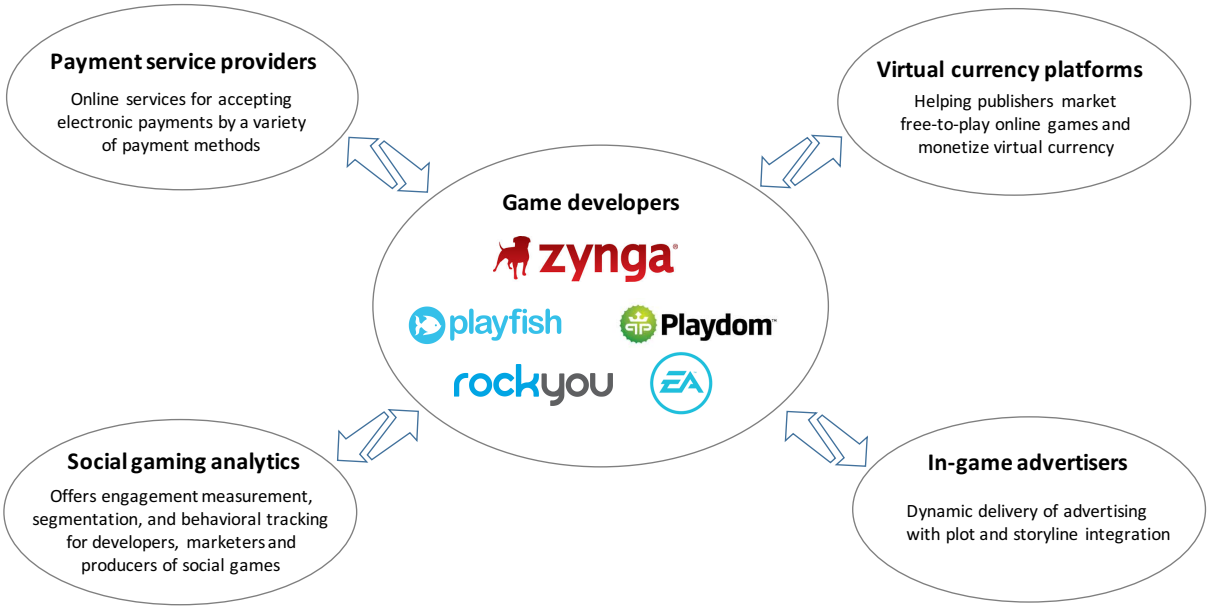
Virtual currency providers help developers monetize free-to-play online games without building in-game features into each game. This allows any game released on the virtual currency platforms to take advantage of this revenue-generating feature easily.

Payment service providers offer services for accepting electronic payments via credit card, direct debit or bank transfer. Payment service providers typically manage technical connections, relationships with the external network, and bank accounts.

When developing and running an online social game, publishers generally need to handle and analyze data on a vast scale to maximize user engagement and monetary conversions, and this is where social gaming analytics providers come into play.

Approximately 15% of all the revenue of social game developers come in fact from advertising. In-game advertisers most often use dynamic in-game advertisements, which allows the game manufacturer to track advertisements and capture data such as screen time and type of advertisement.

Figure 1: Typical Stakeholders in Online Game Development



Source: Own work.

In addition to making their own games, Zynga has created a network which allows third-party developers to become part of the Zynga network.

1.5 Zynga Games

Zynga games, mostly played via Facebook or mobile phone, can be divided into four basic types of social network-based and casual games, namely: "Virtual World" games, Role playing games, Card games and Puzzle games.

Zynga's most successful games are provided in the continuation in a chronological order.

Texas Hold'Em Poker falls under the type Card games and was Zynga's first social game. It is also the largest F2P online poker game in the world. There are three basic options of poker play inside the game: casual Hold'Em tables, tournament play or VIP tables. The company monetizes its players through the gift shop, where players can customize and decorate their seat at the poker table. Throughout the game, players usually chat with each other, complete challenges and send and receive gifts, such as poker chips. According to AppData, it was the fourth most popular game on Facebook, only four years after its launch. Also available on Google Android and Apple iOS, Zynga Poker has been a top 10 grossing game in the Apple App Store for iPhone (Zynga, 2011).

FarmVille is a virtual world game that lets players create and cultivate their own »virtual« farms by plowing, planting and harvesting crops. Players can also take care of their farm animals (milking cows, collecting eggs from chickens, etc.). Similar as with Poker Hold'Em,

the company in this case too typically monetizes its users by selling virtual goods that help users progress in the game. FarmVille was the top game by daily active users on Facebook between August 2009 and December 2010, that is during the time that CityVille claimed the top spot (Zynga, 2011).

CityVille is the largest game on Facebook by monthly active users, according to AppData. The game is very similar to FarmVille, albeit more complex, with better social interaction between players and storyline. The underlying story of the game is building a city of your dreams. Players can construct homes, businesses, famous landmarks and public buildings to create their own city. CityVille surpassed an astonishing 61 million MAUs within the first 50 days after launch (Zynga, 2011).

Words with Friends is a multi-player word game developed by Newtoy Inc., which was later acquired by Zynga. In the game, players challenge other players (mostly friends and family) to take turns building the highest-scoring words (crossword puzzle style). Words with Friends became a leading social mobile game by leveraging scale, technology infrastructure and deep knowledge of social game mechanics. Zynga was able to double the amount of DAUs for Words with Friends within approximately 120 days after the acquisition. Between 2010 and 2011, Words with Friends was regularly the leading game in the word category in the Apple's App Store for iPhone, available both as free (with ads between turns) and paid version (without ads). The primacy was later taken by the game Hanging with Friends (Zynga, 2011).

Mafia Wars game was developed in 2008 and became Zynga's first role-playing game. This game too is played mainly on Facebook. It enables players to build criminal empires by collaborating with their friends, while fighting other players online. It is filled with tasks, missions, and operations in order to gain rewards and strength (Zynga, 2011).

Due to the massive success with FarmVille, all subsequent games, such as CityVille, CastleVille, FrontierVille, seem to continue following a similar pattern. The things that Zynga changed are the themes and particular game components. According to Runge (2014, p. 9), »this can be viewed as a kind of component innovation which entails changes to one or more components of a product system without significantly affecting the overall design«. Martin (2011) adds that the games "are graphical in nature, involve building a landscape of some sort (for instance, frontier, city, farm) and focus on character progression via gaining experience and items. The games are designed to be short duration play, meaning that in most cases, game-play time is limited due to the mechanics of the game."

2 THE INDUSTRY, COMPETITION AND MARKET SENTIMENT ANALYSIS

2.1 Global Trends

In this section, we start the analysis by providing the necessary conditions that have made it possible for Zynga to succeed and that are certainly bound to have a significant impact on its future performance as well.

For the online social gaming to develop and grow to the size we know today, there were a few preconditions that needed to materialize for this to happen. The first precondition was the global internet connection. For comparison, in 2000, it was estimated that approximately 415 million people or approximately 6.8% of the world population were using the internet, while by 2011, it was already 2,232 million people or 31.8% of the world population that was using the internet (internetlivestats, n.d.). The speed of the internet also played a significant role in the gaming industry. The higher the internet speed, the more easily players interact with each other. This paved the way for all online, especially MMO, games. In fact, according to the International Telecommunication Union (International Telecommunication Union, 2011, p. 3), the "International Internet bandwidth, a key factor for providing high-speed Internet access to a growing number of Internet users, has grown exponentially over the last five years, from 11000 Gbit/s in 2006 to close to 80000 Gbit/s in 2011".

The second condition that needed to be met for the successful online social gaming development and growth was the creation and massive adoption of social networks. The first social networks began to emerge in 2003 (Friendster, Myspace), with broader adoption starting not long later in 2005. Throughout the years that followed, Facebook became the go-to social platform and a leader in the category, with 800 million users in September 2011 (Statista, n.d.).

The third condition that had to be fulfilled was the opening of the Facebook's platform for outside developers of social games that took place in 2007. This meant game developers could build applications with deep integration into Facebook and mass distribution throughout the network, which created endless new business opportunities for gaming companies.

2.2 Industry Analysis

The gaming industry can be divided into four sub-industries, namely:

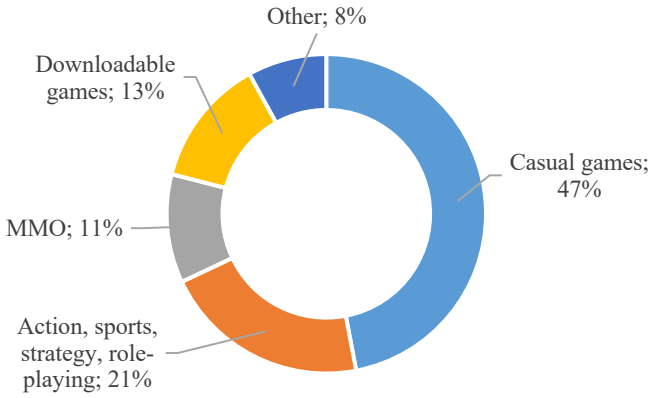
- Console games – games played via a console and displayed on a TV or PC screen.
- PC games – games played via a personal computer, with a pre-installed game from a CD-ROM or other means of digital transfer.
- Online games – games played via the internet, usually through an internet browser or social network.
- Mobile games – games played on the mobile phones, usually in the form of an app.

Online games can be further divided into four following parts:

- **Massively Multi-Player Online Games (MMO)** – according to Steinkuehler (2007, p. 298), MMOs "are highly graphical 2- or 3-D video games played online, allowing individuals, through their self-created digital characters or "avatars", to interact not only with the gaming software [...] but with other players' avatars as well«. They include over 15 different gameplay types, among which some of the most popular are Massively Multiplayer Online Role-Playing Games, Massively Multiplayer Online Battle Arena and Massively Multiplayer Online Real Time Strategy.
- **Player vs. Player** – also called match games, involve one person playing against another person or a group of people against another group. The main difference to MMO games lies in the fact that players compete against one another instead of against the computer. The most popular type of player vs. player game is the multiplayer online battle arena (MOBA) game.
- **Social gaming** – O'Neill (2008) defines social games as a »[...] structured activity which has contextual rules through which users can engage with one another. Social games must be multiplayer and have one or more of the following features: turn-based, are based on social platforms for providing users with an identity and are casual«. Further, Järvinen (2011) described social games to be "online games that adapt your friendship ties for play purposes, while accommodating your daily routines." Social games are indeed most often associated with playing games on social networks, and since the opening of Facebook platform in 2007, they have expanded from mostly browser games to social network games. However, games do not have to be tied to a specific platform.
- **Casual gaming** – casual games are not defined by a specific genre. They typically have simple rules and are played in short bursts, as they do not require a long-term commitment to play nor any unique skills. These games also tend to be smaller in scope, with limited gameplay as compared to the traditional console or PC games, which is why players' expectations are lower. These types of games include puzzles, trivia, card games, board games, game shows and many other.

In 2011, online gaming revenues were forecasted by Business Insights to increase from US$ 13.2 billion in 2009 to US$ 25.3 billion in 2014, reaching a CAGR of 13.9%.

Figure 2: Types of Online Games Played Most Often



Source: Entertainment software association (2011).

While casual games are played most often, according to Entertainment software association (2011), MMO games attract the largest number of »hardcore gamers«. Since such gamers spend the most time playing games, they on average also spend the biggest amount of money on in-app purchases. Consequently, the largest segment of the online gaming industry by revenues is exactly MMO. However, as stated by Patel, Leung and Chesler (2010) of Deutsche Bank Securities Inc., social gaming represents a »large opportunity with the fastest growth trajectory over the next five years«.

According to Patel J. et al (2010), the US revenues in the social gaming segment were estimated to amount to $0.6 billion in 2009, and were set to grow to $3.9 billion by 2014, growing at a CAGR of 46%. This growth was supposed to be driven by the ever-increasing user base of social networks, which would lead to an increase not only in the number of players of social games, but also in the purchasing of virtual goods and longer game-time.

Free-to-play games

There are two major business models in the space of online gaming, namely Free-to-play (F2P) and Pay-to-play (P2P).

Pay-to-play business model is the traditional one. To access a game, the player needs to pay a fee first. In some of the games, the player must also pay a subscription instead of a just one-time »entrance« fee to maintain the playing account. This feature is included in almost all console games, PC games and some of the online games.

Free-to-play games, as the name itself suggests, on the contrary, do not have any »entrance« fee. The F2P business model was first introduced by MMO game publishers in the late 1990s, when the then games tried to monetize its players by selling virtual goods to them. In any case, there are many advantages of the F2P business model, the biggest being the volume of players that the F2P games attract. Since they are free and immediately accessible, players can try and experiment with a game easily and without costs. This consequently

attracts a wider range of audience. Another observed advantage is the fact that the F2P business model "allows flexible price points for players with different levels of willingness to pay for additional content" (Alha, Koskinen, Paavilainen, Hamari & Kinnunen, 2014). This can be a powerful tool for monetizing users who are not "gamers" and would not typically buy a game to start with. Surprisingly, even those "gamers who used to knock off full-price games were spending ten times that amount on virtual doodads, expediting upgrades and premium features" (Brown, 2011, p.). There is also an advantage when it comes to development costs. "A free-to-play game does not require its full content to be created before its release, as most content is created gradually after the game launch" (Luban, n.d., p.). Some game developers reported that F2P game could be released with 20–50 percent of its final content (Luban, n.d.). Furthermore, the F2P business model enables the developers to change and tweak game mechanics after the game is released, thus gradually improving customer acquisition, retention and monetization. Of course, with so many advantages come also the disadvantages. The major challenge of the F2P game developers is to make a game worth playing for a prolonged time, since the switching costs are almost non-existent, leading to an extremely volatile number of players of a particular game.

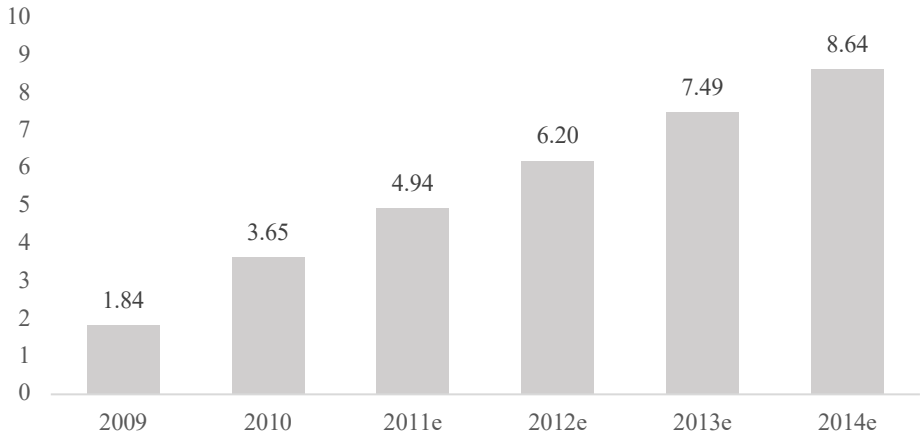
Nearly all game developers focus on more than just one part, usually covering many genres or sub-industries. When it comes to business models, companies tend to stick to one or the other. Zynga uses the exclusively Free-to-play business model, while genres are mostly distributed over two parts, namely social games and casual games, with the emphasis on social games developed specifically for the Facebook platform. Some analysts suggest that Zynga games are actually a hybrid of the two sectors, at the same time being neither truly social nor casual. For further analysis of the size of the total market, the focus of the research in the continuation goes to both the social and casual gaming sectors.

Social/casual gaming experienced a quick rise in a relatively short time frame. The number one reason for the quick ascent in gaming lies in the fact that social networks have enabled gaming to become mainstream. Research performed by Econsultancy points to the fact that it is the casual gamers who are the typical consumers of social gaming content, not the typical gaming enthusiasts. As stated by Zaidi (2011, p.), »more consumers are now playing these sorts of games online, and brands ranging from SMEs and local businesses to blue-chips and multinationals are beginning to invest in this space« According to Casual Games Association (2012), the worldwide social gaming market rose to the level of US$ 3.65 billion in 2010, and the market was estimated to grow at the $CAGR_{2010\text{-}2014}$ of 52.4%, reaching US$ 8.64 billion by 2014

Since Zynga games are mostly played on social platforms, the number of users and their engagement on Facebook and other social platforms is of course extremely important. In 2010, there were approximately 1.0 billion users of social networks globally, according to IDC, a market research firm. IDC at the time even forecasted that the number of users on social networks globally would grow to 1.6 billion by 2014 (Zynga, 2011). Consistent with

the web page Statista.com, Facebook reached 457 million DAUs and 800 million total users in the third quarter of 2011 (Statista.com, 2011), with the estimates of further high growth also in the future.

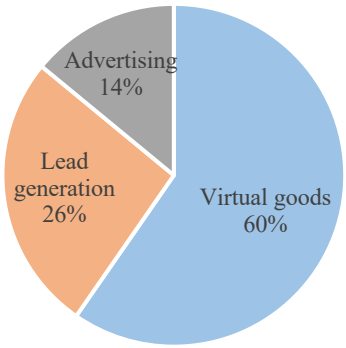
Figure 3: Worldwide Social Gaming Market (in Billion US$)



Source: Casual Games Association (2012).

The business model of social games that is prevalent in the world of gaming is the "free-to-play" one, with the pay to purchase optional upgrades, extra content, virtual goods, in-game currency, power-ups, and other premium features inside the game itself (Casual Games Association, 2012). Further, according to Casual Games Association (2012), only 1%–5% of a social game's audience purchase virtual items. As far as the amounts are concerned, moderately paying players spend $5–$10 per month, representing 25%–40% of the overall payers who generate about 25% of the revenue. However, most payers spend only $1–$5 a month and generate less than 15% of a game's revenue, in aggregate. Social network games rely heavily on their big spenders, since it is the latter who spend on average more than $25 per month. And despite the fact that big spenders represent less than 15% of a game's paying users, they nevertheless account for more than 50% of a typical game's revenue (Casual Games Association, 2012).

Figure 4: US Social Gaming Revenues by Segment



Source: Casual Games Association (2012).

The top 10 content providers reach more than a half of the total gaming audience on Facebook (Casual Games Association, 2012), with the biggest players in the "social games" industry being, besides Zynga, also Wooga, Playdom, RockYou and Playfish (acquired by Electronic Arts).

With the introduction of smartphones and touchscreen technology, coupled with faster cellular-network speeds, an increasing number of people started to use phones to play games. According to Information Solutions Group (2011), 28% of game players use a smartphone, while 10% of them use a feature phone (standard web-enabled phone) to play games. This trend can on one hand be seen as an opportunity for game developers to expand their reach, and on the other be perceived as a threat.

Since the use of smartphones is most likely to keep increasing, the business model of social games is sooner or later expected to be put to the test.

Mobile gaming is, according to the SEC filling report, Zynga's next major target, and for this reason we provide in the continuation a brief description of its beginnings, but also its future development.

When it comes to mobile gaming, we mostly refer to the gaming on smartphone devices. The mobile gaming in this sense started with the introduction of the first iPhone in 2007. With the launch of the Apple App Store platform in July 2008, Apple Inc. enabled gamers to buy games directly to their phones. The segment of mobile games also includes games made for tablets, such as iPad, since the underlying technology and the way games are made are similar.

The development of smartphones and tablets created a whole new segment of the gaming industry, which some companies managed to make really good use of. One of them was a company called Rovio, which created a hit game Angry Birds, with more than 200 million downloads (Takahashi, 2011).

Then followed the incumbent companies with deep pockets which invested substantial amounts of their capital into the sector, thus confirming the segment's importance. Electronic Arts (EA), for example, bought the company Jamdat, a maker of games for feature cell phones, for US$ 680 million in 2005. By 2011, EA had some of the biggest grossing iPhone apps of all time, including Tetris, which boasts of more than 132 million paid downloads to date (Takahashi, 2011). Other well-known incumbents that bet on mobile gaming at the time were Gameloft, Ngmoco, PopCap Games, Glu Mobile, and Disney Mobile.

Besides the already mentioned Rovio, among some of the notable startups that sprung up in the mobile gaming sector were Storm8, Outfit7, Pocket Gems, TinyCo, Gameview Studios,

Sunstorm Interactive, and Backflip Studios. With an early success, most of these companies managed to raise their capital and even increase their production of games. What is more, a growing interest from the venture capital investors was observed, further increasing the odds of building a serious competition to the already established gaming companies.

In 2009, Apple Inc. introduced in-app purchases, which meant that customers could buy virtual goods without leaving the games (Takahashi, 2011). With this feature, many companies started applying the free-to-play business model, which quickly became the most dominating business model in the mobile apps.

According to Merel (2011), mobile games could at that time reach sales of US$ 13 billion by 2014. In fact, in 2011, the mobile games market amounted to approximately "US$ 8 billion, a small slice of the overall game market, (…) still dominated by console games, web games, and Facebook games." (Takahashi, 2011).

2.3 Benchmark Analysis

The most common key performance indicators (KPIs) in the overall gaming industry are MAUs (monthly active users), DAUs (daily active users), MUUs (monthly unique users), and ARPDAU (average revenue per daily active user). To compare the companies within the industry, we mainly use the MAU and DAU figures, mainly due to their availability. Since the listed KPIs are relatively unknown, we briefly describe them below.

DAUs is defined as the number of individuals who played one of the games during a particular day (Zynga, 2011).

MAUs is defined as the number of individuals who played a particular game in a 30-day period ending with the measurement date (Zynga, 2011).

MUUs is defined as the number of unique individuals who played any of the games on a particular platform in a 30-day period ending with the measurement date (Zynga, 2011).

ARPDAU is defined as the total revenue divided by the number of daily users.

Zynga has by far the highest number of monthly and daily active users. As at 28.11.2011, according to Casual Games Sector Report 2012, Zynga had 207 million MAUs and 48 million DAUs. For comparison, the closest competitor, EA, had at the same time 58 million MAUs and 12 million DAUs, which is about 25% of the then Zynga numbers.

Table 2: *Number of DAUs and MAUs of the Top 10 Social Game Developers*

Active users as at 28.11.2011	**MAU**	**DAU**	**DAU/MAU Ratio**
	mio	mio	%
Zynga	**207**	**48**	**23.0%**
Electronic Arts	58	12	20.7%
wooga	34	7	21.2%
King.com	22	5	22.6%
Playdom	18	4	19.3%
Tetris online	9	3	29.2%
GSN	6	2	28.2%
Playtika	6	2	27.5%
Happy Elements	5	2	37.0%
Halfquest	4	1	29.6%

Source: Casual Games Association (2012).

The Zynga DAU/MAU ratio, also called the »stickiness« or engagement ratio, is with its value at 23% below average. This ratio means that 23% of the monthly active users are also daily active users. In addition, the DAU/MAU ratio of 23% can indicate that the average user of a Zynga application uses it approximately 7 out of 30 days in a month. Otherwise, the average DAU/MAU ratio of the top ten companies in the industry stands at 25.8%.

The average daily revenue per daily active user typically ranges from US$ 1–10 cents. The so-called role-play games (RPG), gambling and poker games (one of them being Zynga Poker) usually generate more revenues per user, while arcade, caretaking and simulation games (including FarmVille, CityVille, and similar) generate, quite on the contrary, the lowest amount of revenue per user.

Table 3: Expected average daily revenue per daily active user

in US$ cents	**Type of game**
1 - 5	Puzzle, Arcade, Caretaking, Simulations
3 - 7	Hidden Object, Adventure, Tournaments
5 - 10	RPG, Gambling, Poker

Source: Casual Games Association (2012).

2.3.1 Comparable Public Companies' Analysis

To be able to put Zynga's financials into context and later on make certain assumptions regarding the projections, we make a selection of 11 publicly traded comparable companies, which we then divide into two groups, namely Tier 1 and Tier 2.

Tier 1 includes companies that make use of the free-to-play business model. Unfortunately, the platform they use as well as the type of games that are available vary widely from company to company. Most of the comparable companies are diversified, when it comes to the type of games, ranging from social games, casual games, to massive multi-player online games, with the typical platform of the tier 1 developer being either a PC or mobile.

Tier 2 covers companies that do not strictly follow the free-to-play business model, but are instead highly diversified, when it comes to their business model, the platform of the games and also the type (genre) of the games. Some of them even go as far as to develop other online services not in any way connected to gaming, although the gaming segment remains prevalent for the company to be included in.

2.3.2 Tier 1 companies

Gamevil is a South Korean game developer which makes video games primarily for mobile devices. Its most popular games include Zenonia, Baseball Superstars and Soccer Superstars.

Glu Mobile is a San Francisco based game developer which makes video games primarily for mobile devices. Its most famous games include Stardom: The A-List and Magic Life.

GungHo is a Japanese video game corporation. The company is mostly known for its MMORPG and puzzle games such as Ragnarok Online and Grandia Online.

Shanda Games is a Chinese operator of online PC games and a book publisher. It mostly develops MMO games, of which most popular are Magical Land and The World of Legend.

Com2us is a South Korean mobile and online game developer. It is known for its real-time MMORPG for mobile phones and PCs, such as is IMO: The World of Magic and Chronicles of Inotia.

2.3.3 Tier 2 companies

NetEase is a Chinese Internet technology company that develops online PC and mobile games, advertising services, e-mail services and e-commerce platforms. Some of the most well-known games developed by NetEase are Fantasy Westward Journey II, Heroes of Tang Dynasty Zero and Ghost II.

Activision Blizzard is a California based interactive gaming and entertainment company. The company primarily develops PC and console games, with some of the most well-known titles in the industry, such as Call of Duty, Skylanders, Guitar Hero and others.

Capcom is a Japanese video game developer known for its games such as Mega Man, Street Fighter, and Resident Evil. It mostly develops games for PCs and consoles.

Electronic Arts (EA) is an American based developer and distributor of video games. The company is known for its games such as Battlefield, Need for Speed, The Sims, Medal of Honor, Command & Conquer, FIFA, NBA Live, and others. EA develops a wide range of games, from PC and console games to social and casual online games. In 2009 and 2011, EA acquired social games developers Playfish and PopCap Games.

Take Two is an American based multinational developer and distributor of mostly PC and console games. Most notable game titles include Civilization, Max Payne, Grand Theft Auto and other.

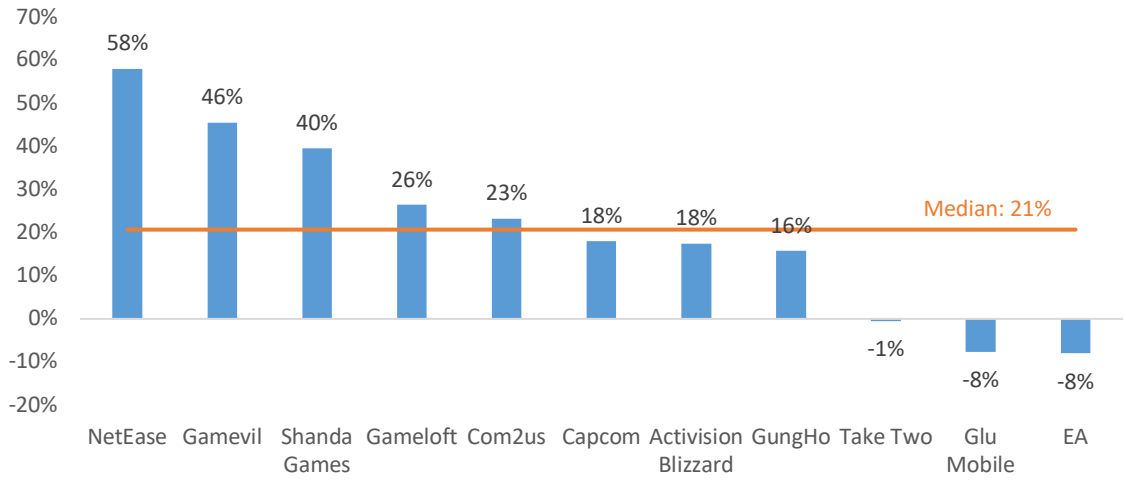
Gameloft is a French-based game developer for mobile phone handsets, tablets, games consoles and other platforms. Most widely known games include Prince of Persia and Modern Combat.

Unfortunately, none of the comparable public companies are in fact directly comparable to Zynga, since they typically develop games for a variety of platforms, while Zynga games are created to be played primarily on Facebook or other social networks.

However, we certainly cannot say that Zynga does not have any competition. Due to the tremendous success of Zynga games, several small niche developers as well as prominent opponents decided to start developing games for Facebook. »Deep-pocketed Electronic Arts, known for console games, has emerged as Zynga's first substantial rival« (Runge, 2014, p.). EA tried to leverage the know-how of Playfish, a social-gaming company it acquired in 2009, to turn the successful EA brands such as "The Sims" into Facebook games (Runge, 2014). "In addition, it was said that competition from other social platforms was gaining momentum in the US, with big Japanese competitors aggressively entering the market for "social mobile games."" (Runge, 2014; Raice & Smith, 2011). Zynga was suddenly put under tremendous pressure to keep producing new hits and thus defend its territory.

It is evident from the graph above that the average EBITDA margin in the period of 2007–2010 amounted to 20.7%. Three companies, namely NetEase, Gamevil, Shanda Games, stand out on the positive side, with margins way above the average. Having negative EBITDA margins, the bottom three companies were Take Two, Glu Mobile, and EA.

Figure 5: Average EBITDA Margins in the Period 2007–2010



Source: Infront Analytics (2020).

2.4 Market Sentiment Analysis

There were several confounding factors that affected the US market sentiment at the time of the Zynga's IPO.

Historically speaking, the year 2010 brought an increase in the number of IPOs after reaching the lowest number of IPOs in 2008 and 2009 since 1980, with only 21 and 41 IPOs appearing in each of the two years. 2010 saw an increase in the IPO activity, recording 91 IPOs, with almost USD 30 billion raised, which is an increase of 126.4% since the previous year (Ritter, 2017). 2011, the year that Zynga went public, started out fairly strong, with 85 IPOs in the first half of the year, compared to 70 in the previous year (PricewaterhouseCoopers, 2012).

Then came the month of August, with a sharp drop in stock prices, both in US and globally. There were myriads of causes, however, the majority consensus today is that there were two major ones that need to be pointed out, namely the downgrading of the US's credit rating from AAA to AA+ by Standard & Poor's (Riley, 2011) and fears of the European sovereign debt crisis spreading to Spain and Italy, and even France (Bremer, 2011). Consequently, on August 8, the Dow Jones industrial average dropped by 5.6%, which was at the time the worst one-day drop since December 2008 (Roeder, 2011). Due to the fall in the prices of stocks, the IPO sentiment suddenly changed, making it more difficult for companies to file an IPO with prices imagined before the drop.

Additionally, the media and consequently the investors on the US market suddenly realized the scope of the questionable Chinese companies that gained access to the US capital markets through reverse mergers (Vlastelica & Bases, 2011). According to the same article by Reuters, "many are legitimate, some turn out to be outright pump-and-dump schemes and other scams." (Vlastelica & Bases, 2011). This was probably the number one reason that

influenced the investors to start scrutinizing and inspecting in more detail every potential IPO that followed, just to avoid scams.

In light of the above-mentioned facts, "sixty-six companies withdrew plans to raise money through new stock offerings in 2011, a 27-percent rise from the previous year, and the biggest number since the depths of the recession in 2008, according to IPO Investment firm Renaissance Capital." (Johansmeyer, 2011, p.). In the second half of 2011, only 34 companies went public, Zynga being one of them.

2.5 Key Findings of the Industry and Competition Analysis

There are a few issues, positive and negative, that may affect Zynga's future from the standpoint of its competitors and general business environment. Most pressing are the following:

- **Missed opportunity in mobile gaming**

Zynga, relying on Facebook as the primary outlet for its games, did not invest heavily in the creation of mobile games in its past. Their only successful mobile game was Words with Friends, which was developed by Newtoy Inc. (later acquired by Zynga), and not internally. Although the mobile game market with its impressive growth rate and a relatively high penetration among general population does represent a worthy strategic goal, it is difficult to predict whether Zynga will succeed in developing games that appeal to paying players or advertisers. In its SEC filing, Zynga actually admitted to having limited experience, when it comes to developing games for mobile platforms (Zynga, 2011). In 2010, Zynga, for the same reason that it bought Newtoy, offered to buy Ngmoco, an "iPhone-focused mobile game company started by former EA executive Neil Young" (Takahashi, 2011). The deal, nevertheless, fell through and Ngmoco was later acquired by DeNa, a Japanese competitor.

To emphasize the importance of mobile games for the growth of Zynga's future revenues, there are two points to consider. In the article for The Wall Street Journal, Walker (2011) cited Mintel, a UK market-intelligence firm, which predicted that mobile gaming could in fact be a bigger market than Facebook.

The second point to consider is the fact that social media gaming reached a peak of popularity in 2010. Facebook became a major gaming platform in only two short years, namely 2009 and 2010. However, with an equal speed, the market became mature in 2011, with a forecast of continuous low growths. From today's perspective, one reason suggesting why Facebook gaming is becoming less popular can be found in the fact that it is after all a non-specialist games platform. Instead, Zynga not only needs to compete with other game developers, but also needs to compete for the user's attention with so many other priorities happening at the same time on the Facebook platform. Nevertheless, Facebook still offers plenty of

opportunities in the future, although the first impression might be that the increasing competition is making it hard for gaming companies to find and retain users. This consequently means a rise in cost.

Mobile gaming thus seems a logical next platform, if the intention is to reach millions of both the existing and new users. The question remains, whether Zynga has the right skill set to make the games that will become the next hit, or whether it is already too late for that.

- **Relationship with Facebook**

Zynga games are primarily built for the online social platform Facebook. With the tremendous rise in Facebook's popularity and its number of users in the recent years, Zynga games had a perfect outlet for exposing its games to the masses who were not gamers and had not yet played games on their PC or gaming console. This approach enabled Zynga to end up becoming the world's biggest social gaming company, with the highest number of monthly active users.

Some analysts have pointed out the fact that Zynga's reliance on Facebook might also be one of the most significant risks in going forward. In its SEC filing report, Zynga wrote: "We generate substantially all of our revenue and players through the Facebook platform and expect to continue to do so for the foreseeable future. Any deterioration in our relationship with Facebook would harm our business and adversely affect the value of our Class A common stock." (Zynga, 2011). This means that should Facebook decide to become more user-friendly and further limit the so-called "spamming" with advertising messages among Facebook users, the outcome would be a lower number of Zynga users, not to mention the lower overall revenue for Zynga. Facebook in some form already enforced something similar to this in the past, when it put a restriction on how much players could notify other users of the network about their accomplishments. With a more intense focus on user satisfaction in the future, Facebook could limit Zynga's marketing strategy even further and in the process endanger the well-being of the company.

For Facebook to cash in on Zynga's success, Facebook introduced Facebook Credits, a virtual currency that enables users to acquire virtual goods inside the games on Facebook platform. Under the terms of the agreement between Zynga and Facebook, Facebook Credits take 30% of gross revenues, although in the past, Zynga used third-party virtual currency providers, which charged far less for its services than Facebook. In any case, should the prediction about Facebook going more user-friendly materialize, this would definitely inevitably lower Zynga's profitability, and this is why it is a good indicator of what most probably lies ahead, when it comes to the relationship between Zynga and Facebook.

In the light of the above-discussed facts, some social platform game developers are actually leaving Facebook and refocusing their businesses on other platforms, such as mobile

platforms (although these are already a well-established platform with high competition), other up-and-coming gaming platforms or even something as distant in the future as virtual reality gaming.

- **Increasing competition**

Zynga's success can be in large part attributed to an early bet on the development and increasing popularity of social networks, particularly Facebook. The bet, combined with an innovative marketing approach and substantial investments in promotion, paid off in the way of high market share and tremendous growth in revenues. However, like with any profitable endeavor, competition is right around the corner. In the year leading to the IPO, Zynga had been under attack by other video game companies. The biggest threat came from Electronic Arts, which entered the social gaming sector by acquiring two relatively large social gaming companies, Playfish and PopCap Games. In 2011, Electronic Arts released a game called "The Sims Social". The game was a success mainly due to the prior popularity of The Sims game, which was played on PC. It quickly took second place on Facebook with 66 million monthly active users (Takahashi, 2011). Other competitors who entered the competition involved media companies, such as Disney (acquired Playdom), and mobile gaming companies, such as DeNa and Gree (both from Japan). The biggest question that will affect Zynga in the long run is its ability to fend off competition despite the increasing competition and massive investments in the social gaming sectors (development, marketing, and promotion, merger & acquisition activities, etc.).

- **Operational (in)efficiency**

Some analysts claim Zynga's operations to be inefficient. Takahashi (2011) argues that "as it might take a crew of 25 people six to nine months to create a social game, Zynga had in principle the potential to create tens of games." Since Zynga had more than 2,500 employees at the time of the IPO (the majority of which came from acquisitions), Zynga could, if Takahashi's estimations were correct, produce around 100 new games a year. Yet, it produced one game every few months. Thus, in order to test the operational inefficiency, we compare Zynga's revenues per employee to other comparable public companies. It is established that in 2010, Zynga had above average revenues per employee (US$ 403 thousand compared to an average of US$ 319 thousand), indicating that operational inefficiency had not up to that point in time been a big issue.

Zynga's business model of producing only a few games a year might, however, turn out to be a double-edged sword. On the one hand, Zynga's bet on a few games per year limits its chances of producing the next big hit. This could prove detrimental, since users today are changing quickly one game for another. On the other hand, with fewer games, Zynga can focus on better gameplay of the existing and future games, proper advertising, research and development, and on improving conversion rates.

- **Market leader with the highest share in the social gaming sector**

Zynga is currently the market leader, when it comes to online social games, with an almost 56% market share on Facebook. The culprit of its market dominance can be traced back to the game FarmVille, where the game's design and marketing efforts resulted in large amounts of people playing and enjoying the game. Since then, the majority of revenue comes from the FarmVille successor, i.e. CityVille. To beat Zynga and take its leading position, competitors would need to create more than one game that attracts a substantial number of users. However, that, on its own, is not enough. The industry is becoming mature, which means that the company that makes a hit game also needs to support the effort with a substantial amount of advertising, which always comes with a price. Facebook game advertising is actually becoming increasingly costly, which means that in turn the industry is becoming more capital-intensive. The successor of Zynga, if there is to be one, will probably come from a well-established game developer with deep pockets.

- **Knowhow**

If we compare Zynga to other game developers, we soon notice certain differences. Zynga, due to its freemium business model and reliance on social networks, never creates a whole game before the launch. It is only when a game that is introduced to users gets enough traction early on that Zynga continues to work on the game plot by analyzing vast amounts of data. In addition, Zynga's business model relies heavily on the concept of improvement through data analytics. With data, developers can not only improve the game plot, but also increase the amount of virtual goods purchased, which is why Zynga claims to be a company with a metrics-driven culture. In its SEC-1 filing (2011, p.), Zynga claimed the following: "The extensive engagement of our players provides over 15 terabytes of game data per day that we use to enhance our games by designing, testing and releasing new features on an ongoing basis. We believe that combining data analytics with creative game design enables us to create a superior player experience." Nevertheless, the ability to analyze vast sums of data and learn from them to improve the gameplay of its next games might just prove to be Zynga's biggest competitive advantage.

- **Standardized social payment system**

With the introduction of Facebook Credits, Facebook created a standardized social payment system that affects Zynga in two ways. The first one is that it cuts directly into Zynga's gross margin, since Facebook's fee of 30 percent is higher than what Zynga paid in the past, while the second one is positive, as it provides users with a reliable, widely accepted and safer (at least in the eyes of the users) method for paying for the in-game online goods. This can, therefore, lead to higher penetration levels and conversion rates, at least in the long run. In

any case, considering which effect has the predominant underlying effect for Zynga is hard to evaluate without additional data.

3 FINANCIAL ANALYSIS

3.1 Profit and Loss Statement

3.1.1 Revenue

As described in the previous chapters, Zynga is primarily in the business of selling virtual goods. There are, however, certain specifics, when it comes to the recognition of such revenue, since it is a relatively new occurrence and thus without strict guidelines. According to the US Generally Accepted Accounting Principles, »revenue should not be recognized until it is realized or realizable and earned« (Financial Accounting Standards Board, 2008, p.). In the further breakdown of the guidelines, the Financial Accounting Standards Board (2017, p.) states that a company can recognize revenue, when all of the following conditions are satisfied: »(1) persuasive evidence of an arrangement exists; (2) delivery has occurred or services have been rendered; (3) the seller's price to the buyer is fixed or determinable; and (4) collectability is reasonably assured.« Moreover, apart from the guidelines above, the US GAAP do not specifically address the issue of virtual goods and their revenue recognition.

The nature of virtual goods can be categorized by the time of their consumption. According to Gurley (2010), there are two categories, namely the goods that are used once and then no longer available, and the durable items that are displayed or used over an extended period of time.

For the first category, the consumable items, the time of consumption is known and thus it satisfies all the given four conditions for revenue recognition, since one can recognize revenue at the exact time it is used.

In case of the durable items, the time of consumption cannot be determined as easily, since it can be said that it is used continually or for a predetermined time period. In this case, according to Gurley (2010), it should be recognized as either an income distributed over the useful life of the virtual good or the average life of the actual user.

For the purposes of determining when the service has been provided to the player, Zynga has decided that an implied obligation exists to the paying player to continue displaying the purchased virtual goods within the online game over their estimated life or until they are consumed. Thus, the proceeds from the sales of virtual goods are initially recorded as deferred revenue (Zynga, 2011).

Table 4: *Consolidated Statements of Operations of Zynga*

Consolidated Statements of Operations Data					
Zynga	2008	2009	2010	9m 2011	LTM 9/2011
	$'000	$'000	$'000	$'000	$'000
Revenue	**19,410**	**121,467**	**597,459**	**828,863**	**1,024,622**
Online games	5,272	85,748	574,632	781,738	969,219
Advertising	14,138	35,719	22,827	47,125	55,403
Cost of revenue	10,017	56,707	176,052	225,908	277,511
Research and development	12,160	51,029	149,519	282,316	333,816
Sales and marketing	10,982	42,266	114,165	121,971	160,251
General and administrative	8,834	24,243	32,251	117,723	100,635
Total costs and expenses	**41,993**	**174,245**	**471,987**	**747,918**	**872,213**
EBIT	**-22,583**	**-52,778**	**125,472**	**80,945**	**152,409**
EBIT margin	*-116.3%*	*-43.5%*	*21.0%*	*9.8%*	*17.3%*
Interest income	319	177	1,222	1,223	1,696
Other income (expenses), net	187	-209	365	-273	-386
Income (loss) before income taxes	**-22,077**	**-52,810**	**127,059**	**81,895**	**153,719**
Provision for income taxes	-38	-12	-36,464	-51,206	-80,038
Net income (loss)	**-22,115**	**-52,822**	**90,595**	**30,689**	**73,681**
EBITDA	-19,678	-42,406	164,953	145,093	229,696
EBITDA margin	*-101.4%*	*-34.9%*	*27.6%*	17.5%	25.1%

Source: Zynga (2011).

In the period 2008–2010, Zynga's revenue practically explodes, growing from US$ 19 million in 2008 to US$ 597 million in 2010. The Compounded Annual Growth Rate (CAGR) for the same period amounts to an amazing 455% increase, as revenues were generated primarily from the sale of virtual goods and advertising. Further, sales of virtual goods skyrocket in both 2009 and 2010 and are therefore the primary revenue driver in the mentioned period. According to the Zynga's SEC filing (Zynga, 2011), the main reason behind the high growth is the launch of several games, including FarmVille, Café World, and FrontierVille, as well as the addition of new content to the existing games. The growth of the online games segment continues in the first three months of 2011, while the advertising segment, on the other hand, is fairly constant over the years, ranging US$ 15–35 million. In terms of the percentage of the revenues, advertising is, with its explosive growth of revenues from the online games, becoming a small part of the total revenues, decreasing from 72.8% of total revenues in 2008 to 3.8% in 2010. The main reason for the decreased advertising revenues lies in the fact that Zynga reduced its in-game offers and placements at the expense of improving player experience.

In comparison to other public companies in the gaming industry, Zynga experiences by far the fastest growth. The average net sales $CAGR_{2007-2010}$ of the 11 selected comparable public companies amount to 13.3%, with Tier 1 $CAGR_{2007-2010}$ at 12.2% and Tier 2 $CAGR_{2007-2010}$ at 15.0%.

3.1.2 Cost of Revenue

The cost of revenue represents the second biggest expense, reaching 29.5% and 27.3% of the total revenues in 2010 and in the ninth month (9m) of 2011. In total, the cost of revenue increases substantially over the analyzed period of time to support additional games and an increased player activity. According to Bragg (2018), the following items are typically part of the cost of revenue: (1) cost of materials related to a product sale, (2) cost of production labor related to a product sale, (3) the overhead allocated to a product that is sold, (4) the cost of labor associated with a services sale, (5) the cost of a sales call, (6) the cost of a coupon or other sales discount or promotion associated with a sale, and (7) the commission related to a sale part of the cost of revenue. More specifically, the cost of the sales of Zynga consists primarily of web hosting and data center costs related to operating games, including depreciation and amortization, consulting costs primarily related to the third-party provisioning of customer support services, payment processing fees, and also salaries, benefits and stock-based compensation for customer support and infrastructure teams. Zynga estimates that its cost of revenue is going to both increase in absolute terms and vary as a percentage of the revenue in the coming years (Zynga, 2011).

Despite the fact that with having more users Zynga is currently still expanding, both organically and through acquisitions, it is important to note that this will require the firm to expand also its infrastructure in order to support its operations. Consequently, should this happen, it will surely result in higher costs that are associated with web hosting and data centers, maintenance and depreciation of its infrastructure, and ultimately, other costs of revenues as well. As the latter costs are not all fixed, Zynga could benefit from them by scaling the operations. That said, we thus expect the costs to either remain stable or decrease as a percentage of sales as Zynga matures.

By observing the reported cost of revenue of comparable companies in the industry, we see that Zynga has relatively high costs of revenues in 2008 and 2009, while in 2010, the costs remain in the average of the industry. Further, the average cost of revenues as a percentage of total revenues of comparable companies amounts to 31.1% in 2010, while Zynga's cost of revenues amounts to a slightly lower percentage, i.e. 29.5%. The cost of revenues as a percentage of total revenues of Tier 1 companies amounts to 21% (on average throughout the observed period), while that of Tier 2 companies to as high as 42%. The explanation for why Tier 2 companies report a higher cost of revenues is because they develop a wider range of games. After all, developing console and PC games typically costs substantially more than developing online or mobile games. The reason for that can be found in the ever growing complexity of games that are developed for PCs and consoles, in large part due to increasing

computer power. These kinds of games have better graphics, animation, and longer and more complex storylines. Mobile and online games, on the other hand, can be developed in as short a time as a few months and can even be expanded or modified after the game has been released. Looking through this prism, we can expect that Zynga's cost of revenues will gradually decrease to the level of Tier 1 companies' cost.

3.1.3 Research and Development Expenses

According to Bragg (2011, p.), »R&D costs incurred in the ordinary course of operations consist of materials, equipment, facilities, personnel, and indirect costs that can be attributed to research or development activities.« Similarly, Zynga (2011) reports that research and development expenses consist primarily of salaries, benefits and stock-based compensation for engineers and developers. In addition, research and development expenses include outside services and consulting, as well as allocated facilities and other supporting overhead costs. The research and development (R&D) department's primary role is to offer support to the development and production part of the company, »since video game development has evolved to become one of the most complex disciplines in software development« (Wong, 2012, p.). R&D expenses are increasing throughout the period 2008–2010, mostly due to headcount-related expenses, and amount to 25.0% and 34.1% of total revenues in 2010 and 9m 2011, falling down from 62.6% in 2008.

Considering the R&D expenses of the comparable companies, these amount to 14.8% on average throughout the observed period, with Tier 1 companies showing lower R&D expenses (9.2%) than Tier 2 companies (19.1%). Among the comparable companies, three of them stand out, when it comes to R&D expenses. Electronic Arts, Glu Mobile and Gameloft have each on average 35.6%, 32.3% and 56.0% of R&D expenses as percentage of revenues. What all three companies have in common is the fact that they are primarily based in the US, which means they are eligible for R&D tax credits. The R&D tax credit can help lower tax liabilities, increase cash savings, and consequently fund future projects. R&D tax credits and incentives can amount to up to 15 percent or more of the game developer's qualified spending (Wong, 2012). Tax credit might also be the main reason for the discrepancy between the US-based and other companies. To compare, the US-based companies report R&D costs as percentage of revenues on average at 28.1%, while other non-US-based companies' average amounts to only 3.1%.

3.1.4 Sales and Marketing Costs

According to the SEC filing, sales and marketing costs consist primarily of the so-called player acquisition costs, which are actually advertisements designed to draw players to Zynga's games. These acquisition costs are the primary driver from increasing sales and marketing expenses. Besides unpaid channels, Zynga uses mostly online advertising on Facebook. According to TBG Digital, an independent marketing firm specializing in social media, prices of Facebook advertising are increasing. As Bradshaw puts it (2011, p.): »The "cost per click" of an ad placed on Facebook has increased by 74 per cent over the last year

in four of the world's largest media markets«. Considering the growth and popularity of Facebook, we can safely predict an increasing cost of advertising in the next few years, and consequently higher future sales but also marketing costs. Other expenses include salaries, benefits and stock-based compensation for sales and marketing employees, and fees paid to consultants. In addition, sales and marketing expenses cover general marketing, branding, advertising and public relations costs, as well as allocated facilities and other supporting overhead costs (Zynga, 2011). Overall, the sales and marketing expenses amount to 19.1% and 1.7% of total revenues in 2010 and 9m 2011.

3.1.5 General and Administrative Costs

According to Bragg (2019, p.), the »general and administrative expense is those expenditures required to administer a business, and which are not related to the construction or sale of goods or services.« Bragg (2019, p.) further adds to the definition that general and administrative expenses »is any expense that will still be incurred, even in the absence of any sales or selling activity.« Primarily, general and administrative costs consist of salaries, benefits and stock-based compensation for executive, finance, legal, information technology, human resources and other administrative employees (Zynga, 2011), and amount to 5.4% and 14.2% of total revenues in 2010 and 9m 2011. The increase observed in the expenses in the period 2010–9m 2011 was in the main attributable to the increase in the headcount-related expenses and professional service costs.

Due to the limitations of the equity analysis platform that we used in gathering the data regarding comparable public companies (Infinancials.com), we were unfortunately able to get only the data on selling, general and administrative costs combined. For that reason, Zynga's sales and marketing costs are summed with the general and administrative costs so as to compare the data with the other companies in the industry. On average, selling, general and administrative costs of Tier 1 companies amount to 46.0% of revenues, while Tier 2 companies have a lower average of 25.0%. Zynga reports the same costs to be at 24.5% and 28.9% percent of the revenues in 2010 and 9m 2011, having much higher percentage in previous years. The discrepancy between Tier 1 and Tier 2 companies can be explained by the fact that Tier 1 companies are smaller in the size of their revenues, where for comparison Tier 2 average revenues in 2010 are at US$ 1,887,462, and those of Tier 1 at US$ 182,448. In other words, this means Tier 1 companies cannot use economies of scale as effectively, since not all general and administrative costs are fixed.

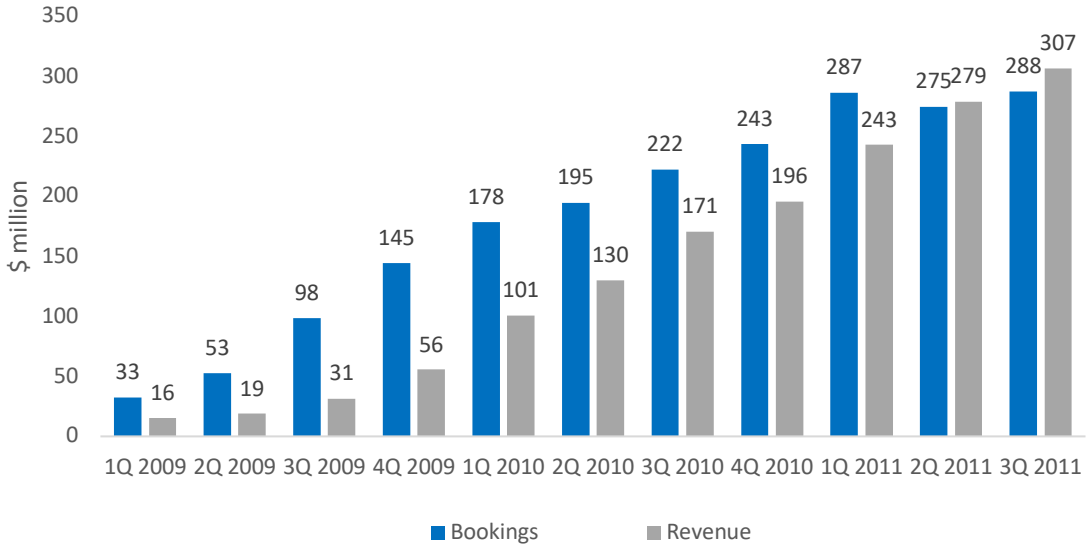
Zynga also suffers a negative EBIT margin in the years 2008 and 2009, due to high initial developing and personnel costs. Nevertheless, the EBIT margin becomes positive in 2010 after the launch of the most popular game FarmVille, reaching 21.0%, while in 9m 2011, it falls slightly again, amounting to 17.3%.

3.2 Key Financial Metrics

3.2.1 Bookings

Booking(s) is a non-GAAP financial measure that is defined as the total amount of revenue from the sale of virtual goods in online games and advertising that would have been recognized in a period, if all the revenue had too been recognized immediately at the time of the sale (Zynga, 2011). It is also a top-line metric, used for measuring sales activity.

Figure 6: Bookings and Revenue by Quarters



Source: Zynga (2011).

Zynga's bookings have been growing for two main reasons, namely the launch of new games (FarmVille, Café World, and FrontierVille) and the release of new content and features in the existing games. Bookings are also dependable on the degree to which players choose to pay for virtual goods inside the games.

In addition, in the last three months of 2009, data become available that enable to separately account for consumable and durable virtual goods for one of the games, thus allowing Zynga to recognize revenue related to consumable goods upon consumption (Zynga, 2011). This means that in 2010 and LTM 9/2011, part of the growth of revenues can be attributed to the change in policy, while the change in the deferred revenue is, on the other hand, affected negatively, decreasing its growth.

In the table below, we add change in the deferred revenue (which is an estimate of the revenue that was created in the period but still not accounted for in the financial statement as revenue) and reported revenue, arriving to total bookings. Since Bookings, as a top-line metric, is used for measuring sales activity, we include it in the analysis in order to analyze its past movements and make sensible predictions in the projections.

Table 5: Reconciliation of Revenue to Bookings

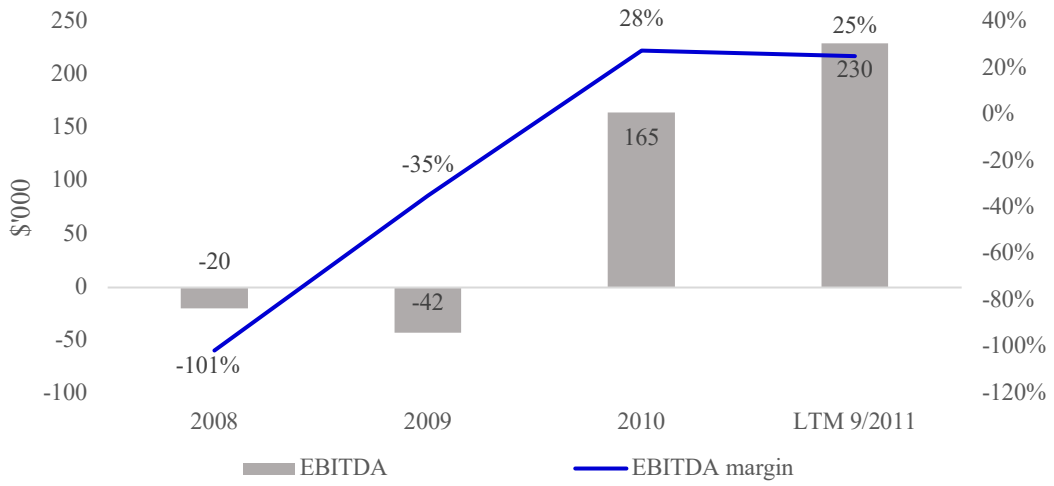
Reconciliation of Revenue to Bookings					
Zynga	2008	2009	2010	9m 2010	9m 2011
	$'000	$'000	$'000	$'000	$'000
Reported revenue	19,410	121,467	597,459	401,700	828,863
Change in deferred revenue	16,538	206,603	241,437	193,697	20,139
Bookings	35,948	328,070	838,896	595,397	849,002

Source: Zynga (2011).

3.2.2 EBITDA and EBITDA adjustments

EBITDA is also a non-GAAP financial measure, used as a measurement of operating results. Zynga's EBITDA margin is negative in 2008 and 2009, with EBITDA margins of -101.4% and -34.9% in each respective year. However, in 2010, Zynga reaches a positive EBITDA for the first time, with a 27.6% EBITDA margin.

Figure 7: The EBITDA and EBITDA Margin



Source: Zynga (2011).

To get the intrinsic operational performance or the "clean" EBITDA, the reported EBITDA for the costs that do not occur in the normal course of business (all one-off costs, such as restructuring costs, special project costs, consulting and specialized legal fees, extraordinary compensations, etc.) need to be first adjusted. The adjusted EBITDA is then calculated by adding or subtracting from the EBIT:

- one-off events, such as gains/losses from legal settlements and stock-based compensation,
- depreciation and amortization (they need to be subtracted from the calculation as well, since they are not a part of the EBITDA calculation), and
- change in deferred revenue (since our aim is to come as close to the operating cash flow of the firm as possible, we need to take the deferred revenue into account).

Table 6: Reconciliation of EBIT to Adjusted EBITDA

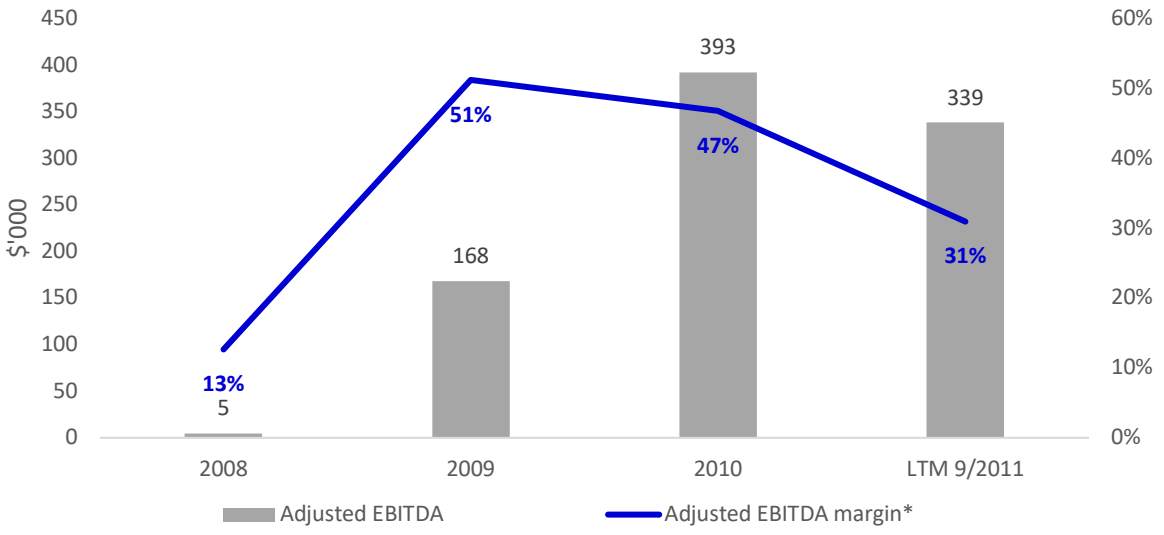
Reconciliation of Income (loss) from operations to Adjusted EBITDA					
Zynga	2008	2009	2010	9m 2011	LTM 9/2011
	$'000	$'000	$'000	$'000	$'000
EBIT	**-22,583**	**-52,778**	**125,472**	**80,945**	**152,409**
Gain (loss) from legal settlements	7,000	0	-39,346	0	-39,346
Depreciation and amortization	2,905	10,372	39,481	64,148	77,287
Stock-based compensation	689	3,990	25,694	70,241	80,436
Change in deferred revenue	16,538	206,603	241,437	20,139	67,879
Adjusted EBITDA	**4,549**	**168,187**	**392,738**	**235,473**	**338,665**
Adjusted EBITDA margin*	***12.7%***	***51.3%***	***46.8%***	***27.7%***	***31.0%***

Source: Own work.

Note. *The adjusted EBITDA margin is calculated as a percentage of total bookings.

As seen in Graph 7 below, the adjusted EBITDA increases significantly in both 2009 and 2010, which can both be ascribed to an increase in bookings. The adjusted EBITDA margin increases as well, topping at 50.0% in 2009. In 2010 and LTM 9/2011, the EBITDA margin decreases slightly to 46.8% and 31.0% in total bookings, respectively. The reason for decreasing the adjusted EBITDA margin in LTM 9/2011 lies in the fact that change in the deferred revenue starts gradually slowing down. Other potential reasons could be attributed to higher costs of developing games for the mobile segment.

Figure 8: The adjusted EBITDA and EBITDA Margin



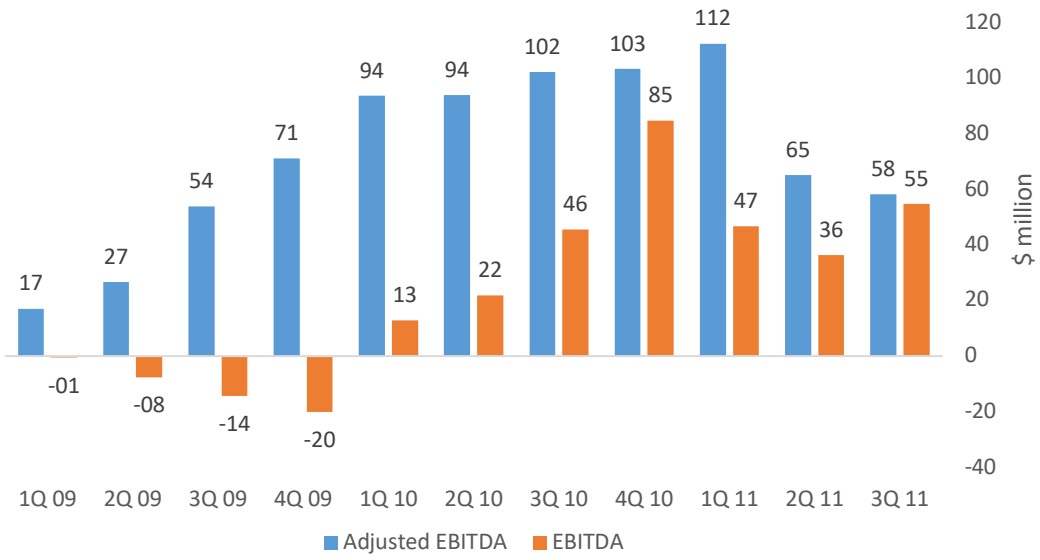
Source: Own work.

Note. * The adjusted EBITDA margin is calculated as a percentage of total bookings.

Another reason for the stagnating adjusted EBITDA can be found in the fact that in July of 2010, Facebook introduced Facebook Credits, a virtual currency that enabled users to acquire virtual goods inside the games on the Facebook platform. Since it became the sole purchase currency, Facebook Credits eliminated other virtual currency platforms by April

2011. Under the applicable terms of the agreement between Zynga and Facebook, Facebook Credits take 30% of gross revenues, which is twice as high as the rate that Zynga developers paid in the past, when it was estimated to be at 15% to the platform/distribution (Patel, Leung & Chesler, 2010). Since in the past Zynga recognized the revenue based on the transaction price paid by the player, without any intermediary besides payment processing companies, the growth of EBITDA started to decrease, along with other possible effects. Unfortunately, the exact effect of this transition is not known, due to the limitations of the data provided in the SEC filing report. Another reason for the slower growth is the stagnating number of users, which is discussed in the next chapter.

Figure 9: EBITDA and the Adjusted EBITDA by Quarters



Source: Zynga (2011).

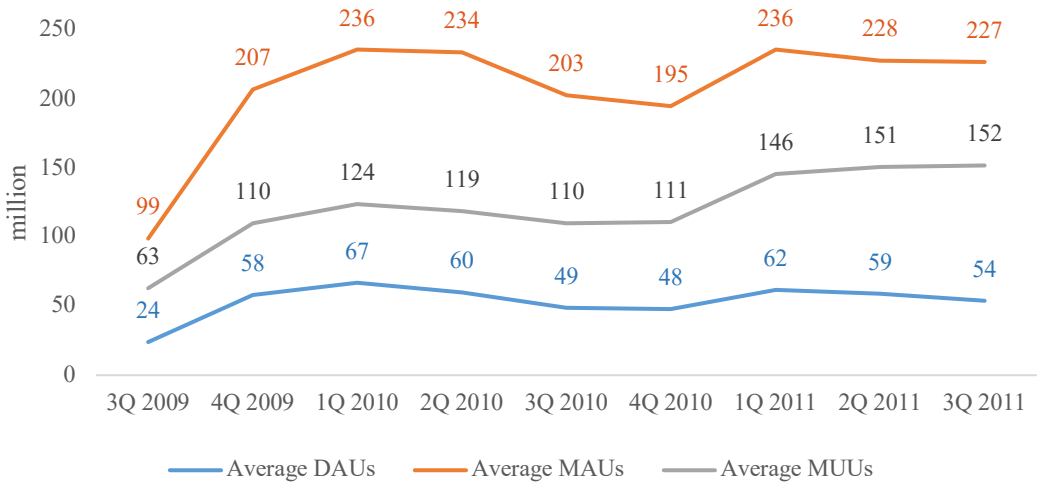
As evident from the table, the quarterly non-adjusted EBITDA is increasing from the first quarter (1Q) of 2010 forwards and reaches a peak in the fourth quarter (4Q) of 2010 with US$ 84.6 million. Nevertheless, in the second quarter (2Q) of 2011 and the third quarter (3Q) of 2011, we observe a drop in EBITDA. The reasons for the drop lie in the fact that the general and administrative expenses in 4Q 2010 are offset by a net gain from legal settlements of US$ 39.3 million. In case we accounted also for the legal settlements, the EBITDA in 4Q 2010 would be on the level of 3Q 2010 and 1Q 2011 ($45.3 million).

3.3 Key Operational Metrics

Number of users is the most important metric for Zynga. This is understandable, given that practically all of its revenue is generated by selling virtual goods or advertising space to its users. For Zynga, the higher the number of users, the higher the opportunity to sell virtual goods to these users. Furthermore, the higher the number of Zynga games users, the easier

it is for Zynga to sell advertising space. Hence, advertisers typically seek platforms that reach as many people as possible to maximize their efforts and reach economies of scale.

Figure 10: Number of Users



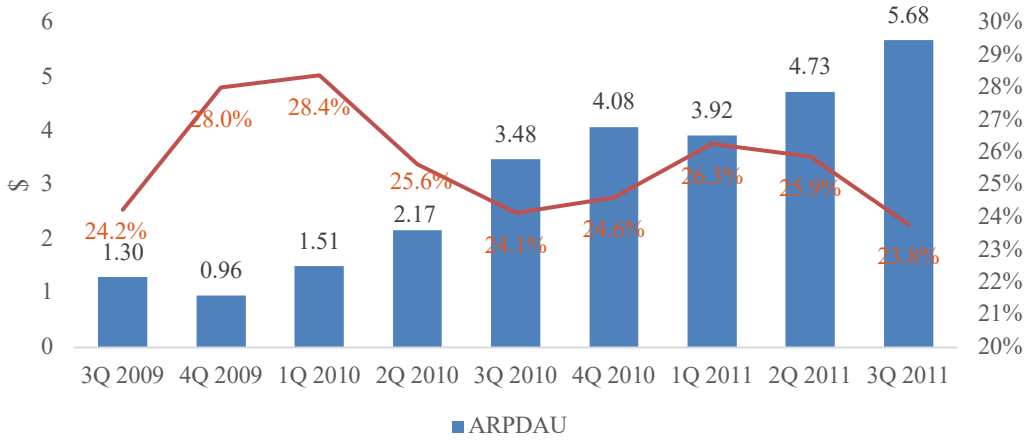
Source: Zynga (2011).

According to Graph 9, the Average DAU grows from 24 million in 3Q 2009 to its peak of 67 million in 1Q 2010. After 1Q of 2010, the number of DAU however starts to decline, with the lowest count in 4Q 2010. As indicated in the Zynga's SEC filing report, the reason for the decline is the change in Facebook's policy for application developers at the beginning of 2010 regarding the use of its communication channels. These changes actually limited the level of communication among users. In other words, Facebook, to improve the satisfaction of its users, banned the so-called »spamming« from players of social games. As a result of this change, the number of Zynga's players on Facebook declined dramatically in the second half of 2010. Another explanation for the decline could be in the cyclicality. Every time Zynga releases a new hit game (or shortly after that), the number of users goes up. This means that if there are no hits in the period, we observe a stagnating or even decreasing number of users.

The increase in Zynga's DAUs, MAUs, and MUUs in the 1Q 2011 can primarily be ascribed to the launch of CityVille in December 2010, the addition of new content to the existing games, and the launch of several mobile initiatives (Zynga, 2011).

The average revenue per daily active user (ARPDAU) increases from $2.1 in 2009 to $10.3 and $11.3 in 2010 and LTM 3/2011. ARPDAU means that each daily active user spent approximately $10.3 in 2010 on in-game virtual goods purchases. Interestingly, the increase correlates with the launch of the game CityVille in December 2010, surpassing 61 million MAUs within the first 50 days after the launch (Zynga, 2011).

Figure 11: Average Revenue per Daily Active User and the DAU/MAU Ratio



Source: Zynga (2011).

The DAU to MAU ratio provides us with a sense of engagement of the users. The more users come back and play, the more engaged they are and easier to monetize. Graph 10 reveals that in 2009, Zynga has a DAU to MAU ratio of 26.8%. A year later, in 2010, the ratio dips to 25.8%, while in the first quarter of 2011, the ratio increases to 26.3%. In the following second and third quarters of 2011, the ratio again decreases, reaching 23.8% in 3Q 2011. This metric implies that, on average, Zynga converted 25.7% of the new monthly active users to daily active Zynga users. Some critical drivers for higher DAU/MAU ratio are engaging game content and the ability of the application to prompt users to reach out to their friends via the Facebook News Feed with stories and pictures (Coelln, 2009).

3.4 Balance Sheet

As of 30.9.2011, approximately 61.3% of Zynga's assets consist of marketable securities (US government debt securities) with cash and cash equivalents. The third biggest asset proves to be property and equipment, which consists of computer equipment, software, furniture and fixtures, and leasehold improvements. The intangible assets, on the other hand, are divided into goodwill from acquisitions and other intangibles, as are developed technology, trademarks, and domain names.

The majority of the liabilities and stockholders' equity is comprised of paid-in and additionally paid-in capital. In 2010, Zynga increases its treasury stock from US$ 1.5 million to US$ 263 million through a stock buyback.

As at 30.9.2011, Zynga does not have any outstanding financial debt.

Table 7: Consolidated Balance Sheet Statement

Consolidated balance sheet statement			
Zynga	31.12.2009	31.12.2010	30.9.2011
	$'000	$'000	$'000
Assets	**258,848**	**1,112,572**	**1,511,652**
Long-term assets	**36,708**	**206,358**	**397,789**
Goodwill	0	60,217	94,706
Other intangible assets, net	1,045	44,001	36,926
Property and equipment, net	34,827	74,959	221,145
Long-term marketable securities	0	0	706
Restricted cash	0	14,301	20,667
Other long-term assets	836	12,880	23,639
Short-term assets	**222,140**	**906,214**	**1,113,863**
Marketable securities	72,622	550,259	321,412
Accounts receivable	7,157	79,974	119,477
Income tax receivable	11,290	36,577	3,957
Deferred tax assets	0	24,399	24,505
Restricted cash	653	2,821	4,139
Cash and cash equivalents	127,336	187,831	604,215
Other current assets	3,082	24,353	36,158
Liabilities and stockholders' equity	**258,848**	**1,112,572**	**1,511,652**
Total stockholders' equity	**-21,478**	**482,215**	**787,663**
Paid-in capital	47,674	394,028	914,153
Additional paid-in capital	6,610	79,335	114,805
Treasury Stock	0	-1,484	-282,754
Other comprehensive income	21	114	548
Retained earnings (deficit)	-75,783	10,222	40,911
Total non-current liabilities	**45,690**	**109,707**	**114,613**
Deferred revenue	45,690	56,766	29,684
Deferred tax liabilities	0	14,123	14,741
Other non-current liabilities	0	38,818	70,188
Total current liabilities	**234,636**	**520,650**	**609,376**
Accounts payable	21,503	33,431	52,486
Other current liabilities	35,024	78,749	101,199
Deferred revenue	178,109	408,470	455,691

Source: Zynga (2011).

3.5 Working Capital

Working capital generally shows the amount of own funds that are necessary for the company to finance its operations. And since working capital has an effect on the value of the firm through the generated free cash flows, this makes it an important value driver.

In our research, the working capital is calculated by first adding accounts receivable and then subtracting accounts payable and deferred revenue. The adjusted working capital (excluding deferred revenue) is included with the purpose to account for the fact that it is already accounted for in the adjusted EBITDA calculation.

Table 8: Working Capital and Adjusted Working Capital Calculation

Working capital **Zynga**	31.12.2009	31.12.2010	30.9.2011
	$'000	$'000	$'000
Accounts receivable	7,157	79,974	119,477
Accounts payable	-21,503	-33,431	-52,486
Deferred revenue	-178,109	-408,470	-455,691
Working capital	**-192,455**	**-361,927**	**-388,700**
Working capital as % of sales	*-158.4%*	*-298.0%*	*-46.9%*
Adjustments			
Deferred revenue	178,109	408,470	455,691
Adjusted working capital	**-14,346**	**46,543**	**66,991**
Adjusted WC as % of sales	*-11.8%*	*7.8%*	*6.5%*

Source: Own work.

As evident from the table above, Zynga's working capital was negative three times, namely as at 31.12.2009, 31.12.2010, and 30.9.2011. The main reason for the mentioned negativity lies in the substantial amount of deferred revenues, since the company records the sale of virtual goods as deferred revenue and recognizes revenue only later on, when either the virtual goods are consumed or according to the estimated average life of the virtual good.

After being adjusted, the adjusted working capital becomes positive in 2010, with the adjusted working capital (WC) as % of sales at 7.8%, while as at 30.9.2011, the adjusted WC as % of sales amounts to 6.5%.

3.6 Net Debt

Zynga did not have any current or long-term financial liabilities as at 30.9.2011, which is why its net debt is positive. In the calculation of net debt, we include marketable securities, i.e. the US government-issued obligations maturing within one year of the purchase date, including also cash and cash equivalents.

However, we do not include other liabilities, since they represent game cards that are initially recorded as a customer deposit liability. Upon redemption of a game card into one of the games and the delivery of the virtual currency to the player, these amounts are then reclassified to deferred revenue (Zynga, 2011).

Table 9: Net Debt

Net debt			
Zynga	31.12.2009	31.12.2010	30.9.2011
	$'000	$'000	$'000
Long-term marketable securities	0	0	706
Marketable securities	72,622	550,259	321,412
Cash and cash equivalents	127,336	187,831	604,215
Total net debt	**199,958**	**738,090**	**926,333**

Source: Own work.

3.7 Capital Expenditures

Capital expenditures (or capex) relate to the assets that typically remain in use over an extended period of time. Capex is defined as expenditures that create future benefits and is calculated by using the formula (1):

$$Capex_t = \Delta PPE + \Delta intangible\ assets, net + \ depreciation \quad (1)$$

where Δ represents the change in value in a given year or quarter.

Table 10: Capital Expenditures

Capital expenditures			
Zynga	2009	2010	9m 2011
	$'000	$'000	$'001
Capital expenditures	**39,401**	**72,716**	**74,963**
Capex as % of sales	*32.4%*	*12.2%*	*9.0%*
Capex as % of depreciation	*379.9%*	*184.2%*	*116.9%*

Source: Own work.

According to the figures in Table 11, Zynga's capex amounts to US$ 39,949 in 2009, which equals 32.4% of total revenues, and US$ 72,716 in 2010, equaling 12.2% of total revenues, while in the first three quarters of 2011, capex amounts to US$ 74,963 or 9% of total revenues. Overall, Zynga is a growth company, which is why it needs continuous acquisition of computer equipment, servers, furniture, and other equipment to run its expanding operations.

The capex of the comparable companies in the gaming industry varies from company to company, with some of the companies reaching a capex of as high as 50% of revenue or more. If we do not take into account the outliers with high capex (mostly due to acquisitions), the average capex amounts to between 4% and 15% of revenue.

4 DISCOUNTED CASH FLOW METHOD

4.1 Theoretical Background

The discounted cash flow (DCF) method is one of the most commonly used methods for valuing companies (Fernandez, 2007), as it is the only available method that tries to calculate the intrinsic value of a company. In other words, if it is done correctly, with valid inputs—a big "if"—the DCF model will produce the "correct" valuation of a firm (Metrick & Yasuda, 2006). According to Fernandez (2007), it is also the most conceptually correct method. In addition, the DCF method is forward-looking, meaning that it depends on future expectations. The method is based on the free cash flow of the company, which is however more difficult to manipulate than any other multiples or certain other figures and ratios. On the other hand, the DCF method has proven to have some significant disadvantages, especially when it comes to valuing young companies. One of the biggest problems encountered when valuing young companies is the lack of historical information, as they usually have no more than a few years of basic accounting data available, if that much at all. To further complicate things, some companies use innovative business models, which are harder to understand and thus analyze.

Damodaran (2001, p.) defines three variables that determine the value of a business or an asset under DCF, claiming that "the value of any asset should be a function of three variables, namely how much it generates in cash flows, when these cash flows are expected to occur, and the uncertainty associated with these cash flows. The discounted cash flow valuation brings all three of these variables together, by computing the value of any asset to be the present value of its expected future cash flows."

We can define a company's present value with the formula (2):

$$\mathrm{PV} = \sum_{i=1}^{n} \frac{E_i}{(1+k)^t} \tag{2}$$

where the included values stand for the following:
PV = Present value, n = The last period for which economic income is expected, n may equal infinity (i.e., ∞) if the economic income is expected to continue in perpetuity, Ei = Expected economic income in the ith period in the future, k = Discount rate, i = Number of years in which the prospective economic income is expected to be received.

When valuing a company, analysts most commonly use the Free Cash Flow to the Firm (FCFF), which can be calculated as provided in the continuation under point 5.5.1.

4.1.1 Free Cash Flow to the Firm

The formula (3) to calculate Free Cash Flow to the Firm (FCFF) is the following:

FCFF = EBIT (1 – Tax rate) – Changes in Net Working Capital + Amortization & Depreciation – Capital Expenses. (3)

According to Damodaran (2001, p.), the free cash flow to the firm can be defined as "being the cash flow left over after operating expenses, taxes and reinvestment needs, but before any debt payments". Nevertheless, the stated implies that FCFF measures cash flows that belong to the whole firm, not just its equity holders.

In addition, FCFF is derived from net operating income, which shows the ability of a company to produce income from its core operations. Later, taxes, changes in net working capital and capital expenditures are detracted, while subtracting amortization and depreciation costs.

4.1.2 Discount Rate (WACC)

To value a company using free cash flow to the firm in the context of the discounted cash flow method, we discount free cash flow by the weighted average cost of capital (WACC). The discount factor is defined by Pratt and Niculita (2008) as "an "opportunity cost", that is, the expected rate of return (or yield) that an investor would have to give up by investing in the subject investment instead of investing in available alternative investments that are comparable in terms of risk and other investment characteristics".
"The expected cash flows need to be discounted back at a rate that reflects the cost of financing these assets. The cost of capital is a composite cost of financing that reflects the costs of both debt and equity, and their relative weights in the financing structure" (Damodaran, 2005, p.).

"The most important principle underlying successful implementation of the cost of capital is the consistency between the components of WACC and free cash flow." (Koller, Goedhart & Wessels, 2005). Also, according to Koller, Goedhart, and Wessels (2005), to ensure consistency the cost of capital must meet the below criteria:

- It must include the opportunity costs from all sources of capital.
- It must weight each security's required return by its target market based weight, not by its historical book value.
- It must be computed after corporate taxes.
- It must be denominated in the same currency as free cash flow.
- It must be denominated in nominal terms, when cash flows are stated in nominal terms.

$$WACC = k_{equity} (E/(D+E) + k_{debt} (1 – T) (D/(D + E) \quad (4)$$

The above equation (4) of the weighted average cost of capital is divided into two parts: the cost of equity (k_{equity}), which represents the rate of return required by equity investors, and the cost of debt (k_{debt}), which reflects the current cost of borrowing, adjusted for the tax

benefits of borrowing. The weights (E/D+E and D/D+E) are usually set at the target capital structure.

4.1.2.1 Cost of equity

The cost of equity is most commonly derived from the CAPM model, which can be defined by the following formula (5):

$$E(Ri) = Rf + \beta(ERP) \tag{5}$$

in which the given values stand for:
E(Ri) = Expected return on an individual security, Rf = Rate of return available for a risk-free security, β = Beta for the individual security, ERP = Equity risk premium for the market as a whole (or, by definition, the equity risk premium for a security with a beta of 1.0).

Common way to calculate cost of equity is also modified CAPM model, which adds other premiums, such as size premium, country risk premium etc.

4.1.2.2 Risk-free rate

The "risk-free" rate used is the rate available on instruments that are considered to have virtually no possibility of default (Pratt & Niculita, 2008). Most analysts use government securities to derive risk-free rates. The most commonly used source in the US is the 10- (Koller et al., 2005) or 20-year US Treasury bond (Hitchner, 2011).
According to Metrick and Yasuda (2006), Koller, Goedhart, and Wessels (2005) and Hitchner (2011), it is ideal to use the current treasury yield for a horizon that matches the expected holding period of the investment. This implies that for an investment with a short-term horizon we would use the yield on the short-term treasury bond. Damodaran (2001) advises using a zero-coupon government bond matching the time horizon of the cash flow being analyzed.

An alternative approach to estimating the duration can be taken from the calculation of duration of bonds. One could estimate the weighted average of when the cash flows come due by computing a duration for the cash flows in the valuation (Damodaran, 2001). Since the cash flows on technology stocks tend to be weighted towards the later years, while often being negative in the earlier years, they will consequently have a longer duration, which would suggest that longer-term government bond rates should be used as riskless rates when valuing these stocks (Damodaran, 2001).

4.1.2.3 Beta

The risk-free rate and equity risk premium are generally the same for all investments in a market, however, beta, for comparison, captures the investment's market risk exposure (Damodaran, 2001). Beta is defined as "the slope term in the simple linear regression

function, where the rate of return on a market index was the independent variable and the security's rate of return was the dependent variable." (Alexander & Chervany, 1980). Put another way, it measures how the security's market value changes with the changes in the stock market.

A beta value of 1 represents an average risk investment, meaning that the prices of stocks will move according to the market. Betas with the value above 1 imply a higher level of risk and volatility, as compared to the stock market. Further, betas valued below 1 (and higher than 0) imply that the stock prices are less risky and volatile. Besides, there is the beta risk, also known as market risk, non-diversifiable risk, or systematic risk (Metrick & Yasuda, 2006).

To calculate beta, analysts most commonly rely on statistics and historical data. The standard approach for estimating the CAPM beta is to run a regression of returns on a stock against returns on a broad equity market index (Damodaran, 2001).

Regarding Zynga's beta, it cannot be calculated, since Zynga shares are not yet traded on the stock market. A solution most often applied in such cases as is with Zynga is a bottom-up beta. The bottom-up or guideline beta is a way to estimate beta of a private company by calculating betas of the traded firms in the same industry, adjusted for the differences in financial leverage (Damodaran, 2001).

The first step in the process is computing unlevered betas for the comparable companies in the industry, where the unlevered beta stands for a beta that the company would have, if it had no debt (Pratt, et al., 2008). The second step is to re-lever the beta according to the industry's capital structure by applying the formula (6) provided in the continuation.

$$B_U = \frac{B_L}{1+(1-t)(W_d/W_e)} \quad (6)$$

where the given values mean:
B_U = Beta unlevered, B_L = Beta levered, t = Tax rate for the company, Wd = Percentage of debt in the capital structure, We = Percentage of equity in the capital structure.

4.1.2.4 Equity risk premium

The equity risk premium (ERP) is the premium that investors demand for investing in risky assets (or equities) as a class, relative to the risk-free rate. It is a function of not only how much risk investors perceive in equities as a class, but also the risk aversion that they bring to the market (Damodaran, 2001). In other words, it is a premium that investors must receive to entice them to invest in the public equity markets instead of long-term government securities (Hitchner, 2011). ERP is most commonly calculated based on historical excess returns of stocks over the long-term government bond income returns. Ibbotson provides

historical ERP data in its annual publication Market Results for Stocks, Bonds, Bills, and Inflation (Hitchner, 2011).

4.1.2.5 Cost of debt calculation

The cost of debt is the current rate at which a firm can borrow, adjusted for any tax benefits associated with borrowing. Firms with higher default risk should have higher costs of debt than firms with lower default risk (Damodaran, 2001).

The cost of debt part of the WACC formula can be divided into three sections (interest rate, tax rate, and the amount of debt used (capital structure)), presented by the following formula (7):

$$\text{Cost of debt} = k_{debt}\,(1 - T)\,(D/(D + E)) \tag{7}$$

It can be determined in four ways, namely:

- If the firm issued bonds in the past and if the bonds are currently being traded, we can use its yield to maturity as the interest rate.
- If the firm is rated by one of the rating agencies, we can use the rating and calculate a default spread on bonds with that rating to estimate the cost of debt.
- If the firm is not rated:
    - If the firm has recently borrowed a loan from a bank or any other lender, we can use the interest rate on the borrowing, or
    - We can calculate a synthetic rating for the company and use this rating to arrive at a default spread and a cost of debt.

In the case when a startup is not already financed by debt, an alternative approach needs to be used to calculate the cost of debt. Damodaran suggests calculating a synthetic rating, which can be estimated based upon a financial ratio called the interest coverage ratio. The calculated rating (through the interest coverage ratio) allows us to get a default spread to the risk-free rate, which we can then add to determine a pre-tax cost of debt (Damodaran, 2001).

Since young companies are not publicly traded, we cannot apply market values to estimate their weights for debt and equity. The alternative in this case is to get some indication, whether founders have any inclination towards using debt versus equity. Since this is very rare and the founders typically do not know how much debt they intend to use in the future, for our research purposes we were required to rely our estimates on the average market debt ratio of the comparable publicly traded firms.

4.1.3 Terminal Value

Financial analysts typically use mid-term projections of cash flows, which are then discounted with an appropriate discount rate. This in most cases means in the range between 5–10 years. Since the company that is being valued is likely to operate more than 5–10 years

(unless it goes default), it is necessary to consider the period after the projections as well, called terminal value.

The most utilized way of calculating terminal value is to value a firm as a going concern, which means we need to make assumptions regarding the growth of cash flows into the infinity. The calculation of terminal value has two components: the growth rate of cash flows into perpetuity and excess return (standing for the difference between return on invested capital and the cost of capital). Terminal value is presented with the following formula (8):

$$\text{Terminal value} = (\text{En}\ (1+g))/(k-g) \tag{8}$$

where the values indicate:
En = Expected amounts of net cash flow, k = Discount rate, n = Number of periods in the projection period, g = Annually compounded growth rate in perpetuity for the prospective economic income, beyond the discrete projection period.

There are many problems with determining terminal value, when it comes to young growth companies, among which the very first and the biggest one is the question of whether the firm is even going to reach a stable growth phase.

The second issue, which can only take place if the first issue occurs, is regarding the timing and duration of the stable growth phase. Is the firm going to reach it in a couple of years, or is it going to take much more than that? In any case, if the expected growth of a young company in perpetuity is higher than our required return, we end up with a negative outcome. Therefore, one of the recommendations in using the Gordon Growth Model is that your expected growth rate be within a reasonable range of the nominal GDP growth (Carver, 2012). In other words, this means we need to value discounted cash flows with the DCF method for as long as the company reaches a steady state level of cash flows which are lower than the discount rate. This usually implies a period of 10–15 years, or more, depending on the age of the company, potential market, etc.

4.2 Valuation of Zynga (DCF)

In this section, the major assumptions that affect Zynga's projected cash flows are discussed with the purpose of deriving the value of Zynga with the DCF method.

Since Zynga is betting heavily on conquering the mobile gaming market in the future, we must certainly account for that also in our projections. In light of these facts, we create two scenarios. In the pessimistic scenario (Scenario 1), we account for large investments in the mobile gaming market, while the revenues stay relatively low. The primary assumption in this scenario is a lack of competitive advantage in mobile gaming and tough competition already established on the market, which is reflected in the projections. In the optimistic

scenario (Scenario 2), we account for significant investments in development and acquisitions, while the bet on the mobile gaming market comes to fruition, with a substantial number of new users and consequently revenue. This scenario is a consequence of the strengths of Zynga, to which belong data analytics, the established sales funnel and the experiences in designing viral games.

4.2.1 Pessimistic Scenario (Scenario 1)

4.2.1.1 Revenues

Considering that Zynga receives all of its revenue from two main revenue streams, namely advertising and online sales of virtual goods, we focus on each of them to arrive at the total projected revenue. In the process, we further subdivide sales from virtual goods to the social gaming sector and the mobile gaming sector.

Each sector can be modelled by further separation to two major effects, namely the average number of daily active users (DAU) and the average revenue per daily active user (ARPDAU).

As seen in the analysis of the key operational metrics (user engagement), the average DAU of the social gaming sector reached a ceiling of approximately 65 million daily users. We assume that the number of DAUs is going to increase in the fourth quarter of 2011 by 5%, in comparison to the average DAUs in 2010, reaching 58.8 million average DAUs. In the subsequent years, we forecast a further increase of DAUs by 5% in 2012 and 2% in 2013. Due to the increased competition, Facebook restrictions and lack of focus on the social gaming sector, we predict a ceiling of the number of users in 2014 (with 0% growth) and a decline of the number of users by 2% from 2015 onwards. The assumption behind the numbers is that Zynga's DAU numbers are going to decline, mainly due to the increasing competition, which is what is most likely to happen the more Zynga shifts its priorities to the mobile gaming sector. Another issue that has already affected Zynga's number of users is Facebook's policy of limited spam (push notifications to other users).

The average revenue per daily active user is projected to grow from US$ 1.6 per month per DAU in 9m 2010 to US$ 2.0 per month per DAU in 2019. To convert the numbers to daily averages (for better comparison to the industry averages), the ARPDAU is going to increase from ¢5 per day per DAU in 9m 2010 to ¢7 per day per DAU in 2019, implying a significant improvement in monetization of daily active users. The only way Zynga can do that is by creating even more engaging games and improving the user interface, when it comes to payments (in some form Facebook already did that for Zynga with Facebook Credits).

The critical assumption behind the mobile gaming sector projections that affects Zynga's outlook is the number of daily active users it attracts. In the pessimistic scenario, we project the DAU numbers to reach approximately one-third of that of the social gaming sector, starting from 5 million DAU in 2012 and reaching 22.1 million DAU in 2019. Since Zynga

plans to invest a substantial amount of resources behind the launch of many mobile games, we believe these are relatively pessimistic numbers and can be achieved without creating big blockbuster games. After all, the mobile gaming market is projected to become a much bigger segment than social gaming.

The fact that the gaming sector is still in its early phases makes it hard to estimate its potential to monetize gameplay. The best approximation can nevertheless be derived from the social gaming sector. Accordingly, we plan for the ARPDAU numbers to follow the trend of the social gaming sector, increasing in value, from ¢2 in 2012 to ¢7 in 2019.

Although advertising is a primary source of revenue at the beginning of its existence, Zynga does not rely primarily on advertising revenue in the years 2009 and 2010. In LTM 9/2011, Zynga's advertising revenue in total increases by 142.7%, reaching US$ 55,403 thousand, signaling the growth of this segment. The projections for the advertising revenue for the next five years are based on the industry's percentage of the total revenue, which amounts to 14% (Casual Games Association, 2012). We thus gradually increase the percentage of the advertising revenue in total revenue, reaching the industry's 14% share in 2016.

If we look at our projections solely through the prism of historical data, we could say they are rather conservative. In the period 2008–2010, Zynga showed CAGR of 455%, with a growth rate of 392% in the year 2010. Even for a startup firm, this kind of growth rates are an exception rather than the rule. Our relatively conservative projections are based on the outlook for the social gaming industry. Even though the number of users of Facebook is probably going to grow substantially in the following years, the growth of the social gaming industry is starting to slow down, mainly due to an increasing popularity of mobile gaming. Furthermore, the increasing competition from Japan and larger gaming companies are threatening Zynga's dominance, when it comes to Facebook games. Another critical issue that might curb Zynga's growth of revenues comes from Facebook's policy regarding the advertising on the platform. If Zynga games cannot become viral the way they used to, with a large amount of push notifications, we might see a substantial decrease in the number of users and consequently revenue. On the other hand, Zynga is betting on the mobile gaming market, which is still in its early phases. However, if Zynga, without any real presence in this sector thus far, can dominate the market, is yet to be seen.

Another argument for the conservativeness of the estimation lies in the fact that startups (or high-growth firms) seem to report a lower revenue growth after the IPO. In their paper, Metrick and Yasuda (2006) compare revenue growth rates of high-growth firms after the IPO to those of other firms in the sector, in which they operate. Initially, high-growth firms report higher growth rates than the industry average. In their first year, they report a 15% higher growth rate (than the industry average), in the second they report a 7% and in year four a 1% higher growth rate, while in the year five they report the same growth rate as the average. As Damodaran (2001) puts it, "the aggregate evidence suggests that growth firms

that can maintain high-growth rates for extended periods are the exception rather than the rule."

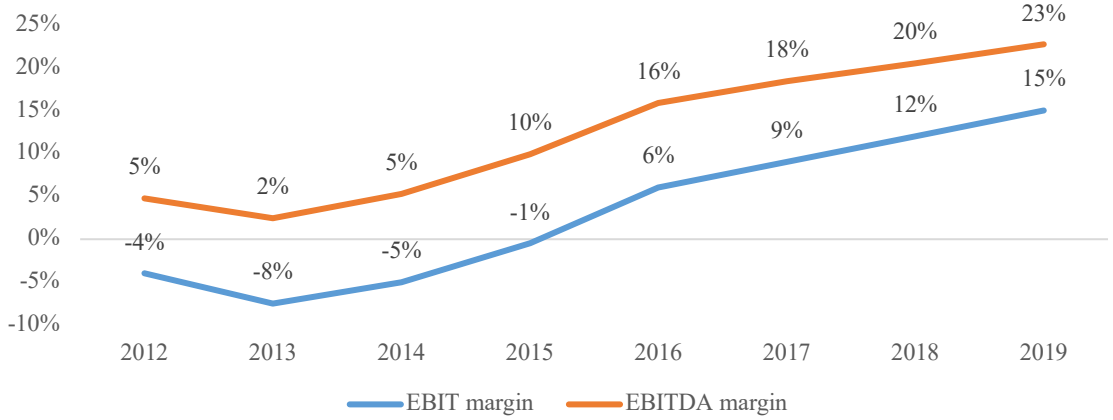
4.2.1.2 Costs

When forecasting the cost of revenue, we mostly rely on the analysis of Tier 1 comparable companies, since the disparity between Tier 1 and Tier 2 companies is simply too wide. The greatest reason for the difference is the type of games companies develop. Tier 1 companies focus on mobile and online games, which can be developed with significantly lower costs than PC or console games, leaving us to thus assume that Zynga's cost of revenues will gradually decrease to the approximate level of Tier 1 companies' cost, ranging between 27% and 23%.

Zynga's R&D expenses in the period 2008–2010 average 43.2% of total revenues, while in LTM 9/2011, the R&D expenses amount to 34.1% of revenues. In comparison, the US-based comparable companies spent on average 28.1% of revenues on R&D in the same period. Since Zynga is a relatively young company, tackling a new segment and producing games that are technologically demanding, we forecast the R&D spending in the next few years to range between 42.5% (2013) and 35% (from 2016 forward), with an average of 38%, which is slightly above the average of the US-based companies.

The sales and marketing expenses decrease substantially in the past years, falling from 56.6% in 2008 to 14.7% in 9m 2011. The forecasted sales and marketing expenses are set at an average of 24.8% of the revenues in the period 2012–2015, while they are forecasted to drop to the lowest number of 17% in the year 2019.

Figure 12: Forecasted EBIT and EBITDA Margins



Source: Own work.

As is the case with the sales and marketing expenses, the general and administrative expenses decrease in the period 2008–2010, while in 9m 2011, they reach 14.2% of sales. With the

scale and further optimization of Zynga business processes, we predict general and administrative expenses to decrease to 12.0% of revenue by 2016 and 10.0% by 2018.

The EBIT margin is forecasted to first hit negative numbers, due to the investments in the mobile gaming sector, and later on increase, from -5.0% in 2014 to 15.0% in 2019. The increase can be attributed to the decrease in all costs and expenses relative to the revenue. The EBIT and EBITDA margins of the comparable companies in 2010, excluding those with negative margins, amount to 22.0% and 27.2%, respectively, while the EBIT and EBITDA margins of the period 2007–2010, excluding negative margins, average to 24.5% and 28.9%, respectively.

Table 11. Revenue and Cost/Expenses Projections

Revenue projections	Estimate	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Zynga	10-12m 2011	2012	2013	2014	2015	2016	2017	2018	2019
	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000
Revenue	**337,085**	**1,518,236**	**1,679,167**	**1,849,745**	**1,958,287**	**2,068,663**	**2,124,957**	**2,165,714**	**2,175,756**
Advertising	24,969	138,021	166,404	198,187	225,290	254,046	277,168	298,719	300,104
Social gaming	312,116	1,350,214	1,404,763	1,432,858	1,432,285	1,417,676	1,389,322	1,361,536	1,334,305
Mobile gaming	0	30,000	108,000	218,700	300,713	396,941	458,466	505,459	541,347
Total costs and expenses	**353,940**	**1,578,965**	**1,805,105**	**1,942,233**	**1,968,079**	**1,944,543**	**1,933,711**	**1,905,828**	**1,849,393**
Cost of revenue	91,013	394,741	419,792	462,436	450,406	475,792	488,740	498,114	500,424
Research and development	134,834	607,294	713,646	776,893	783,315	724,032	743,735	758,000	761,515
Sales and marketing	77,530	349,194	436,583	462,436	489,572	496,479	467,491	433,143	369,879
General and administrative	50,563	227,735	235,083	240,467	244,786	248,240	233,745	216,571	217,576
EBIT	**-16,854**	**-60,729**	**-125,938**	**-92,487**	**-9,791**	**124,120**	**191,246**	**259,886**	**326,363**

Source: Own work.

4.2.1.3 Cash Flow Projections

Table 12: Cash Flow Projections

Cashflow projections	**Estimate**	**Forecast**	**Forecast**	**Forecast**	**Forecast**	**Forecast**	**Forecast**	**Forecast**	**Residual**
Zynga	**10-12m 2011**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**value**
	$'000	**$'000**	**$'000**	**$'000**	**$'000**	**$'000**	**$'000**	**$'000**	**$'000**
EBIT	(16,854)	(125,938)	(92,487)	(9,791)	124,120	191,246	259,886	326,363	
(1-tax rate)	1.00	1.00	1.00	1.00	0.71	0.71	0.71	0.71	
EBIT after taxes	**(16,854)**	**(125,938)**	**(92,487)**	**(9,791)**	**88,125**	**135,785**	**184,519**	**231,718**	**236,352**
Change in deferred revenues	8,190	33,583	36,995	39,166	41,373	42,499	43,314	43,515	44,385
Depreciation and amortization	24,762	132,561	166,984	190,301	203,710	199,480	183,642	167,753	
Change in working capital	(9,240)	(10,522)	(11,153)	(7,097)	(7,216)	(3,681)	(2,665)	(657)	(670)
Capital expenditures	(187,720)	(335,833)	(351,452)	(332,909)	(310,299)	(233,745)	(173,257)	(167,533)	
Free cash flow to the firm (FCFF)	**(180,862)**	**(306,149)**	**(251,112)**	**(120,330)**	**15,693**	**140,338**	**235,554**	**274,797**	**280,068**
Long-term growth (g)									2.00%
Residual value									**3,438,710**
Time factor (mid-year discounting)	0.125	1.75	2.75	3.75	4.75	5.75	6.75	7.75	7.75
Discount factor	0.988	0.844	0.767	0.696	0.632	0.574	0.521	0.473	0.473
WACC									
Present value of free cash flows	**(178,690)**	**(258,522)**	**(192,517)**	**(83,755)**	**9,917**	**80,517**	**122,698**	**129,956**	**1,626,229**

Source: Own work.

4.2.1.4 Effective Tax Rate

In 2010, Zynga paid an effective tax rate of 28.7%. According to the data provided by Damodaran (n.d.), Entertainment tech industry had on average, across only the profitable companies, a 28.5% tax rate. The effective tax rate for the comparable companies in the past

four years varies widely, from 14.0% in 2010 to 25.3% in 2009, considering only the profitable companies. If we look at only the US-based companies, the effective tax rate is even more volatile, the reason for which is the relatively low number of the profitable companies. The effective tax rate of the US-based comparable companies ranges from 4.1% in 2009 to 28.1% in 2008. Based on these facts, we can safely assume that Zynga's effective tax rate in the future years will not exceed 29.0%.

4.2.1.5 Change in Deferred Revenues

Changes in deferred revenues are not typically included in the calculation of free cash flows. Despite this, we decided to include them, because in Zynga's case they represent a constant cash flow to the firm. Over the years, Zynga's year-on-year change of deferred revenues, due to an accounting change, started to decrease as a percentage of revenue. In 2010, the change in deferred revenues amounted to 2.4% of total revenues. For all the forecasted years, we anticipate the change in the deferred revenues to stay at 2% of the total revenues.

4.2.1.6 Depreciation and Amortization

Since Zynga's SEC filing report does not include a breakdown of Zynga's property, plant, and equipment, but instead each item is amortized at a different rate, nor does it provide any data regarding future investments, we were unfortunately unable to model future depreciation costs. Thus, we set amortization and depreciation as a percentage of the total revenues. In the last two years, Zynga on average reported amortization and depreciation at 7.6% of the total revenues. Tier 1 companies report similar depreciation and amortization as a percentage of revenues, with an average of the last two years at 7.3%. We forecast depreciation and amortization to gradually increase to 9.8% in 2014, which is mainly a consequence of substantial investments in PPE. After the peak, the depreciation is forecasted to drop to 7.7% in 2019.

4.2.1.7 Change in Working Capital

In the past years, Zynga's working capital (WC) was negative, precisely due to a substantial amount of deferred revenues. In the analysis of the company's working capital, we thus make an adjustment to show its "real" working capital. The reason for the use of the adjusted working capital in the calculation of free cash flow is that change of deferred revenue is already accounted for in the adjusted EBITDA. After the adjustment, the adjusted working capital becomes positive in 2010, with the adjusted WC as % of sales at 7.8%, while as at 30.9.2011, the adjusted WC as % of sales amounted to 6.5%. In the forecast, we set the adjusted working capital at 6.5% of the total revenues in the years 2011–2019. For comparison, the average WC of the comparable companies varies widely from company to company, which is why we used median instead of average, with the median WC in 2009 thus being 4.1%, while the median in 2010 amounts to 4.9%.

4.2.1.8 Capital Expenditures

According to the SEC filing report (Zynga, 2011), Zynga's capital expenditures were forecasted to increase in 10–12m 2011 by US$ 137,720 thousand, reaching capex for the year 2011 of US$ 200,000 thousand, which would mean a capital expenditure as a percentage of revenue of 17.2% of the total revenues. The median capital expenditure as percentage of revenues of the comparable companies amounted to 5.2% in 2009 and 7.1% in 2010. Considering the fact that Zynga is a relatively young company, its high capital expenditures are somewhat expected. However, they are also most likely not sustainable in the long run, which is why in our projections of free cash flow, we gradually lower the capital expenditure as a percentage of revenue, reaching 7.7% of revenue in 2019, thus equaling depreciation.

4.2.1.9 WACC

The weighted average cost of capital (WACC) of Zynga is calculated by considering the fact that Zynga creates revenue in two geographical regions, namely the USA and the rest of the world. Zynga creates roughly 67% of all revenue domestically (USA), while 33% of its revenue is created worldwide. Unfortunately, a more accurate division of the company's revenue is not stated in the SEC filing report. Moreover, as different regions have different tax rates and country risk premiums, this affects the underlying WACC.

For the risk-free rate, we use the interest rate of the US Federal Government 10-year bond. At the time of the IPO, the riskless interest stands at 1.92% (Fusion Media Ltd., n.d.), which leads us to apply the 10-year bond in order to approximate the average time horizon of the investors, and as no data on the time horizon preferences exist, we instead make a crude estimation. In case we had overestimated the time horizon of the average investor, and it is in fact a span of less than 10 years, we would have valued the company conservatively. At the end of the valuation analysis, we in addition perform a sensitivity analysis with two variables, one of them being WACC. In case the risk free rate is believed to be lower, the reader can check the value of Zynga in the sensitivity analysis.

The equity risk premium (ERP) is calculated by averaging the US ERP and the ERP of the rest of the world, where the ERP of the United States is sourced from Damodaran's database (2011) on his website and amounts in 2011 to 6.01%. The equity risk premiums of the countries of the rest of the world (i.e. ERP plus country risk premiums) are weighted by the country's share of the global GDP (excluding the US) and then averaged, the ERP of the rest of the world, excluding the US thus amounting to 8.77% and the total weighted ERP for Zynga amounting to 6.9%.

Not having the data on how the performance of Zynga correlates with the performance of the market, we first need to make an estimation of the industry's beta and then use the calculated beta in the CAPM model to estimate the WACC of Zynga. Accordingly, the unlevered beta, i.e. without the effects of debt on the riskiness of the company, for each of

the comparable companies that were at the time of the IPO traded on the stock exchange is calculated and then averaged. In the process, we use the 3-year monthly unlevered beta at the time of the IPO (as at 15.12.2011), with the unlevered beta amounting to 1.22. Similarly, the debt to equity (D/E) ratio is calculated by averaging the D/E of all the comparable companies at the time of the IPO, amounting to 2.9%. Both the unlevered beta and D/E ratio are crosschecked with Damodaran's database (2011) on his website. According to his database, the unlevered beta of the industry in the US, called Entertainment tech, is 1.3, while D/E amounts to 7.3%. Both of these numbers are relatively close to the data gathered via the equity analysis platform Infinancials. As the chosen comparable companies are a better estimate of the market in which Zynga operates and the industry "Entertainment tech" represents a wide variety of companies, we decided to use our own calculation of the beta and D/E ratios. This is done by applying a D/E of 2.9% and re-levering the unlevered beta with the Hamada equation, thus amounting to the levered beta for Zynga at 1.24.

The tax rate applied to the calculation of CAPM is 35.0% for the US and 22.9% for the rest of the world, where the tax rates of other countries are weighted by the country's share of the global, excluding the US, GDP and then averaged.

Within the research, the country risk premium is applied by sourcing the risk premiums of every country. We then first weight them by the country's share of the global, excluding the US) GDP and then average them.

Table 13: Country Risk Premium Calculation

Region		GDP	Weight	Weight (excl. US)	Total Equity Risk Premium	Weight (excl. US) * TERP
Africa	$	1,229	1.8%	2.4%	3.1%	0.1%
Asia	$	19,282	27.9%	36.9%	3.7%	1.4%
Australia & New Zealand	$	1,514	2.2%	2.9%	0.0%	0.0%
Caribbean	$	178	0.3%	0.3%	4.5%	0.0%
Central and South America	$	5,481	7.9%	10.5%	6.2%	0.6%
Eastern Europe & Russia	$	3,751	5.4%	7.2%	3.7%	0.3%
Middle East	$	1,695	2.5%	3.2%	1.8%	0.1%
North America	$	16,830	24.4%		0.6%	0.0%
Western Europe	$	19,105	27.7%	36.6%	0.9%	0.3%
Weighted average					**2,71%**	**2,76%**

Adapted from Damodaran (n.d.).

The calculated CAPM for Zynga as at 15.12.2011 amounts to 10.31%.

Table 14: CAPM Calculation

Risk free rate	+	Levered beta	x	Equity risk premium	+	Country risk premium (weighted)	=	Cost of capital
1.92%	+	1.24	x	6.01%	+	0.91%	=	**10.31%**

Source: Own work.

Even though Zynga does not have any outstanding debt as at 15.12.2011, for the purposes of calculating WACC, we need to take into account the market D/E ratio of 2.9%. This consequently means we also need to estimate Zynga's future cost of debt. One way to estimate the cost of debt is to calculate a synthetic rating based upon its financial ratios, most often the interest coverage ratio. However, as Zynga has no records of paying any interest in the past, we cannot calculate its interest coverage ratio. We thus resort to another solution which is to make an estimate of the cost of the debt in the industry. Accordingly, if we look at Damodaran's database (Damodaran, n.d.) under Entertainment tech industry, we get a cost of debt of 6.29%.

Table 15: Cost of Debt Calculation

Pre-tax cost of debt	X	(1-tax rate)	=	After-tax cost of debt
6.29%	X	69.0%	=	**4.34%**

Source: Own work.

Since companies in the industry do not use much leverage for their operations, the WACC calculation is primarily influenced by the cost of capital. In the table below, we observe that the cost of capital amounts to 10.31%, contributing to the majority of WACC (10.02%), while the after-tax cost of debt amounts to 4.34% and contributes only 0.12% to the total WACC of 10.14%.

Table 16: WACC Calculation

	Ratio	Cost		Contribution
Debt	2.82%	4.34%		0.12%
Capital	97.18%	10.31%		10.02%
		WACC	=	**10.14%**

Source: Own work.

4.2.1.10 Probability of Failure

According to Damodaran (2011), there are two main ways to account for the likelihood of survival of a company. The first approach is to adjust the discount rate, however, since this approach is, as Damodaran (2011) puts it, "a difficult exercise" with no clear steps to identify the alpha factor, we opt to use the second approach, which can be divided into two steps. In

the first step, we value the firm under the assumption that the firm survives (the going concern scenario), and in the second, we estimate the distress value (all the proceedings, if the firm does not survive). We then weight the scenarios by using the probability of failure. In their paper, Peristiani and Hong (2004) conclude that firms with the profitability in the 5th percentile (i.e. low profitability) have a 10% probability of failing within the first years after the IPO. The firms with high profitability (in the 95th percentile), on the other hand, have a 4% probability of failure. "With the dot-com explosion of the late 1990s, […] the failure rate among these speculative companies that rushed to go public appears to have been very high. Indeed, our calculations confirm that firm age is a fairly good predictor of aftermarket survival." (Peristiani & Hong, 2004). Since Zynga is a high-growth, young firm with an unproven business model, showing profitability only in the year 2010, we apply the probability of failure of 10%.

In case Zynga really went bankrupt, we estimate the proceeds from the bankruptcy would equal Zynga's book value of US$ 787,633 thousand. At any rate, the underlying assumption behind the use of book value is that in the event of bankruptcy, Zynga's competitors would acquire the firm, thus accessing Zynga's know-how and appropriating its user base.

4.2.1.11 Net Debt

Table 18 reveals that Zynga's net debt as at 30.9.2011 amounts to US$ 926,333 thousand, with the components of the net debt in the case of Zynga being current and long-term marketable securities, and cash and cash equivalents. The fact that Zynga raised a considerable amount of money while simultaneously becoming profitable is reflected in the balance sheet of the company. The excess cash was either invested in low-risk marketable securities, consisting entirely of the US government-issued obligations, or left in the banking account, ending up without financial debt. Besides account payables, included in the working capital, the only liability in Zynga's balance sheet are other liabilities. The latter typically consist of sales tax, income tax, payroll, and customer advances. However, in its SEC filing report, Zynga does not provide a detailed breakdown of other liabilities, although it is mentioned in the report that the company sells "game cards that are initially recorded as a customer deposit liability, which is included in other current liabilities on the consolidated balance sheet, net of fees retained by retailers and distributors. Upon redemption of a game card into one of our games and delivery of virtual currency to the player, these amounts are reclassified to deferred revenue." (Zynga, 2011, p.). As in the context of our research we value Zynga under the going concern assumption, we do not include other liabilities in the calculation of the company's net debt. Namely, unless it goes bankrupt, the company will not need to pay off its other liabilities, since they are part of the Zynga business model.

Table 17: Net Debt Calculation

Net debt			
Zynga	31.12.2009	31.12.2010	30.9.2011
	$'000	$'000	$'000
Long-term marketable securities	0	0	706
Marketable securities	72,622	550,259	321,412
Cash and cash equivalents	127,336	187.,831	604.,215
Total net debt	**199,958**	**738,090**	**926,333**

Source: Own work.

4.2.1.12 Value of Options

Employee compensation is used by the majority of startups in the form of options. This is predominantly so, because they do not have any other choice, but to, in order to attract the best talent in the industry, offer high compensations in the form of equity-based compensation.

Cost of employee stock options can be valued in several ways, although according to Damodaran (2001), there are three main approaches that are applicable, namely:

- Diluted Shares approach

  "In the calculation of the value of options, we assume that all or some of the options will be exercised in the future. Then, we adjust the number of shares outstanding by excluding the number of options and divide the value of equity by this number to arrive at value per share." (Damodaran, 2001)

  Diluted value of equity per share =
  Aggregate value of equity / Fully diluted number of shares

- Treasury Stock approach

  "Incorporate the exercise proceeds from the options in the numerator and then divide by the number of shares that would be outstanding after exercise." (Damodaran, 2001)

  Treasury stock value of equity per share =
  Value of equity + Options outstanding * Average exercise price /
  Fully diluted number of shares

- Option Value Approach (Black-Scholes model)

  "Estimate the value of the options today, given today's value per share and the time premium on the option (Black-Scholes model). After this value has been estimated, it is subtracted from the estimated equity value, and the remaining amount is divided by the number of shares outstanding to arrive at value per share." (Damodaran, 2001)

  Value of equity per share =
  Value of equity – Value of options / Primary shares outstanding

The first two enumerated options value options by multiplying the number of options by the exercise price. The assumption in this approach is that all the options are going to be exercised, when the stock price reaches the exercise price. If the market price is already above the exercise price, we multiply the number of options by the market price. In the third approach, we apply the Black and Scholes option pricing model. Since all the data needed for the calculation of options are already stated in the SEC filing for tax purposes, we can merely apply it in the calculation. The third approach is considered by many to be better, since it accounts for the true value of the currently out-of-the-money options and time premium on the options, for which reason we also decide to use it.

Since Zynga issued four option classes with different exercise price and volatility, the market value needed to be derived for all of them. The majority of the options were issued with US$ 6.44 as the exercise price per share, 4.5 years as the weighted average remaining contractual life and the expected volatility of 73%, as reported by the company (Zynga, 2011). The remaining options were calculated with the same methodology. Based on the presented inputs, the intrinsic value of 132 million options yields the total value of options with a value of US$ 714 million.

Table 18: *Employee Stock Option Valuation*

Option valuation				
Exercise price	**Number of shares**	**Expiration of the option**	**St. dev. of the stock price**	**Value of options**
US$		**Years**	**%**	**$'000**
6.44	79,402,854	4.5	73%	507,780
13.96	35,664,638	5.5	55%	143,470
17.09	8,001,102	5.5	55%	29,619
17.20	8,943,461	5.8	55%	33,610
	132,012,055			**714,478**

Adapted from Zynga (2011).

4.2.1.13 Conclusion

With the DCF method and assumptions described in the pessimistic scenario, we can conclude, that the value of 100% equity share of Zynga as at 15.12.2011 amounts to US$ 2,167,245 thousand or US$ 3.1 per share.

Table 19: *Value of Zynga – Pessimistic Scenario*

Valuation summary Zynga	
	$'000
Present value of free cash flows	**-609,980**
Present value of residual value	**1,626,229**
Probability of failure	10%
Proceeds if the firm fails	787,663
Net proceeds from the IPO	962,000
Enterprise value	**1,955,390**
Net debt	926,333
Value of options	-714,478
Value of 100% equity share as at 15.12.2011	**2,167,245**
Value per share (in US$)	**3.1**

Source: Own work.

The sensitivity analysis, including the varying WACC and growth of residual value, shows a range between US$ 2.8 and US$ 3.4.

Table 20: *Sensitivity Analysis – Pessimistic Scenario*

Sensitivity analysis					
WACC	**Growth of residual value**				
	US$	**US$**	**US$**	**US$**	**US$**
	1.50%	175%	2.,0%	2.25%	2.50%
11.14%	2.6	2.7	2.7	2.8	2.8
10.64%	2.8	**2.8**	2.9	3.0	3.0
10.14%	3.0	3.0	**3.1**	3.2	3.2
9.64%	3.2	3.2	3.3	**3.4**	3.5
9.14%	3.4	3.5	3.6	3.7	3.8

Source: Own work.

4.2.2 Optimistic Scenario (Scenario 2)

4.2.2.1 Revenues

As with the pessimistic scenario, we divide the revenue projections of the optimistic scenario into three sections: advertising, social gaming, and mobile gaming. The primary assumption in the pessimistic scenario is that Zynga will tackle the mobile gaming sector and fail to acquire a substantial market share and thus significant sales. The optimistic scenario takes into account the option of Zynga actually gaining a significant market share in the mobile gaming sector, far surpassing the sales of the social gaming sector.

When it comes to the advertising sector, our assumptions remain the same as in the pessimistic scenario, namely that the advertising revenue as a percentage of total sales will grow from 6.2% in 2011 to 13.8% in 2019.

Assumptions for the social gaming sector are slightly more optimistic than they are for the pessimistic scenario. In this scenario, Zynga is expected to go from 58.5 million DAUs in 2012 to 74.1 million DAUs in 2019, achieving a compounded annual growth rate of 3.0%. The assumption behind these numbers is that Zynga, with its know-how, data analytics and established brand, is going to produce more hits in the near future, reaching the numbers of active users at the level of Cityville or Farmville. It has done so in the past, and with its competences, it can certainly create new hit games also in the future. Another trend that can certainly benefit Zynga in the short term is increasing the number of Facebook users. Zynga has the opportunity to ride the wave of Facebook by targeting new users. Those are in the majority supposed to be from the undeveloped world, which means that Zynga would need to adapt the gameplay of its games to the likes and needs of the new users.

Monetization effort is going to increase ARPDAU from US$ 1.8 in 9m 2011 to US$ 2.0, while in the year 2019, sales are going to amount to US$ 1,736,504 thousand. In the same year, the compounded annual growth rate of sales is expected to be at 5.9%.

When it comes to modelling the mobile gaming sector, we project the DAU numbers to start at 10 million DAU in 2012 and reach growth rates of 100%, 75% and 30% in 2013, 2014 and 2015. The initial growth is going to be achieved with the help of acquisitions, as Zynga already demonstrated in the past, however, in the later years, the growth rate is going to be more modest, with the maximum number of DAUs in 2019 at 81.1 million. Since the numbers are relatively optimistic, we must stress the fact that they can only be achieved, if Zynga proves capable of creating more than one "top 10" blockbusters game. Nevertheless, should Zynga deliver on the promise, and considering the fact that the mobile gaming market is projected to become a much bigger segment than the social gaming one, the sales forecast is sure to surpass that of the social gaming sector.

As in the pessimistic scenario, we based the ARPDAU of this scenario on following the trend of the social gaming sector, increasing in value, from ¢2 in 2012 to ¢7 in 2019. In the optimistic scenario, the compound annual growth rate of total revenue in the period 2011–2019 is to amount to 64.9%, while in 2019, 46.0% of all sales or US$ 1,985,893 thousand will be made in the mobile gaming segment.

4.2.2.2 Costs

When it comes to costs, there are two main differences between the scenarios. In the optimistic scenario, we use lower R&D and marketing costs as a percentage of total revenues. Also, the main assumption concerning this scenario is that Zynga will create a higher number of successful games, earning higher revenues, and will not have to (in relative terms) spend as much on R&D and marketing as in the pessimistic scenario, although in absolute terms, they are to be larger than in the pessimistic scenario.

We forecast the R&D spending in the next few years to range between 40% (2012 and 2013) and 30% (from 2016 forward), with an average of 34%, which is slightly above the average of the US-based companies in the industry. The forecasted sales and marketing expenses are set at an average of 23.8% of revenues in the period 2012–2015, while they are forecasted to drop to the lowest number of 15% in the year 2019.

Table 21: *Revenue and Cost/Expenses Projections*

Profit and Loss Statement	Estimate	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Zynga	10-12m 2011	2012	2013	2014	2015	2016	2017	2018	2019
	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000
Revenue	**337,085**	**1,551,236**	**1,871,548**	**2,407,161**	**2,812,883**	**3,277,595**	**3,714,365**	**4,066,020**	**4,317,980**
Advertising	24,969	141,021	185,469	257,910	323,606	402,512	484,482	560,830	595,583
Social gaming	312,116	1,350,214	1,446,080	1,519,251	1,588,377	1,636,346	1,669,073	1,702,455	1,736,504
Mobile gaming	0	60,000	240,000	630,000	900,900	1,238,738	1,560,809	1,802,735	1,985,893
Total costs and expenses	**353,940**	**1,613,285**	**1,927,695**	**2,334,947**	**2,601,917**	**2,851,508**	**3,120,066**	**3,273,146**	**3,368,024**
Cost of revenue	91,013	403,321	467,887	601,790	646,963	753,847	854,304	935,184	993,135
Research and development	134,834	620,494	748,619	842,506	928,251	983,279	1,114,309	1,219,806	1,295,394
Sales and marketing	77,530	356,784	449,172	577,719	675,092	721,071	742,873	711,553	647,697
General and administrative	50,563	232,685	262,017	312,931	351,610	393,311	408,580	406,602	431,798
EBIT	**-16,854**	**-62,049**	**-56,146**	**72,215**	**210,966**	**426,087**	**594,298**	**792,874**	**949,956**

Source: Own work.

4.2.2.3 Cash Flow Projections

Table 22: Cash Flow Projections

Cashflow projections	**Estimate**	**Forecast**	**Forecast**	**Forecast**	**Forecast**	**Forecast**	**Forecast**	**Forecast**	**Residual**
Zynga	**10-12m 2011**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**value**
	$'000	**$'000**	**$'000**	**$'000**	**$'000**	**$'000**	**$'000**	**$'000**	**$'000**
EBIT	(16.854)	(56.146)	72.215	210.966	426.087	594.298	792.874	949.956	
(1-tax rate)	1,00	1,00	0,71	0,71	0,71	0,71	0,71	0,71	
EBIT after taxes	**(16.854)**	**(56.146)**	**51.273**	**149.786**	**302.522**	**421.952**	**562.940**	**674.468**	**687.958**
Change in deferred revenues	8.190	37.431	48.143	56.258	65.552	74.287	81.320	86.360	88.087
Depreciation and amortization	22.121	140.155	191.426	234.903	270.396	282.194	274.524	253.783	
Change in working capital	(9.240)	(20.942)	(35.019)	(26.527)	(30.383)	(28.556)	(22.992)	(16.473)	(16.803)
Capital expenditures	(187.720)	(374.310)	(457.361)	(478.190)	(491.639)	(408.580)	(325.282)	(259.079)	
Free cash flow to the firm (FCFF)	**(183.503)**	**(273.813)**	**(201.538)**	**(63.770)**	**116.447**	**341.296**	**570.511**	**739.059**	**759.242**
Long-term growth (g)									2,00%
Residual value									**9.322.061**
Time factor (mid-year discounting)	0,125	1,75	2,75	3,75	4,75	5,75	6,75	7,75	7,75
Discount factor	0,988	0,844	0,767	0,696	0,632	0,574	0,521	0,473	0,473
WACC									
Present value of free cash flows	**(181.300)**	**(231.216)**	**(154.510)**	**(44.387)**	**73.587**	**195.814**	**297.176**	**349.514**	**4.408.573**

Source: Own work.

4.2.2.4 Other Assumptions

All other assumptions, from effective tax rate, change in deferred revenues, depreciation and amortization, change in working capital, to capital expenditures follow the same assumptions that are made in the pessimistic scenario (mostly set as a percentage of total revenue).

For the reason of the riskiness of the firm being the same as with the optimistic scenario, we apply the same WACC.

4.2.2.5 Conclusion

With the DCF method and assumptions described in the optimistic scenario, it can be concluded that the value of 100% equity share of Zynga as at 15.12.2011 amounts to US$ 5,271,999 thousand or US$ 7.5 per share.

Table 23: *Value of Zynga – Optimistic Scenario*

Valuation summary Zynga	
	$'000
Present value of free cash flows	**57,402**
Present value of residual value	**4,408,573**
Probability of failure	10%
Proceeds if firm fails	787,663
Net proceeds from the IPO	962,000
Enterprise value	**5,060,144**
Net debt	926,333
Value of options	-714,478
Value of 100% equity share as at 15.12.2011	**5,271,999**
Value per share (in US$)	**7.5**

Source: Own work.

The sensitivity analysis, including the varying WACC and growth of residual value, shows a range from US$ 6.8 to US$ 8.4.

Table 24: *Sensitivity Analysis – Optimistic Scenario*

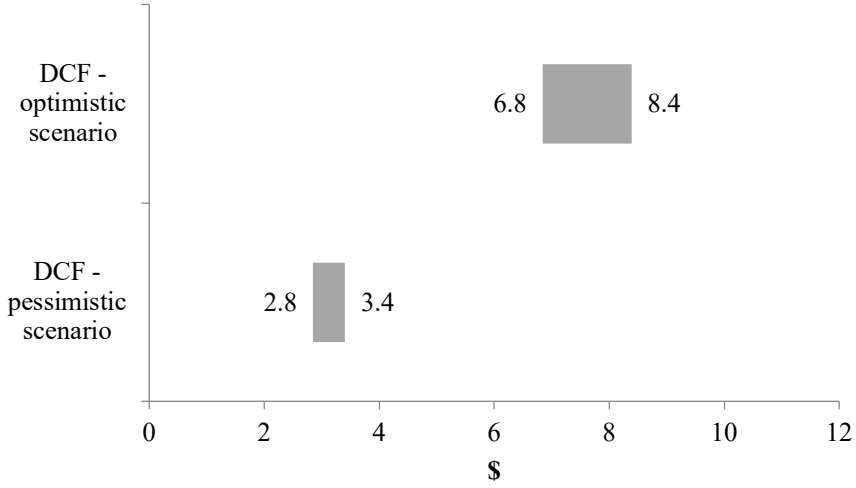
Sensitivity analysis					
WACC	**Growth of residual value**				
	US$	**US$**	**US$**	**US$**	**US$**
	1.50%	1.75%	2.0%	2.25%	2.50%
11.14%	6.3	6.4	6.5	6.7	6.8
10.64%	6.7	**6.8**	7.0	7.2	7.3
10.14%	7.2	7.4	**7.5**	7.7	7.9
9.64%	7.7	7.9	8.2	**8.4**	8.6
9.14%	8.4	8.6	8.9	9.1	9.4

Source: Own work.

4.2.3 Value of Zynga

Looking at both the pessimistic and optimistic scenarios, we can observe a significant disparity in the calculated value. On one hand, the pessimistic scenario follows the narrative of a stagnant social gaming sector and significant investments in the mobile gaming sector with limited success, and on the other hand, the optimistic scenario assumes moderate growth in the social gaming sector and successful transition into mobile gaming sector with a dominant position on the market.

Figure 13: Overview of the Calculated Value of One Share of Zynga as at 15.12.2011 with the DCF Method



Source: Own work.

5 MARKET APPROACH

5.1 Theoretical Background

The market approach method is used, when trying to value a company based on how similar companies are or were priced on the market. Value of a business is typically determined by converting prices into multiples of earnings, multiples of EBITDA or EBIT, book values or sales (Damodaran, 2001). The prices investors pay for businesses can only be gathered, if the comparable companies are publicly traded or have recently been sold, with the terms of the transaction publicly disclosed. "Based on the economic principle of substitution, a rational financial buyer will not pay more for a company than the current price for a comparable company" (Hitchner, 2011).

There are two primary methods under the market approach that are used to estimate the value of a company, namely:

- Guideline Public Company Method (based on comparable publicly traded companies),
- Guideline Company Transaction Method (based on transactions of comparable companies).

The formula (9) for calculating the equity value of a company based on market approach is the following:

$$Value_{\,subject} = \left(\left(\frac{Price_{\,comparable\,c.}}{Parameter_{\,comparable\,c.}}\right) * Parameter_{\,subject}\right) - Debt_{\,subject} \qquad (9)$$

There are pros and cons regarding the use of the market approach method. Among the pros, the most significant one is the ease of calculation of the value of a company, since there are fewer assumptions than with the discounted cash flow method, which is why it is also used widely in the financial world. In addition, the market approach has an advantage as even though firms cannot be identical, they often carry industry-specific value drivers, among them growth rates, operating margins, and cost of capital.

Nevertheless, unlike the discounted cash flow method, the market approach does not calculate the intrinsic value of the company. The company's value is instead determined by the valuation of comparable companies in the industry, which can, however, be mispriced. Furthermore, market valuations can be affected by market sentiments, which have nothing to do with value drivers of the specific company. Another important disadvantage regarding the market approach is the selection of comparable companies and multiples, which is by default subjective. As far as the choice of multiples goes, we can lean on the studies performed in the past. Kim and Ritter (1999), as well as Liu, Nissum, and Thomas (2002) find that the use of earnings forecast is superior to that of reported earnings. Liu, Nissum, and Thomas (2002) in addition state that multiples of forecasted earnings are the most accurate, followed by multiples of historical earnings, then multiples based on cash flow and market-to-book multiples, with sales multiples performing the worst. Further, Imam, Barker, and Clubb (2008) examine the use of valuation models by UK investment analysts, and find that the price to earnings (P/E), enterprise value to EBITDA, and price to book value (P/B) are viewed by practitioners to perform the best.

Some analysts valuing internet companies additionally use the EV/MAU or EV/DAU multiples to get a sense of how much one user is worth. Typically, the higher the number of users, the higher the value of the firm. Of course, the average revenue per user and underlying costs attached to users should also be considered. Therefore, the EV/MAU or EV/DAU multiples should be used only as an additional data point in the estimation of the value of the firm. Another difficulty with user-based multiples is caused by the fact that the definition of "user" varies from company to company, since there is no standardized method to date to identify users.

In our analysis, we do not use forward multiples, since we could not get the estimates for the majority of comparable companies. Instead, we apply the current P/E ratio, EV/ EBITDA, EV/Sales and the industry-specific multiple EV/DAU and EV/MAU, where data could be gathered, for the calculation of Zynga's value.

5.2 Guideline Public Company Method

5.2.1 Selection of Comparable Publicly Traded Companies

The companies selected as comparable publicly traded companies are outlined in Table 25. They were selected under the following criteria:

- industry – gaming, and
- business model – free-to-play (for Tier 1).

For the public multiples valuation, we make use of all the comparable companies, serving as a benchmark in Chapter 3. Out of the 11 companies, we then form two groups, Tier 1 (5 companies) and Tier 2 (6 companies).

As described in Chapter 3, Tier 1 contains companies that use the free-to-play business model. Most of the comparable companies in this group are diversified, when it comes to the type of games, ranging from social games, casual games, to massive multi-player online games. A typical platform of the tier 1 developer is either PC or mobile.

Tier 2 contains companies that do not strictly follow the free-to-play business model. They are highly diversified, when it comes to the business model, platform of the games and type (genre) of games. Some of them even develop other online services, which are not in any way connected to gaming, although the gaming segment is still prevalent for the company to be included in.

To get representative multiples, we exclude in the process three comparable firms, namely Glu Mobile Inc., Take-Two Interactive Software Inc., and Electronic Arts Inc. This is done for the reason that all three firms in question exhibit extremely negative multiples of EV / EBITDA, EV / EBIT or P/E, thus distorting the average and median multiples.

The financial data included in the calculation, when it comes to both the comparable companies as well as Zynga, is the latest financial data available as at 15 December 2011. For better comparison, we calculate the “latest twelve months” data (LTM 9/2011) for all the indicators used.

5.2.2 Results from Guideline Public Company Method

Table 25: Multiples of Selected Companies as at 15.12.2011

Multiples for selected companies 15.12.2011							
			Enterprise value as a multiple of			Equity value as a multiple of	
Company	Currency	Market Cap (mio)	Sales LTM	EBITDA LTM	EBIT LTM	P/E LTM	P/B 15.12.2011
GAMEVIL Inc.	KRW	205.6	7.5x	15.5x	16.4x	21.6x	5.2x
Capcom Co. Ltd.	JPY	1,030.0	1.0x	5.2x	6.5x	15.5x	2.0x
NetEase, Inc.	USD	4,683.2	4.1x	8.3x	8.9x	13.2x	3.3x
Activision Blizzard, Inc.	USD	10,425.5	2.3x	7.5x	8.8x	18.6x	1.3x
GungHo Online Entertainment, Inc.	JPY	228.0	2.0x	9.6x	12.3x	13.4x	2.4x
Com2uS Corporation	KRW	128.8	4.5x	36.8x	55.1x	49.3x	3.1x
GameLoft S.E.	EUR	382.0	2.1x	11.8x	17.0x	24.0x	3.7x
Shanda Games Ltd.	-	2,543.8	4.9x	13.3x	14.1x	18.7x	5.7x
All comparable companies							
High			**7.5x**	**36.8x**	**55.1x**	**49.3x**	**5.7x**
Average			**3.6x**	**13.5x**	**17.4x**	**21.8x**	**3.3x**
Median			**3.2x**	**10.7x**	**13.2x**	**18.6x**	**3.2x**
Low			**1.0x**	**5.2x**	**6.5x**	**13.2x**	**1.3x**
Standard deviation			2.1	10.0	15.7	11.7	1.5
Variation coeficent			0.6	0.7	0.9	0.5	0.5

Source: Own work.

5.2.2.1 Sales multiple

The sales multiple for the period of LTM 9/2011 amounts to 3.6 (average) and 3.2 (median). Applying the financial data of Zynga and subtracting/adding the effects of probability of failure, net proceeds from the IPO, adjusted net debt, and employee stock options, (all discussed in Chapter 5), we get a value in the range of US$ 6.3–5.8 per share. The sales multiples of only Tier 1 companies for the same period are higher and amount to 4.5 (median) and 4.7 (average). These multiples converse to the value per share of US$ 7.5 - 7.7.

5.2.2.2 EBITDA multiple

The average and median EV/EBITDA multiples amount to 13.5 and 10.7. Applying Zynga's adjusted EBITDA for LTM 9/2011, we get a value in the range of US$ 6.2–7.4 per share. Tier 1 companies have substantially higher multiples, with an average of 20.6 and a median of 15.5 for the same period. This means that the value per share of Zynga is in the range of US$ 8.3–10.6.

5.2.2.3 EBIT Multiple

The average and median EV/EBIT multiples for LTM 9/2011 amount to 17.4 and 13.2. Like in the calculation of the value with the EBITDA multiples, we use the adjusted EBIT for LTM 9/2011. The value is in the range US$ 6.0–7.4 per share. Tier 1 companies report higher multiples, with the average multiple amounting to 27.9, and the median multiple to 16.4. This implies a share value of Zynga in the range between US$ 7.1 and US$ 11.0.

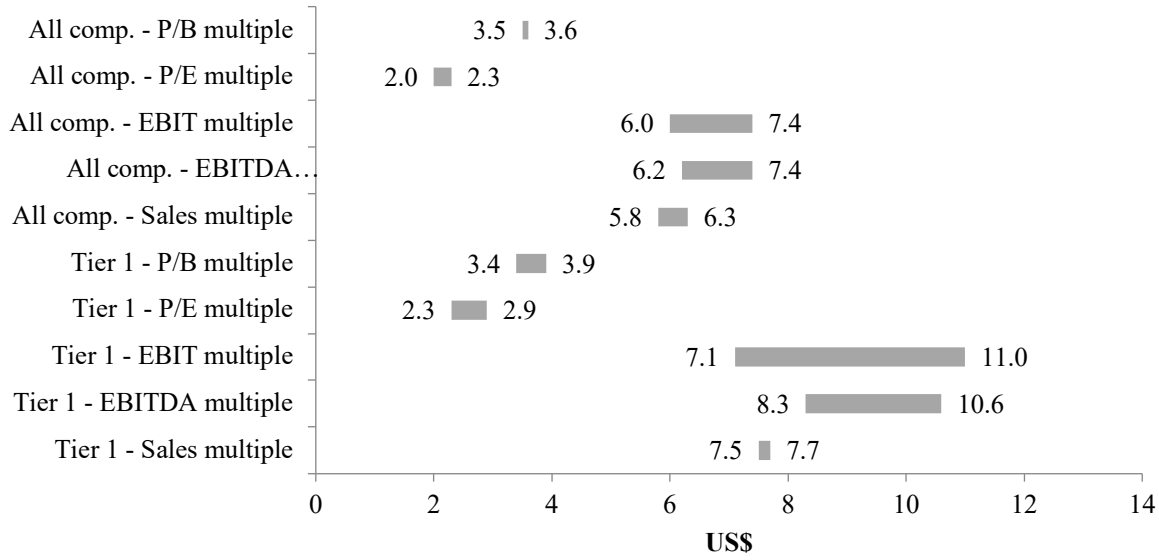
5.2.2.4 P/B and P/E Ratio Multiples

The multiples as are P/E and P/B are substantially lower, which can be ascribed to the fact that Zynga's earnings and book value of equity are relatively low, which is the case with most startups. The average and median P/E ratios of 21.8 and 18.6 result in the valuation range of US$ 2.0–2.3, while the average and median P/B ratios of 3.3 and 3.2 result in the valuation range of US$ 3.5–3.6.

Considering the multiples of Tier 1 companies, the share value proves higher. In this case, the average and median P/E ratios of 28.1 and 21.6 result in the valuation range of US$ 2.3–2.9, while the average and median P/B ratios of 3.6 and 3.1 result in the valuation range of US$ 3.4–3.9.

5.2.3 Conclusion

Figure 14: Overview of the Calculated Value of One Share of Zynga as at 15.12.2011 with the Guideline Public Company Method



Source: Own work.

As apparent in the graph above, the value of Zynga as at 15 December 2011 has a wide range. This is a consequence of two factors, namely the low P/E and P/B multiples of the comparable companies (or low earnings and book value of Zynga) and a wide range of the EV/ EBITDA and EV/ EBIT multiples of Tier 1 companies.

Since the P/E and P/B multiples are usually used to value stable and mature companies, and Zynga is a startup with short history and high growing sales, we believe the multiples mentioned are not a good indicator which to base Zynga's valuation on, although they may be a good indicator of the development of Zynga in the future.

The wide range of EV/ EBITDA and EV/ EBIT multiples is a consequence of the small number of Tier 1 companies, namely Gamevil Inc., GungHo Inc., and Com2Us Co. Among these companies, the multiples of Com2Us are especially high, distorting the average, and consequently the overall range. In case we did exclude the company Com2Us Co. and all P/E and P/B multiples from comparable companies, the value of Zynga would be in the range of US$ 6.4–7.8.

5.3 Guideline Company Transaction Method

5.3.1 Selection of Comparable Transactions

The transactions selected are outlined in Table 26 provided below. It includes a screening of all the transactions in the gaming industry in the time frame of five (5) years, more precisely from 1.1.2007 to 15.12.2011. Within this period, there are 12 transactions with the price of the transaction known, as well as at least one financial or operational indicator (such as revenue, EBITDA, number of users, etc.). Out of twelve, six transactions occur in the social gaming sector, while there are four in the mobile gaming sector. As far as the remaining transactions are concerned, we could not obtain the data regarding the subindustries of the two (remaining) companies being sold.

Table 26: *Transactions in the Gaming Industry from 1.1.2007 to 15.12.2011*

Multiples for selected transactions									Estimated	Estimated		
Announced date	Target type	Target/Issuer	Buyers/Investors	EV ($m)	Revenue ($m)	EBITDA ($m)	EV/Revenue	EV/EBITDA	DAU (mio)	MAU (mio)	EV/DAU	EV/MAU
2.8.2011	Mobile	Griptonite Inc.	Glu Mobile Inc	57.8	21.3		2.7					
20.7.2011	Social	Insider Guides Inc.	MeetMe Inc	100.0	28.9	4.6	3.5	21.7				
12.7.2011	Social	PopCap Games Inc.	Electronic Arts Inc.	1,301.2	100.1		13.0		4.1	16	317.4	81.3
2.2.2011	Social	Riot Games Inc.	Tencent Holdings Ltd.	328.6	28.6		11.5		1.4	3.6	234.7	91.3
20.1.2011	Mobile	Hudson So Co., Ltd	Konami Corp	58.3	194.3	9.7	0.3	6.0				
10.12.2010	Mobile	ngmoco, LLC	DeNA Co., Ltd.	400.0	30.1		13.3					
27.7.2010	Social	Playdom, Inc.	The Walt Disney Company	763.2	49.9		15.3			42.5		18.0
27.7.2010	Social	Kongregate	GameStop	50.0						10		5.0
22.6.2010	Mobile	Ourpalm Co., Ltd.	Huayi Brothers Media	99.0	38.5	12.8	2.6	7.7				
9.11.2009	Social	Playfish Inc.	Electronic Arts Inc.	408.0						60		6.8
12.9.2008	n/a	Cryptic Studios, Inc.	Infogrames Entertainment SA	74.8	17.0		4.4					
10.10.2008	n/a	Gamecock Media Group	SouthPeak Interactive Corp.	32.5	3.7		8.8					
High							15.29	21.74			317.37	91.28
Median							6.6	7.7			276.0	18.0
Average							7.5	11.8			276.0	40.5
Low							0.30	6.01			234.71	5.00

Source: Holtzer and Chandrasekaran (2013); Gridley, Patel, and Yau (2010).

5.3.2 Results from Guideline Company Transaction Method

5.3.2.1 Sales multiple

The EV/Sales multiples range 6.6–7.5, with the multiples of the three most comparable target companies, i.e. PopCap Games Inc., Riot Games Inc., and Playdom Inc., ranging higher, 11.5–15.3. Compared to the publicly traded companies, this multiple range is generally substantially higher. One possible reason that could explain the higher values of the multiples might be the fact that the majority of the target companies are startups or at least companies that are early in the business cycle, but with large potential for growth. They are innovative companies with a novel, yet mostly unproven, business model (free-to-play), and thus, the multiples reflect future possibilities rather than the current financial data.

From the standpoint of acquirers, which are mostly large incumbent companies, such as Electronic Arts or Tencent Holdings, it is of course easier to dive into a new business model via acquisition(s) then to start from scratch. Most startups, with an already established user base, probably know that, which is also what drove the price higher. Applying the financial data of Zynga and subtracting/adding the net proceeds from the IPO, the adjusted net debt and employee stock options (discussed in Chapter 5), we get a value in the range of US$ 12.0–13.4 per share. Further, in case we use the three most comparable transactions' multiples, the value per share we get is US$ 21.0.

5.3.2.2 EV/EBITDA Multiple

The EV/EBITDA multiples are, compared to the EV/Sales multiples, relatively low, as their range amounts to 7.7–11.8. A possible reason for this might be that there are only three, compared to the twelve, when it comes to the EV/Sales multiples, data points, with none of them from the three most comparable transactions mentioned above. Overall, the EV/EBITDA multiples imply a value of one share of Zynga at a range of US$ 5.4–7.4.

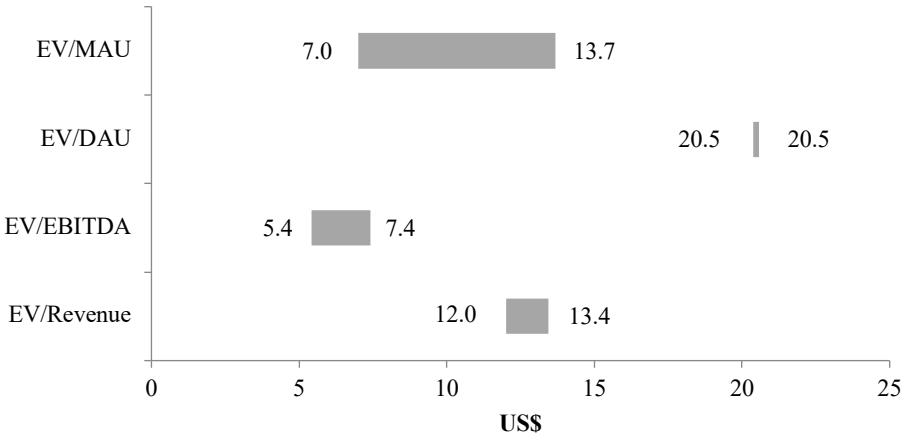
5.3.2.3 Alternative multiples

Other metrics that are applied in our research are the Monthly Active User (MAU) and Daily Active User (DAU). This is a method by which the value of each user is determined. It, however, does not account for the revenue that a company can generate with each user (ARPU) nor its life time value (LTV). Furthermore, since each company uses a different methodology of calculating their users, the method of valuing a company based on the EV/MAU or EV/DAU multiples is highly imprecise and one-dimensional. Nonetheless, it can be another data point in determining the value of a company in the same industry and with the same business model. The EV/MAU multiple range amounts to 18.0–40.5, implying a value per share of US$ 7.0–13.7. The average EV/DAU multiple amounts to 276 (with only two data points included), implying a value per share of US$ 20.5.

5.3.3 Conclusion

The finding that the valuation range with the Guideline Company Transaction Method is even larger than with the Guideline Public Company Method is reasonable, since there are after all fewer data points covered. Furthermore, when it comes to the over-performing target companies, the acquiring companies need to pay a premium, which can also be viewed as paying all or part of the synergies created.

Figure 15: Overview of the Calculated Value of One Share of Zynga as at 15.12.2011 with the Guideline Company Transaction Method



Source: Own work.

The finding that the valuation range with the Guideline Company Transaction Method is even larger than with the Guideline Public Company Method is reasonable, since there are after all fewer data points covered. Furthermore, when it comes to the over-performing target companies, the acquiring companies need to pay a premium, which can also be viewed as paying all or part of the synergies created.

To sum up, the valuation range using the comparable transactions ranges US$ 5.4–20.5, and when the EV/DAU multiple is excluded, due to insufficient data, the range becomes smaller, amounting to US$ 5.4–13.7.

6 DISCUSSION AND EVALUATION OF RESEARCH QUESTION

The main objective of the thesis is to determine, whether the price that Zynga offered to the investors at the IPO, was fair. To answer this question, we divide the issue into three main parts, each with its own goal, presented in the continuation.

The first goal of the thesis is to identify and describe all the major influences on the value of Zynga from the standpoint of global business trends, including the industry it is in, its biggest competitors and past financial performance.

The second goal is to make a valuation of Zynga, taking into account all in the first goal of the thesis mentioned influences. The valuation in this case is based on the quantification of the findings of the first part of the thesis, where three methods of valuation are applied, namely:

- discounted cash flow valuation (DCF),
- valuation with the use of Guideline public company method (CoCos method), and

- valuation with the use of Guideline company transaction method (CoTrans method).

The third goal of the thesis is to critically comment on the pricing set at the IPO in relation to the calculated value in the thesis and the performance of Zynga's stock in the subsequent years, which represents a synthesis of all the findings, with an additional analysis of the stock performance following the IPO and similar tech IPO performances.

6.1 Valuation Results

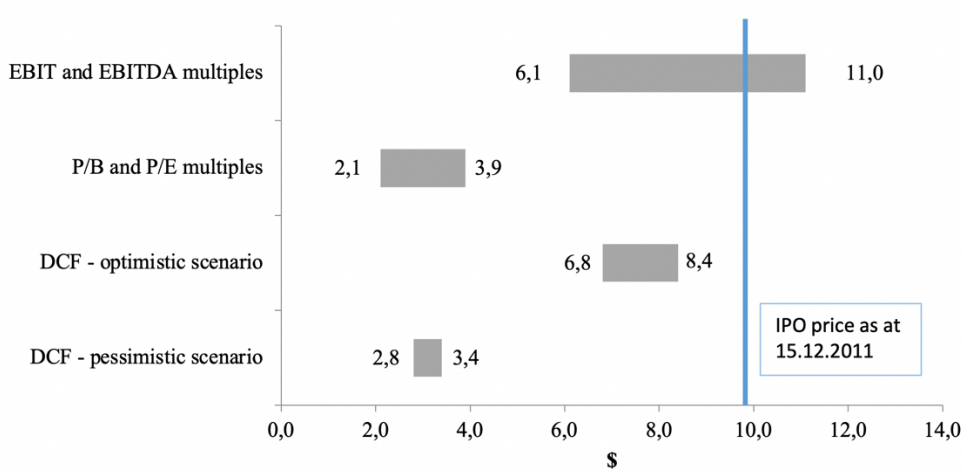
In the performed valuation, we try to consider the inherent riskiness of Zynga's business model. The main issues, described in detail throughout the thesis, are the limited reach through Facebook platform due to an increased focus on user satisfaction (no spam policy), Facebook's own payment system cutting in the revenue of practically all social game providers, further, the stalling user growth, increasing competition and not to mention the possible operational inefficiency. Nevertheless, on the other side of (high) riskiness in tackling the mobile gaming sector lies also the option of huge growth, and Zynga, considering its knowhow and the capital injection from the IPO, faces the challenge with an upper hand.

To capture the ranges of the possible value of Zynga, we perform valuation with two scenarios. One is relatively optimistic, with an assumption of moderate growth in the social gaming segment and a breakthrough in the segment of mobile gaming, thus mimicking the early success of the social gaming segment. The second scenario is pessimistic, as it anticipates slow progress in the segment of mobile gaming, despite big investments in research and development, while the user base of the social gaming segment starts to decline in 2015.

Besides the DCF method, we also use multiple-based valuation methods. The results of the latter are consistent with the findings from the DCF method, albeit with wider valuation ranges. This is in part due to the difficulty of selecting comparing companies, especially in the industry that is evolving as rapidly as the gaming one is.

A recap of the different calculated values for different scenarios and used methods are seen in the graph below. In both DCF scenarios, the price is well below the price set at the IPO. The valuation using the EBIT and EBITDA multiples indicates the price to lie between US$ 6.0 and US$ 11.0. The IPO price is thus in the upper part of the range.

Figure 16: Calculated Values of Zynga as at 15.12.2011 by Different Valuation Methods

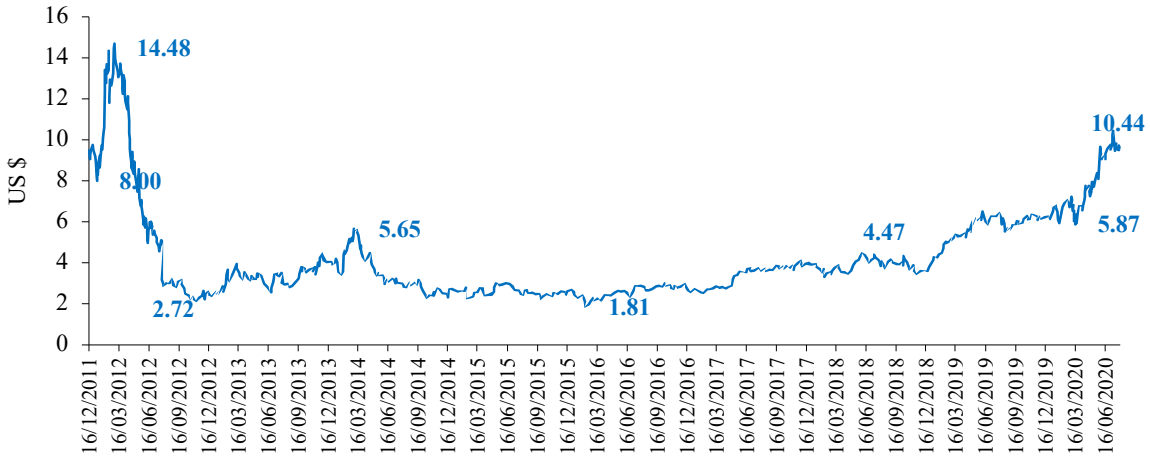


Source: Own work.

6.2 Performance of Zynga's Stock After the IPO

A surge in the price of Zynga shares can be observed in the first few months after the IPO, reaching US$ 14.7 as at 27.2.2012. However, soon after, the price nosedives and reaches the lowest point at US$ 2.21, shedding almost 85% of its value. After the dip, the stock rebounds slightly, stabilizing at a price of US$ 2–4, with only temporarily breaking the range in the first half of 2014. As of the date of writing the thesis, 29.7.2020, the price has amounted to US$ 9.69.

Figure 17: Share Price of Zynga After the IPO



Source: Yahoo finance (n.a.).

The reasons for the initial surge and consequential drop in Zynga stock price are ample. Some of the price surge can be explained by understanding that investment banks underwriting the stock create as much interest as possible in a company, then sell only a small part of the overall shares, thus creating the so-called artificial scarcity. This, however,

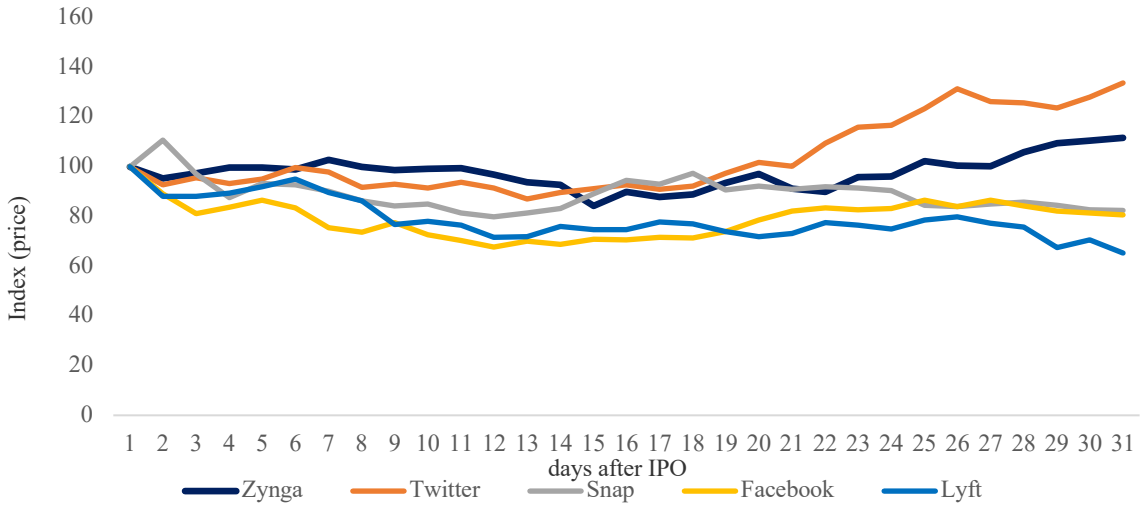
inevitably increases the price of the stock. In many IPOs, this phenomenon is even expected to entice institutional investors to buy at the initial price. Later on, the price drops after each disappointing earnings report, with the biggest drop in price reported after the second quarter of 2012 earnings call, when the price falls by over 40% in an after-hours trading session.

To aggravate the situation even more, the employees, who own a substantial share of the company because of compensation, are "locked up", consequently unable to sell their shares as long as until May 28th, 2012 (Popper, 2012). When they are finally able to sell the shares en masse, and they in fact do sell them, the price drops additionally, because of higher supply. Even greater effect on the price happens with the sell-off of shares by venture capitalists and private equity firms, liquidating more than half of their positions in the second half of 2012. The stock price settles in the range of US$ 2–4, with occasional spikes. And it is only in 2019 that the price starts to climb back towards the issuing price.

6.3 Comparison of Performances of the Most Popular Tech IPOs

In the below graph, a comparison of the performance of the most popular tech stock from the IPO is provided for up to 30 days of trading.

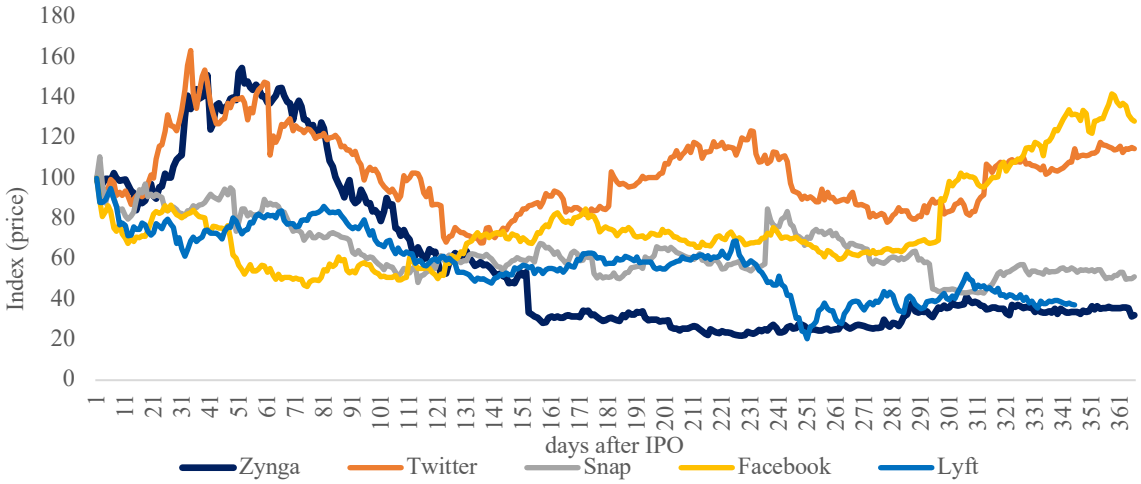
Figure 18: IPO Performance of Tech Stocks in 30 Days after IPO (Zynga, Twitter, Snap, Facebook, Lyft)



Source: Yahoo finance (n.a.).

The price of the Snap stock is the only one that increases in the first days of trading, which might suggest a high demand for the stock at the IPO, although the increase does not last long. All other stocks experience a drop in price from the get go, the highest reported by Facebook, losing 19% of its value in the first three days. 30 days later, it is only the Twitter and Zynga stock prices that remain above the initial IPO price, while all other underperform by at least 20%.

Figure 19: IPO Performance of Tech Stocks in One Year after IPO (Zynga, Twitter, Snap, Facebook, Lyft)



Source: Yahoo finance (n.a.).

Twitter and Zynga, both with best performing stocks in the first 30 days, continue the climb for approximately another month, which at the time signals an undervalued price at the IPO. Later on, however, this proves to be false from the long-term point of view. Namely, in one year's time, Twitter manages to stay above the initial IPO price, while Zynga's price crashes and reaches index of 32, standing for a 68% decrease from the IPO level. Other tech IPOs underperform in the first year, with the exception of Facebook, which gains a significant price in the last two months of the year.

6.4 Main Reasons for the Overvaluation at the Time of the IPO

There are likely several reasons behind the apparent overvaluation at the time of the IPO, since the process of an IPO is generally complex and involves many stakeholders. We find three reasons that stand out as the most probable in affecting the issuing price, namely:

1. Investment bank Morgan Stanley & Co. LTD was one of the investors in Zynga in Series C (with the series size of US$ 490 million) on February 18, 2011, ten months prior to the IPO (Crunchbase, n.d.). In the process of the IPO, Morgan Stanley & Co. LTD, together with Goldman, Sach & Co. LTD, was also the lead underwriter, meaning the book-running manager and representative of the underwriters for the offering. It could be argued that the lead underwriter (or more precisely, their analysts) faced a conflict of interest, when valuing the IPO and stocks' target price. In addition, neither was there an analysis done on the target prices nor are there any data available, making it hard to confirm the suspicion. However, in the case of Facebook's IPO in May the next year (2012), Lai and Wu (2014) report that analysts who are affiliated with the lead underwriters provide more optimistic coverage in terms of target prices. It is important to note that, similarly to Zynga's case, the lead underwriter in Facebook's IPO was Goldman, Sachs & Co. LTD, which participated

in a private round (via its mutual funds) a few months before the IPO, and thus had a conflict of interest, just like Morgan Stanley & Co. LTD did in the case of Zynga.

2. Insofar as we view it from the perspective of the firm, there was no apparent reason for the IPO of Zynga, since the company could theoretically and according to the forecasts, albeit more gradually, bootstrap its R&D and marketing investments into the mobile gaming segment. In case we view it from the founders' and venture capitalists' vantage point, the IPO is probably the best way to cash in on their positions. Their incentive is thus to offer as high a price as possible to the market. This, in and of itself, would not be an issue, if it was not combined with stagnating user metrics and aggressive insider selling. Executives and shareholders, including CEO Mark Pincus, sold well over US$ 500 million worth of stock in a secondary stock offering in April 2012. According to Market Watch (2012, p.), "The offering, which included more than 6 million shares bought by the company's IPO underwriters, generated US$ 593 million for the sellers, while providing nothing to Zynga or its common shareholders." Later on, as Stempel (2015, p.) explains, "shareholders led by David Fee accused Zynga of concealing declining user activity, masking how changes in a Facebook Inc. platform for its games would affect demand, and inflating its 2012 revenue forecast", which led to a lawsuit and a settlement in the amount of US$ 23 million. In retrospect, it seems to be a case of a sinking ship, with the current owners aggressively liquidating their positions via an IPO. In the case of the IPO of Facebook in 2012, "such aggressive insider selling was perceived as an alarming signal" (Martinello, 2017, p.), ending up the negative debut of Facebook in the stock market. In case of Zynga, the sellers got a pass from the investors, that is, at least in the first five months.
3. Valuing a startup with limited financial history, an innovative and fairly unknown business model (based on another platform, also developed by a startup), with the majority of its value based on the future developments (new games on Facebook platform, mobile gaming, etc.) is not only hard, but almost impossible. This is why, in our analysis, we use three valuation methods and two scenarios, yielding 4 different price ranges, with a surprisingly large discrepancy between them. In the case of Zynga, it seems the investors, who are otherwise well-versed in dealing with established companies, bought the story told to them by the management about the future of the company, without proper scrutiny or the tools to do so.

CONCLUSION

With the use of the Zynga SEC filings, media coverage and similar cases, such as Facebook's IPO, we analyze the company's business environment, market sentiment, its financial and business performance, and provide a calculation of the market value of Zynga at the time of the IPO. We perform valuation with two scenarios. Optimistic scenario assumes moderate growth in the social gaming segment and a breakthrough in the segment of mobile gaming,

thus mimicking the early success of the social gaming segment. Pessimistic scenario anticipates slow progress in the segment of mobile gaming, despite big investments in research and development, while the user base of the social gaming segment starts to decline in 2015. In both DCF scenarios, the price is well below the price set at the IPO, since calculated price ranges between US$ 3.4 and US$ 6.8 per share. The valuation using the EBIT and EBITDA multiples indicates the price to lie between US$ 6.0 and US$ 11.0. The IPO price is thus in the upper part of the range.

Zynga opens its trading at the price of US$ 10, which is close to the calculated upper range. A surge in the price of Zynga shares can be observed in the first few months after the IPO, reaching US$ 14.7 as at 27.2.2012. However, soon after, the price, due to disappointing earnings report and sell-off of shares by employees, venture capitalists and private equity firms, nosedives and reaches the lowest point at US$ 2.21, shedding almost 85% of its value.

We identify three possible explanations for the high IPO price. The first one is a conflict of interest of the lead underwriter Morgan Stanley & Co., which invested in Zynga ten months prior to the IPO. Analysts who are affiliated with the lead underwriters typically provide more optimistic coverage in terms of target prices. The second one is a lack of apparent reasons to raise additional funds since the company could theoretically and according to the forecasts bootstrap its R&D and marketing investments into the mobile gaming segment. It could be argued that the IPO was done to provide liquidity for the founders and VC's, especially since user metrics were stagnating. The third reason is difficulty of valuing a young company with limited history and innovative business model, with most of its value based on the future developments. It seems the investors, who are otherwise well-versed in dealing with established companies, bought the story told to them by the management about the future of the company, without proper scrutiny or the tools to do so.

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APPENDIX

Appendix 1: Summary in Slovenian language

1. julija 2011 je družba Zynga inc. Komisiji za vrednostne papirje in borzo Združenih držav Amerike (SEC) sporočila, da bo kmalu začela s prvo javno ponudbo delnic (IPO). Dokumenti, predloženi komisiji so razkrili, da je bila družba Zynga takrat komaj 4 leta stara družba za spletne družbene igre. Predloženi podatki so pokazali, da Zynga dosega visoke stopnje rasti prihodkov in ima razmeroma veliko bazo uporabnikov, hkrati pa dosega nizko EBITDA maržo v primerjavi s povprečjem panoge. Prav tako je bila opazna velika odvisnost od zagonskega podjetja Facebook, s takrat še nepoznanim poslovnim modelom.

Vsi ti dejavniki so otežili napovedovanje denarnih tokov podjetja, prav tako pa tudi primerjavo družbe Zynga z drugimi podjetji. Dodatno je otežilo analizo dejstvo, da vodstvo ni izrecno povedalo, kaj je razlog za IPO. Nepojasnjeno uporabo dodatnega kapitala je bilo mogoče razlagati tudi kot izplačilo ustanoviteljem in vlagateljem tveganega kapitala. Prav tako je bilo moč opaziti, da se je trend števila uporabnikov prelomil, in da je število uporabnikov začelo padati. Okolje za prvo javno ponudbo družbi Zynga ni bil naklonjen, saj je le redko katera družba v preteklem letu napravila IPO.

Zaradi velike količine nasprotujočih si informacij je bilo vrednost delnice družbe Zynga na prvi ponudbi težko oceniti. Cena delnice je bila prvotno določena v višini 10 USD, sledil pa je porast cene delnice že v prvih nekaj mesecih. Na dan 27.2.2012 je cena delnice dosegela vrednost 14,7 USD. Kmalu zatem je cena delnice strmoglavila in dosegla najnižjo točko pri 2,21 USD. Izgubila je skoraj 85% vrednosti in tako iz vidika padca cene delnice postala ena najslabših javnih ponudb delnic.

Glavni cilj diplomske naloge je bilo ugotoviti, ali je bila cena, ki jo je družba Zynga ponudila vlagateljem na IPO, poštena. Za odgovor na to vprašanje smo razdelili nalogo na tri dele.

Prvi cilj magistrske naloge je opredeliti in opisati vse pomembnejše vplive na vrednost družbe Zynga z vidika svetovnih poslovnih trendov, vključno s panogo, njenimi največjimi konkurenti in preteklimi finančnimi rezultati. Glavni izsledki so naslednji:

- Zynga, ki se je zanašala na Facebook kot glavno prodajno mesto za svoje igre, v preteklosti ni veliko vlagala v ustvarjanje mobilnih iger. Njena edina uspešna mobilna igra je bila Words with Friends, ki jo je razvil Newtoy Inc., kasneje pa jo je kupila Zynga. Čeprav trg mobilnih iger z visoko rastjo in popularnostjo predstavlja vreden strateški cilj, je težko napovedati, ali bo Zynga uspela razviti igre, ki bodo všeč plačljivim igralcem ali oglaševalcem.
- Nekateri analitiki so poudarili dejstvo, da je odvisnost od platforme Facebook predstavlja tudi eno najpomembnejših tveganj za prihodnost družbe. Zynga je v svojem poročilu, ki ga je predložila SECu zapisala: »Skoraj vse prihodke in igralce ustvarjamo prek platforme Facebook in pričakujemo, da bo tako tudi v bližnji prihodnosti. Vsako

poslabšanje našega odnosa z družbo Facebook bi škodilo našemu poslovanju in negativno vplivalo na vrednost navadnih delnic razreda A." (Zynga, 2011). To pomeni, da v kolikor bi se Facebook odločiti, da bo postal prijaznejši do uporabnikov in še dodatno omejil tako imenovano "pošiljanje neželene pošte" med uporabniki Facebooka, bi le-to privedlo do manjšega števila uporabnikov, ter posledično do nižjih prihodkov za družbo Zynga.

- V letu pred IPO je Zynga dobila ostro konkurenco na trgu video iger. Največjo grožnjo je predstavljala družba Electronic Arts, ki je na trg družabnih iger vstopila z nakupom dveh relativno velikih podjetij za družabne igre, Playfish in PopCap Games.
- Poslovni model družbe, ki omogoča izdelavo le nekaj iger na leto, bi se lahko izkazal kot dvorezen meč. Po eni strani manjši obseg izdelanih iger omejuje njene možnosti za naslednjo veliko uspešnico, saj uporabniki hitro menjajo eno igro za drugo. Po drugi strani se lahko Zynga z manj igrami osredotoči na boljšo igralniško izkušnjo obstoječih in prihodnjih iger, ustrezno oglaševanje, raziskave in razvoj ter na izboljšanje stopnje konverzije. Ravno sposobnost analiziranja velikih količin podatkov ter posledično izboljšanje igralniške izkušnje se lahko izkaže za največjo konkurenčno prednost družbe.
- Z uvedbo lastne virtualne valute je Facebook ustvaril standardiziran sistem socialnih plačil, ki na družbo Zynga vpliva na dva načina. Družbi se je neposredno znižala bruto marža, saj je 30 % provizija Facebooka višja od tiste, ki jo je Zynga plačevala v preteklosti. Razen nižje bruto marže pa virtualna valuta pozitivno vpliva na percepcijo varnosti uporabnikov, saj le-tem zagotavlja zanesljiv, splošno sprejet in varnejši način plačila za spletno blago. To na dolgi rok lahko pomeni višja raven penetracije in stopnje konverzije.

Drugi cilj je ovrednotiti družbo Zynga, pri tem pa upoštevati vse omenjene vplive v prvem cilju magistrske naloge. Vrednotenje v tem primeru temelji na ugotovitvah prvega dela magistrskega dela, uporabili pa smo tri metode vrednotenja, in sicer:

• vrednotenje z diskontiranim denarnim tokom (DCF),
• vrednotenje z uporabo metode primerljivih na borzi uvrščenih podjetij, in
• vrednotenje z uporabo metode preteklih transakcij.

Pri vrednotenju družbe smo poskušali upoštevati vsa tveganja, ki so del njenega poslovnega modela. Glavna tveganja, ki so v magistrskem delu podrobno opisana, so:

- omejen in morda kratkotrajen doseg preko platforme Facebook, zaradi povečane osredotočenosti na zadovoljstvo uporabnikov (brez politike neželene pošte),
- lastni plačilni sistem Facebooka, ki zmanjšuje prihodke skoraj vseh ponudnikov družabnih iger,
- stagnirajoča rast uporabnikov,
- povečanje konkurence ter
- morebitna operativna neučinkovitosti.

Kljub visokemu tveganju pri spopadanju s sektorjem mobilnih iger seveda obstaja tudi možnost velike rasti, kar pa Zynga, glede na svoje znanje in kapitalski vložek (IPO), zna izrabiti v svojo prid.

Za namen ugotovitve razpona možne vrednosti družbe Zynga smo pripravili dva scenarija. Prvi je optimističen in predvideva zmerno rast v segmentu družabnih iger ter preboj v segmentu mobilnih iger, ki posnema zgodnji uspeh segmenta družabnih iger. Drugi scenarij je pesimističen, saj predvideva počasen napredek v segmentu mobilnih iger, kljub velikim vlaganjem v raziskave in razvoj, medtem ko se bo število uporabnikov v segmentu družabnih iger v letu 2015 začelo zmanjševati.

Poleg metode DCF smo uporabili tudi metodo vrednotenja primerljivih družb, uvrščenih na borzo, ter metodo primerljivih transakcij. Rezultati slednjih so skladni z ugotovitvami metode DCF, čeprav s širšimi razponi vrednotenja. To je deloma posledica izbire primerljivih podjetij, saj le-te delujejo v panogi, ki je v fazi velikih sprememb.

V obeh scenarijih, izračunanih po metodi DCF, je vrednost precej pod vrednostjo, s katero je družba ponudila na IPO. Vrednost delnice po pesimističnem scenariju znaša med 2,8 USD in 3,4 USD, med tem ko vrednost po optimističnem znaša med 6,8 USD in 8,4 USD. Vrednotenje z uporabo večkratnikov EBIT in EBITDA kaže, da se cena giblje med 6,0 USD in 11,0 USD. Cena, postavljena na IPO, ki je znašala 10 USD, je tako v zgornjem delu razpona.

Cilj tretjega dela magistrskega dela je kritično komentirati ceno na IPO v primerjavi z izračunano vrednostjo ter uspešnostjo delnice družbe Zynga v naslednjih letih. Zadnji, tretji del naloge, predstavlja sintezo vseh ugotovitev, z dodatno analizo uspešnosti delnice po IPO v primerjavi s podobnimi tehnološkimi družbami.

Po vsej verjetnosti obstaja več razlogov za visoko postavljeno ceno, saj je postopek IPO na splošno zapleten in vključuje številne deležnike. Razlogi, katere smo identificirali tekom magistrske naloge pa so naslednji:

- navzkrižje interesov glavnega izdajatelja delnice Morgan Stanley & Co.,
- pomanjkanje očitnega razloga za zbiranje dodatnih kapitalskih sredstev, z izjemo zagotavljanja likvidnosti za ustanovitelje in investitorje,
- težave pri ovrednotenju vrednosti in tveganja mladega podjetja z omejeno zgodovino in inovativnim poslovnim modelom.