A Work Project, presented as part of the requirements for the Award of a Masters Degree in Finance from the NOVA – School of Business and Economics

CASE STUDY PREPARATION:

THE WHATSAPP ACQUISITION FROM FACEBOOK

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1) GENERAL OVERVIEW

Abstract

The purpose of this work project is to analyze the acquisition of WhatsApp from Facebook occurred on 19th February 2014. The main research has the aim to understand if the price tag of $19 billion paid by Mark Zuckerberg was fair. Along the reaction of Facebook's EPS on the keydays after the purchase, a balanced assessment of the acquisition was obtained and discussed. Results suggest that the price tag could be reasonable. However, taking into account the industry in which the two companies operate, where competition is quite intense, Facebook should assess this deal in a longer-term perspective.

Keywords: Synergy Value, Corporate Valuation, M&A Deal, Business & Financial Model

2) CASE NARRATIVE

Technologies involved, Industry and Competition

Social networking business area is becoming quite hard to successfully assess and predict, especially for new apps. This has a big impact on driving the change in M&A policy strategies. Early-stage startups, that show innovative platforms, are highly demanded and recent M&A announcements (such as WhatsApp and Facebook) are valid proofs. On the proposed deal, disruptive technologies were the key factors: rapid opportunities followed by short product lifecycles led to a constant innovation. Social softwares, mobile platforms and new developments in cloud were the most involved sensor technologies at the time of WhatsApp's acquisition. Social networking competition was strongly dense, and making an industry analysis assumes a crucial importance in order to judge if the price tag paid by Zuckerberg was fair or not.

Facebook operates in the Global Internet Media Industry. Mobile.app segment is a fundamental innovation engine within this industry. In fact, it attracts lot of M&A activities and competitive private financing. According to Bloomberg, total advertising revenues are constantly increasing over the years. Global advertising revenues were $494.58 billion in 2013, showing an increase of 7.26% compared to 2011. A consistent portion of this amount came from U.S. advertising revenue ($181.21 billion in 2013). In addition, internet advertising revenues were $118.43 billion in 2013 (4.1% more than 2011). They are mainly generated by North America ($45.46 billion), EMEA ($35.25 billion), Asia-Pacific ($33.57 billion) and Latin America ($4.15 billion). Industry forecast expects global advertising revenue to reach $605.88 billion on 2016. **(see Exhibit 1)**

By analyzing the market share segment, competition is quite high. Performance of Internet Industry over recent years might be supported through the strong increase of social media companies which could boast a profitable portion on the BI Internet peer group. These groups should increase their

net income by 310% to $58 billion ($16 billion will just come from social media enterprises) by tripling their revenues on 2018. Global internet advertising revenues per market shares are primarily driven by Google, Yahoo and Facebook. According to Bloomberg, total revenues for Global Internet Media Industry accounted to $348.61 billion on 20th December 2014, while industry revenues were $95.18 billion on the same date. P/E ratio was 25.47. Google and Microsoft, with respectively $285.28 and $314.29 billion, showed the higher market capitalization in their industry. On 20th December 2014, Facebook accounted for $175.90 billion, while Tencen, BADU, Yahoo, SoftBank Group were a little more down the ranking. Google and Tencent had the higher industry revenue ($38.08 and $6.12 billion respectively). On 20th December 2014, Facebook, with $5.93 billion was ahead Microsoft and Yahoo ($5.35 and $3.52 billion respectively). **(see Exhibit 1)**

The Acquiring Company

Facebook Inc is the world's top social network which roughly had 1.2 billion users at the end of 2013. The company held by Mark Zuckerberg had a strong start on 2014 looking at its first three quarters' reports. As its CEO announced on the Q3' 2014 press release, Facebook was continuing to widely expand its large community in size and engagement through 1.35 billion people that were using the service each month (64% of them per day) and 1.12 billion enjoying the social network from their mobile (703 million of them are daily users). Facebook's total revenues are strongly increasing year-over-year. In fact, on the third quarter of 2014, they reached $3.20 billion: 58.88% and 153.80% more if compared to 2013 and 2012 previous third quarters respectively. More than three quarters of Facebook's annual revenue came from USA, Canada and Europe. Furthermore, Facebook increased its revenue growth rate and expanded its operating margins by delivering free cash flow of $765 million and working capital estimated to be $14.88 billion. Finally, the company held by Zuckerberg continued to make considerable investments to ensure itself a long-term climb as witnessed by Facebook's free cash flow from investing activities which reached an overall

amount very close to $3 billion (according to Q3' 2014). Facebook's four geographic regions (USA and Canada, Europe, Asia and the Rest of the World) grew almost 64% over the years. **(see Exhibit 2)** At the time of WhatsApp's acquisition, the real valuation of Facebook was more than the $90 billion which emerged through its IPO (May 2012). Prior to the IPO, Facebook's market capitalization was $104 billion performed on an user base of roughly 900 million customers. Morgan Stanley led Facebook's initial public stock offering by selling $16 billion shares through a valuation of about $100 billion. Facebook went public at $38 per share, but it traded below the IPO price for more than one year. Afterwards, Facebook shares highly rose between the end of 2013 and the beginning of 2014. Indeed, shares were up 26% until the time of WhatsApp's purchase and doubled along the past 12 months. Facebook, on 19th February 2014, was valued $173.5 billion: $130.15 per user given a monthly active user base of 1.23 billion. **(see Exhibit 3)**

Analyzing the financial and business model of the Target Company

WhatsApp was founded in 2009 by Yahoo's executives and engineers Jan Koum and Brian Acton. The company carried all its development work in Russia at a cheaper value. WhatsApp made a popular smartphone application that provided users to send texts and pictures along cellphone broadband without paying the standard SMS fees. WhatsApp employed 55 people of which 32 were engineers (one engineer supported 14 million active users). At the time of the deal, the server processed 53 billion daily messages (19 billion sent plus 34 received) across seven platforms. By 2011, WhatsApp's users were sending more than one billion daily messages. Furthermore, unlike their competitors, Jan Koum did not spend any dollar on marketing advertisements. The service was free to use for the first year and then it charged $0.99 ($1) a year. On July 2013, WhatsApp's value was believed to be $1.5 billion. This means company's value increased 12 times in just 7 months.

Taking into account WhatsApp's business and financial model, it is quite important to underline that the company had only 55 employees at the time of the acquisition. Even if anyone would take a salary of $250.000 per year, WhatsApp would spend only $13.75 million on employees' costs each year. The most expensive part of WhatsApp business and financial model was tied to the cost of storing and processing all the messages that were frequently sent and received through its platforms. By proceding per comparables, Facebook, which roughly 800 million users, spent about $860 million for hosting the data. On Twitter, that had half of WhatsApp's users, hosting costs had an impact of $130 million in 2012 ($0.70 per user). In WhatsApp, annual hosting costs probably would be about $150-$300 million (from $0.30 to $0.70 per user): comparing them to the already known $450 million in revenues, they may erode most of WhatsApp's net income. In the proposed business and financial model, cash expenses were supposed to be around 25%. Employees' salaries were assumed to remain constant over the time to $250.000 a year per person (taking into account that the company will continue to operate on a fixed basis of 55 employees). Additionally, working capital and capital expenditures were 5% and 10% respectively. WhatsApp had more than 450 million monthly average users (70% of them active by day) at the time of Facebook's acquisition. The industry standard was between 10% and 20%, with only a small number of enterprises above 50%. The company stated that its user base had more than doubled last year and will continue to increase at least one million every day. On the other hand, Facebook's active users were 1.23 billion but with a lower engagement rate (62% daily users). On November 2013, when WhatsApp had 350 million active users, it was valued $11 billion by Exhilway Global CEG. Twitter had more than 500 million active users and was valued approximately $20 billion. **(see Exhibit 4)**

Rational of the deal: general synergies

An acquisition is the action through a company (acquiring company) buys most (if not all) of the ownership stakes of another company (acquired company). After an acquisition, the acquiring firm

retains its name whereas the acquired firm ceases to exist. Acquisitions are often made for a need of raising money or issuing new shares or both of them. Acquisitions must be approved by shareholders of the acquired firm. A synergy can be viewed as the additional value which comes from combining two companies in order to generate a new more valuable entity. The main idea of synergy refers to the concept that the value of two combined entities would be greater than the sum of the two separate companies. Indeed, the synergy resulting from an acquisition is expressed by:

$$\text{Synergy} = V_{AB} - (V_A + V_B)$$

Synergies might be attributed to various factors: a need of revenue enhancement (increase in customers and/or market power), cost reduction (economies of scale and/or scope, inefficiencies, replace ineffective managers), capital tax gains, combining talent and technology. Generally, Company A (the acquiring company) offers to Company B (acquired company) a P_b for 100% of B' s shares. Gains for Company B' s stockholders are expressed through the "acquisition premium":

$$\text{Acquisition premium} = P_B - V_B$$

On the other hand, gains for the stockholders of Company A are:

$$\text{Gain}_A = \text{Synergy} - \text{Acquisition premium} = V_{AB} - (V_A + V_B) - P_B - V_B = V_{AB} - V_A - P_B$$

On the whole, P_b divides the synergy among the two parties.

Coming back to Facebook-WhatsApp deal, it is deeply important to compare what Facebook gained by issuing additional shares versus what Zuckerberg's company already had into pocket. Synergy analysis showed that prior WhatsApp's acquisition was performed, Facebook counted about 2.55 billion shares. Afterwards, the firm roughly issued other 230 million shares (market price of $15.8 billion) to acquire WhatsApp. All this led to $173.5 bilion of market capitalization for Facebook. In addition, through the issue of $15.8 billion in new shares, WhatsApp's users were acquired roughly three times cheaper ($42.2 each) compared to Facebook's users which were singly valued at

$130.15. But where did $19 billion come from? Firstly, the answer should consider the will of Facebook to enhance its customers and market power level within the Global Internet Media Industry: WhatsApp, at the time of the deal, could offer Facebook a high fixed revenue stream over the years. Secondly, the ambition to well combine those talents and technologies (intangible assets such as goodwill, brand recognition, intellectual property) that only WhatsApp had at the time of the deal. According to Bloomberg, Facebook was valued $158 billion on December 2013, ($126.4 per user), on a basis of 1.2 billion users. Considering this price per user and adding 450 million new users to those already existing on Facebook, $19 billion can be fairly reached. And what about the value of the synergy created? The only fair way to estimate the synergy amount is to apply a formula where synergy value equals Facebook's ΔNPV which is expressed as Facebook's market capitalizations occurred in the different time periods before and after the deal: **(see Exhibits 6, 7, 8)**

ΔNPV = Synergy

Facebook Market Cap (20/02/2014) – Facebook Market Cap (19/04/2014) = Synergy

$176.88 B - $173.5 B = $3.38 B

Thus, the value of the synergy was more than $3.38 billion. By applying the same reasoning above, it is possible to calculate the synergy value on longer time horizons (supposing on a five days basis) by computing Facebook's different market capitalizations. According to Bloomberg the following:

Facebook Market Cap (24/02/2014) – Facebook Market Cap (14/04/2014) = Synergy

$179.80 B - $170.42 B = $9.38 B

In this case, longer the time horizon (prior and subsequent to the deal) wider the difference in market capitalization for the acquiring company. Finally, the adopted formula, which equals synergy value and ΔNet Present Value, does not consider the cost effect ($19 billion price tag paid by Facebook). In order to conclude a synergy analysis, Facebook's shareholders should be evaluated after the deal happened in a long-run way. An acquisition creates shareholder's value (an

increase on the value of shareholder's stock) when the acquiring company purchases a business at a fundamental value lower than the tag price paid. Indeed, the value of long-term Facebook's shareholders is consistent with the opportunity to share future WhatsApp's earnings and dividends.

Intrinsic value = Market Cap + Preferred Equity + Minority Interest + Total Debt – Cash & Equivalents – Adjustments

Intrinsic value (or fundamental value) equals the enterprise value. According to Bloomberg, Facebook's intrinsic value prior to the acquisition was $160.09 billion. Considering the PV of WhatsApp's future earnings, which is the price tag paid by Facebook, it is possible to get the related value that takes into account the deal. On the other hand, the value that does not rely on the deal is expressed through the ratio between Facebook shares' market price and Facebook's market cap. prior to the deal: thus, Facebook's shareholders value is expecting to rise 2.53% in the long-term:

Value for shareholders = (Value with the acquisition) / (Value without the acquisition)

$$\frac{(1 + (\text{PV WhatsApp future earnings} / \text{Facebook intrinsic value}))}{(1 + (\text{Facebook shares market price} / \text{Facebook Market Cap}))}$$

$$\frac{(1+ (\$19\text{ B} / \$160.09\text{ B}))}{(1+ (\$15.8\text{ B} / \$173.5\text{ B}))}$$

$$= 1.0253 = 2.53\%$$

The deal and the price paid by Facebook: the WhatsApp valuation

There are two different approaches to perform company's value: WACC and APV.

On the one hand, WACC requires several assumptions to estimate the company cost of capital: capital sources such as common stocks, preferred stocks, bonds and other forms of long-term debt are considered in. Taking all factors equal, an increase in WACC leads to a higher risk and a subsequent decrease in valuation. WACC equation is represented by the costs of each component of capital times their proportional weights:

$$WACC = ((E / V) \times R_e) + ((D / V) \times R_d \times (1 - T_c))$$

where R_e is the cost of the equity, R_d is the cost associated to the debt, E is the firm's equity market value, D is the firm's debt market value and V is the enterprise value obtained by summing debt and equity (D+E). T_c is the corporate tax rate: For reaching the Net Present Value (NPV), companies usually discount their cash flows at WACC. This is called Discounting Cash Flow method (DCF):

NPV = Present Value (PV) of Future Cash Flows discounted at WACC

The weighted average cost of capital is adopted when the capital structure of the acquiring company is fixed and the project does not have identifiable incremental debt. It is simple to use since it involves in few calculations and is more suitable for simple projects and/or small firms. WACC is more reasonable for projects where the separate computation of tax shield is not significant. Correct WACC estimation implies a previous knowledge of equity's market value, cost of debt and equity.

On the other hand, APV is more suitable for large firm's projects. It is more more robust than WACC since it needs less assumptions. A correct use of APV occurs when the project's debt/equity ratio is not constant because it may change its capital structure. Finally, APV is widely recommended when projects have an identifiable incremental debt and tax shield is not stable. In order to successfully figure out a fair valuation of WhatsApp, DCF method (using WACC as discount rate) seems to be the most suitable approach. WhatsApp was a small firm (with a very simple project) and it had a fixed capital structure. Taking into account again the business and financial model previously described in the paragraphs, it is possible to reach roughly $22.40 billion in WhatsApp's valuation, an amount very close to what Zuckerberg paid to Koum. The two key assumptions in order to perform this Corporate Valuation analysis are represented by the terminal growth rate (g) and the discount rate (d). Only by adopting these two factors, and then combining them to more than 2 billion users until 2023 (90% of them are paying users), the price tag paid by Facebook's CEO can come out. The main idea behind this analysis is to value WhatsApp on a stand-alone basis, and, consequently reaching the Net Present Value (NPV) by discounting all future cash flows through an appropriate discount rate, assumed to be the WACC. The latter was

determined through the Capital Asset Pricing Model (CAPM) equation since WhatsApp was a private company prior being acquired by Facebook. In order to figure out a correct WACC the risk free rate, the market risk premium and the Beta (by using a sample of 20 WhatsApp's comparables) were estimated:

$$WACC = \text{risk free rate} + (\beta \times (\text{risk premium}))$$

According to Bloomberg, in USA, on 19th February 2014, market return and risk free rate were 10.17% and 2.74% respectively. Thus, the market risk premium was by difference 7.43%. Also, considering that American market risk premiums on 31th December 2013 and 31th March 2014 were respectively 6.75% and 7.36%, it is possible to plot a linear graph between these 3 month data points in order to reach again 7.43% of market risk premium. Furthermore, on 19th February 2014, WhatsApp had 20 comparables: by exploiting an arithmetic average among them, the Beta adopted in CAPM equation is equal to 0.94 which in turn leads to a WACC of 9.72% presented below:

$$WACC = 2.74\% + (0.94 \times (7.43\%)) = 9.72\%$$

Finally, the terminal growth rate (g) assumed to value WhatsApp was 5%. The use of a correct WACC is deeply important since a too low discount rate (d) might cause an overvaluation in the NPV of the company under analysis. A discount rate of roughly 10% should ensure a good equilibrium allowing WhatsApp to not be overvalued in the long term way. Looking to the price tag paid by Facebook to purchase WhatsApp ($19 billion), the main conclusion is that WhatsApp was not overvalued and Facebook did not overpay. Morgan Stanley's analysts estimated that WhatsApp would been able to reach more than 2 billion users by generating an ARPU (average revenue per user) of $2.50 on 2021 at 80% margin of user paying. This analysis was supported by the prediction that WhatsApp could engage 982 million users by the end of 2014, with a total revenue of more

than $1 billion by 2017. Analysts were definitely bullish in estimating ARPU level, supposed to reach $3 in 2023. Consequently, EBIT margin will be extremely high (58% in 2023). **(see Exhibit 4)**

Aswath Damodaraw, a finance professor at the Stern School of Business of New York, stated: *"Normally, for a company to warrant a $19 billion value, it would need to generate about $1.5 billion in after-tax income. WhatsApp is nowhere near that."*

Considering the WACC adopted in the valuation (9.72%), the price tag paid by Facebook ($19billion) and assuming a waiting period of five years prior to the steady state (the time before future cash flow income will be delivered), it is possible to obtain the amount below:

After Tax Breakeven Income in steady state = WACC x Purchase Price x $(1 + WACC)^5$

After Tax Breakeven Income in steady state = 9.72% x $19 B x $(1 + 9.72\%)^5$ = $2.94 B

The amount obtained ($2.94 billion) almost doubled the minimum threshold set at $1.5 billion.

Financing the deal: how did Facebook pay for the deal?

Generally, an acquisition can be performed through three different types of payments: all-cash acquisition, all-stock acquisition, or both of them.

In an all-cash acquisition, the buyer gives target's shareholders a stipulated price per share in cash. This involves in many advantages for the takeover firm. Firstly, the transaction is more efficient and transparent. Secondly, the acquiring company's shareholders catch the synergy all for themselves as well as guaranteeing their control. Thirdly, an all-cash acquisition signals the market that the acquirer truly believes that synergies might be obtained. On the other hand, there are many disadvantages by adopting this approach: target shareholders are obliged to pay taxes on capital gains (cash acquisition is subject to capital gains) and the credit rating of the acquiring firm may

vacillate due to the wide lump sum paid either in debt or cash. All-cash acquisition can cause high agency costs (in the form of indirect bankruptcy costs) and a burden for the acquirer's shareholders.

Conversely, in an all-stock acquisition, synergies are split between the acquirer and the target firm. Additionally, this M&A payment structure avoids all the tax refunds tied to all-cash acquisitions, but shareholders of the target company may not necessarily hold acquirer's shares. An all-stock acquisition signals the market that the acquirer perceives that the target is overvalued and synergies are somewhat in doubt (the acquirer does not believe in the synergy). The main issue in an all-stock acquition is represented by the effects associated to the acquirer's EPS that makes an acquisition accretive or dilutive. The aim is to offer to the target firm a price in a way that the price-to-earnings ratio of the latter is less compared to the acquirer: this will guarantee that the deal will be accretive in a long-run perspective. An all-stock acquisition implies gains on tax shield (that leads in turn the transaction to be less dilutive) and to escape capital gain taxes for the seller. If a company overpays an acquisition, the overprice is easier to hide if the acquirer will pay it in stock rather than in cash.

Facebook acquired WhatsApp for approximately $16 billion, including $4 billion in cash plus 183,865,778 shares of Facebook Class A common stock (worth $12 billion based on the average closing price on February 10th 2014, or $65.2650 per share). Generally, Class A shares were accompanied by more voting rights than Class B shares. Additionally, the agreement between the two companies allowed for 46,966,444 RSUs in restricted share units (worth $3 billion based on the average closing price on February 10th 2014, or $65.2650 per share) to stump up to WhatsApp's employees on the next four years: this translated into $345.5 million per person. On 17th February 2014, Facebook had 2,551,654,996 Class A and B shares outstanding plus roughly 139 million dilutive securities. The Class A common stock and RSUs issued represented 7.9% of Facebook shares based on current shares and RSUs outstanding.

This analysis underlines that Facebook paid WhatsApp almost in stocks. This "strategy" made definitely sense since Facebook perceived itself to be overvalued. By widely swelling the value of its stocks, Zuckerberg was able to save money from the overall transaction outlay. Additionally, when a company seems to pay too much or people may think that the target company is overpriced by the takeover firm, the overprice is easier to hide for the latter if it is paid basically by stocks.

How did Facebook's stock react on the keydays following the deal?

By paying almost in stocks, Facebook allowed WhatsApp to avoid capital tax gains and to share future gains (target shareholders can partecipate in future stock's price appreciation). Generally, after an acquisition among two enterprises a predictable short-term effect modifies the stock price of both firms. Usually, the stock price of the acquiring (or bidder) company will fall, while the acquired (or target) company's stock will rise. The reason related to an increase in target company's stock price is mainly attributable to a premium paid by the bidder company in order to entice target's shareholders to sell. Furthermore, acquiring company's stock goes down for several reasons. In fact, the acquirer company (or takeover company) has to face some complications during an M&A transaction which can cause a decrease in its stock prices such as: more expenses due to the purchase of the target company, accounting issues (like goodwill) that debilitated its financial position or difficulties to well hold up different workplace cultures in an unique company.

Agrawal et al. (1992) in an analysis related to the post-merger stock performance used a large sample of mergers along a 30-years period coming to the conclusion that the takeover firm statistically suffers considerable losses of approximately 10% along a 5- years postmerger phase[1].

On 19th February 2014, the day the deal was announced, Facebook's share-price was $68.50. In few hours, after the acquisition was completed, shares in Facebook decreased by 4.8% to $64.80 closing

[1] Gopalaswamy Arun Kumar (India), Acharya Debashis (India), Malik Jaideep (India). 2008. "Stock price reaction to merger announcements: an empirical note on Indian markets", Investment Management and Financial Innovations, Volume 5, Issue 1.

to $68.06 on the Nasdaq. The acquisition made Facebook's investors insecure when their shares went initially down. Facebook's shares slid by 2.64% (or $1.82) to $66.24 in a hour of trading after it declared to buy WhatsApp. Earlier, on 20th February 2014, stock had a slight recover to $69.08. Subsequently, shares of Facebook rose by 2.3% to a final daily value of $69.63. **(see Exhibit 5)**

What happened to Facebook's EPS and cash flows on the quarters following the deal?

Additionally, EPS is an important phenomenon tied to future share prices performance. Generally, as for stock prices, EPS might go down or up after an acquisition. Accretive and dilutive acquisition strongly depends on EPS performance. An accretive acquisition is tied to an increase in takeover company's earnings per share, while a dilutive one tends to decrease its earnings per share. The general rule stated that an acquisition is accretive if the bidder firm's EPS is less than the target's.

Coming back to Facebook's deal, WhatsApp did not have neither EPS and P/E ratio because it was not a public company at the time of the acquisition. The only rational way Facebook could proceed was to simply add its earnings to WhatsApp's and then dividing them by the new number of shares. EPS decreased because WhatsApp at that time did not have lot of profits compared to Facebook's. In fact, the 230 million issuance of new shares (market price of $15.8 billion) shares caused dilution to the existing 2.55 billion Facebook's shares: indeed, company's future earnings were divisible by 2.78 billion and not by 2.55 billion anymore. Additionally, a second aspect to mention is the overvaluation of the acquiring company's stocks: in this hypothesis EPS should go down as well. Looking to Facebook's EPS on the keydays following the deal and to its first quarter results, it decreased from 0.72 to 0.59 on the keydays subsequent to the acquisition, and it closed to 0.25 on 31st March 2014 (Q1 2014): thus the acquisition was dilutive. However, two important outputs came from this analysis. The first one, is referred to the consideration that Facebook's stockholders actually are holding overvalued shares: this is not a good sign since investors usually buy shares at a

low amount with the main goal to sell them at a higher amount in the future. But, on the other hand, Facebook was definitely smart to overvalue its shares in order to keep on the table more money to guarantee itself WhatsApp's purchase. On 19th February 2014, the deal diluted Facebook's Non-GAAP EPS by roughly 8% (from $1.72 to $1.59). However, since WhatsApp was a growth firm, the variation in Facebook's EPS was slightly immediate as for stocks' performances: **(see Exhibit 5)**

Brian Novak, analyst at Susquehanna International Group stated: *"There is no denying this deal will be dilutive, as we estimate it will impact our 2015 EPS estimate by 5%."*

Holding stock prices constant, P/E ratio and EPS appear to be inversely related. In fact, a price-to-earnings (P/E) ratio is the current stock price divided by annual earnings per share (EPS). Following a decrease in EPS by 8% and a slight stock's price recover on 19th February, the P/E ratio reached $115.36. Generally, higher P/E ratios certify that external investors are expecting higher earnings progress on a long-term way. However, it might be useful to compare the P/E ratio of a company to those of other companies that play in the same industry: indeed, each industry has a different growth perspective. As for Facebook's acquisition case, a rising stock price certifies a higher P/E ratio, while a falling stock price certifies a lower P/E ratio. Finally, a change in EPS will also change company P/E ratio leading in turn to a change in the company's stock price.

Valuation per comparable firms

One important method to assess the value of a company is the "Comparably Company Analysis" or CCA. This is a process mainly focused on performing the value of a company under other enterprises (sometimes defined as benchmarks) that have a similar size tied to the analyzed company positioned in the same industry. CCA operates through the comparison of companies' valuation multiples, such as EV / EBITDA, EV / Revenue or EV / User. For many analysts, this is the best approach in order to successfully assess fast growing firms like WhatsApp since the

company under analysis is compared to similar public companies trading on a stock exchange which values them in real-time. The best advantages are represented by the fact that multiples provide a suitable framework in order to obtain fair judgments. Furthermore, they are robust tools, simple to adopt and their easier calculations make them a friendly method in order to assess the real firm's value. Multiples focus on the key statistics that are always adopted by all the external investors. However, multiples have a short-term nature: they are based on historical data or short-term forecasts. Indeed, valuations based on multiples might be distorted for long term perspectives. Finally, multiples tend to value minorities: multiples do not consider any form of control compared to what asserts the Discounting Cash Flow method. For this important reason, multiple's valuation might be higher than DCF valuation.

Twitter was worth $20.1 billion even though it got operating losses equal to $542 million in the last quarter of 2013. Similarly, Pandora worth $7.3 billion made losses of $18 million at the end of 2013. Netflix worth $25.9 billion showed a price to earnings multiple set at 231.25x firm's yearly earnings. LinkedIn reached 871.48x and was worth $23.5 billion. WhatsApp ($19 billion) placed its enterprise value among LinkedIn ($19.98 billion) and Twitter ($18.79 billion). **(see Exhibit 6)**

Valuation per comparable transactions

An other efficient approach is to compare similar firms' transactions. Indeed, a "comparable transaction" considers the past sales performed by very similar companies. In addition, considering the market value of publicly traded firms which have identical business and financial models to the company under valuation, it may be a very suitable approach. Naturally, in order to reach a more accurate evaluation, it is preferable to rely to more comparable transactions.

For WhatsApp, comparable acquisitions to consider were represented by Instagram, Snapchat and Tumblr. As already underlined before, Facebook acquired Instagram for $1 billion 2012 and offered

(being after rejected) $3 billion in order to purchase Snapchat. Finally, Yahoo offered $1.1 billion to obtain the control of Tumblr in 2013. In this sense, WhatsApp's valuation had completely different values than its "comparable transactions". At the time of WhatsApp's purchase, Snapchat had 25-30 million users that daily shared 400 million photos. Instagram only 55 million images per day. WhatsApp, taking into account its 50 billion messages and 500 million images shared per day, clearly exceeded the above mentioned competitors. The deal with Facebook was one of the biggest in the Internet Industry: it almost doubled what Microsoft paid for Skype ($8.5 billion) and it was roughly five times what Lenovo paid for Motorola to Google ($2.9 billion). **(see Exhibits 7, 8)**

WhatsApp was valued 9.2% of Facebook's market capitalization: making some comparisons, YouTube was valued 1.3% of Google's market cap. and Android just 0.08%. Even Instagram, bought by Facebook, was only about 1% of Facebook's market cap. and Snapchat (which Facebook tried to buy in 2013) was perceived to be valued roughly 2.5% of Facebook's market capitalization.

Valuation per users

The last valuation type is based on the user base size. This kind of valuation mainly focuses on the assets that the takeover firm is going to gain as a consequent result of the M&A transaction.

At the time of the acquisition with Facebook, WhatsApp had nearly twice Twitter's active users by month, and roughly three times its active users by day. Facebook paid just half of Twitter's market capitalization. Facebook market value of $173.5 billion on 19th February 2014 was equal to $130.15 per user, given its existing monthly active user base of 1.23 billion. Given WhatsApp number of users at the time of the deal (450 million), Facebook paid about 42 times WhatsApp's user base or $42.2 per customers. Making a confrontation, Softbank's acquisition of Supercell valued each user at about $100 (Supercell was vaued $3 billion), and considering an other time Facebook attempt to acquire Snapchat for $3 billion, it would have paid $92.3 for each Snapchat's user. **(see Exhibits 7, 8)**

3) DISCUSSION QUESTIONS

WhatsApp's valuation (performed on Section 2, through its business and financial model) reached $22.40 billon. Now, by assuming that analysts might have been more bearish on predicting WhatsApp's ARPU (for instance, in 2022 and 2023 it will continue to set at $2.50) through an EBIT margin of 55% in 2023, and, by considering that the percentage of paying users will remain constant in the last estimated two years (80%), the company valuation might reach about $16.78 billion. This means that Facebook could have overpaid WhatsApp. The main consequences on this assessment might lead to think that Facebook's EPS was dilutive on the keydays following the deal due to the just mentioned overvaluation of the target firm, or even worse, that the company held by Jan Koum can not reach high revenues on the next years. Furthermore, this different scenario shows how the valuation is quite sensitive to the ARPU level. Analyzing Facebook's shareholders, could a possible WhatsApp's overpayment negatively affect their share's value in the long-term period?

Furthermore, it is deeply important to analyze the deal from an external investors perspective along a point of view which mainly focuses over the next years. What are the main risks associated by operating on a poor diversified industry? And what about "playing" alone in the Global Internet Media Industry without facing valuable competitors anymore? What can a lack of integration between Facebook and WhatsApp respective services cause in the future? Could Facebook seriously collapse over the next years by continuing to hold overvalued shares?

In addition, can $19 billion be considered reasonable analyzing the main WhatsApp's comparables?

Finally, Facebook, through WhatsApp acquisition, showed that it can seriously "peak" over the next years: this means that the company is not able anymore to produce any fresh idea which may have a considerable commercial impact within the Global Internet Media Industry: actually, this should represent the greatest cause of concern among all those proposed by this work project.

4) APPENDICES

EXHIBIT 1

FORECAST INDUSTRY

Total Advertising Revenues	2014	2015	2016
Global Revenues ($M)	545,434	575,785	605,878

MACRO

Global Population (M)	2013	2012	2011
Internet Users (M)	2,749	2,497	2,273
Internet Penetration (%)	38,7	35,6	32,7

INDUSTRY

Total Advertising Revenues	2014	2013	2012	2011
Global Ad Revenues ($M)	519,858	494,579	476,113	458,676
U.S. Ad revenues ($M)	189,514	181,212	178,538	173,789

INDUSTRY

Internet Ad Revenues by Region ($M)	2014	2013	2012	2011
North America	51,2	45,462	39,658	34,533
EMEA	39,235	35,248	31,611	28,044
Asia-Pacific	41,285	33,57	27,431	21,307
Latin America	5,047	4,145	3,455	2,879

MARKET SHARE

Internet Advertising Revenues	2013	2012	2011
U.S. Internet Advertising Revenues ($M)	42,781	36,57	31,735
Google Inc	26,768	23,502	17,56
Yahoo! Inc	3,481	3,461	3,303
Facebook Inc	3,173	2,067	1,583

2

MARKET SHARE

Internet Advertising Revenues	2014	2013	2012	2011
Global Internet Advertising Revenues ($M)	100	100	100	100
Google Inc		48,5	49	48,3
Yahoo! Inc		4,5	5,6	6,6
Facebook Inc		6,7	4,8	4,2
AOL		1,5	1,6	1,7
IAC Interactive Corp		1,5	1,6	1,4
Baidu Inc		5	4	3
NHN Corp		1,2	1,2	1,3

[2] *Source: Bloomberg Intelligence (20th December 2014)*

EXHIBIT 2

FACEBOOK'S QUARTER REPORTS 2014

Facebook 1st quarter 2014	(in $ million)
Revenue	2502
Gross Profit	2040
EBITDA	**1339**
Net income	642
Weighted average of shares	
Basic	2545
Diluted	2609
EPS basic	**0,25**
EPS diluted	**0,25**
P/E ratio	**80,32**
Stock Price (in $)	**60,24**

Facebook 2nd quarter 2014	(in $ million)
Revenue	2910
Total costs and expenses	2437
EBITDA	**1647**
Net income	791
Weighted average of shares	
Basic	2560
Diluted	2615
EPS basic	**0,31**
EPS diluted	**0,30**
P/E ratio	**73,14**
Stock Price (in $)	**67,29**

Facebook 3rd quarter 2014	(in $ million)
Revenue	3203
Total costs and expenses	2638
EBITDA	**1686**
Net income	806
Weighted average of shares	
Basic	2587
Diluted	2644
EPS basic	**0,31**
EPS diluted	**0,30**
P/E ratio	**75,28**
Stock Price (in $)	**79,04**

3

EXHIBIT 3

FACEBOOK'S COMMON SHARES PRIOR TO THE ACQUISITION

	Class A common stock 2013 ($)*	
	High	Low
First Quarter	32,51	24,72
Second Quarter	29,07	22,67
Third Quarter	51,6	24,15
Fourth Quarter	58,58	43,55

	Class A common stock 2012 ($)	
	High	Low
First Quarter		
Second Quarter	45	25,52
Third Quarter	32,88	17,55
Fourth Quarter	28,88	18,8

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* Class A common stock is traded on the Nasdaq Global Select Market since May 18, 2012

Class B common stock is not listed or traded on any stock exchange

[3] *Source: Facebook 1st, 2nd, 3rd Quarter Reports 2014*

[4] *Source: Yahoo Finance*

EXHIBIT 4

WHATSAPP BUSINESS & FINANCIAL MODEL

Parameter	**Unit**											
Year		***2014***	***2014E***	***2015E***	***2016E***	***2017E***	***2018E***	***2019E***	***2020E***	***2021E***	***2022E***	***2023E***
Active Users	mm	450	719	982	1218	1431	1623	1795	1950	2090	2216	2329
New user Additions per Day	mm		0,8	0,7	0,6	0,6	0,5	0,5	0,4	0,4	0,3	0,3
% Paying	%		20%	35%	45%	55%	65%	70%	75%	80%	85%	90%
Usage Charges per Annum	$		1	1	1	1	1	1	1	1	1	1
Average Revenue per paying User	$		1	1	1,25	1,5	1,75	2	2,25	2,5	2,75	3
Revenue	**$mm**	**20**	**143,8**	**343,7**	**685,13**	**1180,58**	**1846,16**	**2513**	**3290,63**	**4180**	**5179,9**	**6288,3**
(-) Hosting costs (assumed $0.50 per user)			71,9	171,85	274,05	393,53	527,48	628,25	731,25	836	941,8	1048,05
(-) Salaries (assumed $250K per employee)			13,75	13,75	13,75	13,75	13,75	13,75	13,75	13,75	13,75	13,75
% Cash Expenses	**%**		20%	25%	25%	25%	25%	25%	25%	25%	25%	25%
(-) Cash Expenses			28,76	85,93	171,28	295,14	461,54	628,25	822,66	1045	1294,98	1572,08
Profit before Taxes	**$mm**		**29,39**	**72,18**	**226,04**	**478,16**	**843,40**	**1242,75**	**1722,97**	**2285,25**	**2929,38**	**3654,43**
EBITDA Margin	**%**		**0,20**	**0,21**	**0,33**	**0,41**	**0,46**	**0,49**	**0,52**	**0,55**	**0,57**	**0,58**
(-) Taxes	35%		10,29	25,26	79,12	167,35	295,19	434,96	603,04	799,84	1025,28	1279,05
Profit after Taxes	**$mm**		**19,10**	**46,91**	**146,93**	**310,80**	**548,20**	**807,79**	**1119,93**	**1485,41**	**1904,09**	**2375,38**
(-) Incremental Working Capital	10%		12,38	32,37	34,14	49,55	66,56	66,68	77,76	88,94	99,99	110,84
(-) Capital Expenditures	5%		7,19	17,19	34,26	59,03	92,31	125,65	164,53	209	259	314,42
Free Cash Flows to the Firm (FCFF)	**$mm**		**-0,47**	**-2,64**	**78,53**	**202,23**	**389,34**	**615,45**	**877,64**	**1187,48**	**1545,11**	**1950,12**
Terminal Growth Rate	%	5%										
Discount Rate	%	10%										
Terminal Value	$mm											**43381,93**
PV of FCFF	$mm			-2,41	65,23	153,10	268,65	387,05	503,04	620,33	735,65	846,23
(+) PV of TV	$mm											**18825,08**
Enterprise Valuation	**$mm**	**22401,96**										

EXHIBIT 5

	Class A common stock 2014 (in $)		
	High	Low	Closing Price
January 2, 2014	63,37	51,85	62,57
February 3, 2014	71,44	60,7	68,46
February 18, 2014	67,54	66,07	67,3
February 19,2014 **	69,08	67	68,06
February 20, 2014	70,11	65,73	69,63
February 21, 2014	69,96	68,45	68,59
February 24, 2014	71,44	68,54	70,78
February 25, 2014	71	69,45	69,85
March 3, 2014	72,59	57,98	60,24
April 1, 2014	63,91	54,66	59,78
May 1, 2014	64,3	56,26	63,3
June 2, 2014	68	61,79	67,29
July 1, 2014	76,74	62,21	72,65

	P/E RATIO	**EPS**
18 February 2014	**93,84**	**0,72**
19 February 2014	115,36	0,59
20 February 2014	118,02	0,59

**After the acquisition was completed, shares in Facebook slid by 5% to $64.70 after hours, to a $68.06 close on Nasdaq.

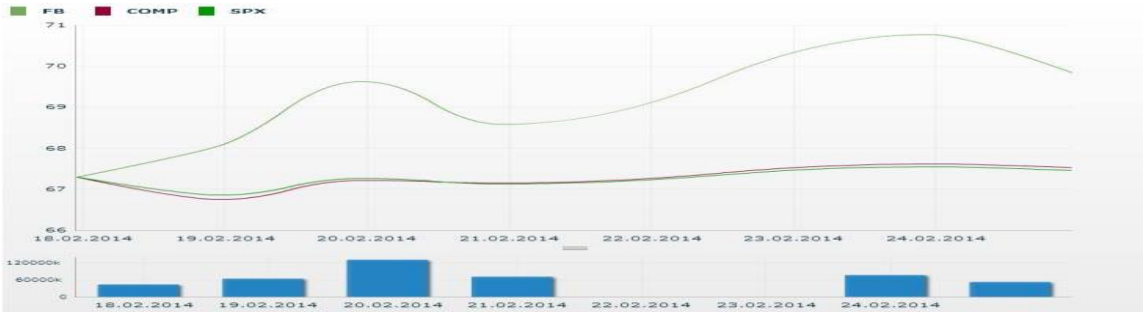

EXHIBIT 6

COMPANIES' VALUATION PER COMPARABLE FIRMS IN INTERNET SPACE AT THE TIME OF FACEBOOK-WHATSAPP'S DEAL

Company	Market Cap (in $M)	Enterprise Value	Revenues	EBITDA	Net Income	Number of users (in M)	EV/User	EV/Revenue	EV/EBITDA	P/E ratio
Facebook	173540	160090	7870	3930	1490	1230	130,15	20,34	40,74	116,47
Linkedin	23530	19980	1530	182	27	277	72,13	13,06	109,78	871,48
Twitter	20130	18790	665	-542	-645	243	77,33	28,26	Not available	Not available
Pandora	7320	7150	665	-18	-29	73,4	97,41	10,92	Not available	Not available
Groupon	6690	5880	2440	125	-95	43	136,74	2,41	47,04	Not available
Netflix	25900	25380	4370	277	112	44	576,82	5,81	91,62	231,25
Yelp	6200	5790	233	2,4	-10	120	48,25	24,85	2412,5	Not available
OpenTable	1720	1500	190	63	33	14	107,14	7,89	23,81	52,12
Zynga	4200	2930	873	74	-37	27	108,52	3,36	39,59	Not available

EXHIBIT 7

COMPANIES' VALUATION PER COMPARABLE TRANSACTIONS IN INTERNET SPACE

Target Company	Acquiring Company	Amount (in $ bn)	Date
Time Warner	AOL	164	January, 2000
Compaq	HP	25	Sept, 2001
WhatsApp	Facebook	19	February, 2014
Motorola Mobility	Google	12,5	August, 2011
Autonomy	HP	10,24	August, 2011
Skype	Microsoft	8,50	May, 2011
Sun Microsystems	Oracle	7,4	April, 2009
Nokia	Microsoft	7,2	Sept, 2013
Broadcast.com	Yahoo	5,7	April, 1999
Motorola (controlled by Google)	Lenovo	2,9	January, 2014
YouTube	Google	1,65	October, 2006
PayPal	eBay	1,5	June, 2002
Tumblr	Yahoo	1,1	May, 2013
Instagram	Facebook	1	April, 2012

COMPANIES' VALUATION PER USER IN INTERNET SPACE

Company	**Amount (in $ mm)**	**Date**
Spotify	167,70	November, 2013
Twitter	144	December, 2013
Facebook	126,4	December, 2013
Supercell	100	November, 2013
Snapchat	92,3	November, 2013
WhatsApp	42,2	February, 2014
YouTube	33	October, 2006
Instagram	28,6	April, 2012
Skype	12,8	May, 2011

EXHIBIT 8

COMPANIES' VALUATIONS AT THE TIME OF THE ACQUISITION

Company	Amount (in $ billion)
WhatsApp	19
Twitter	20
Netflix	25,5
Yahoo	39,28
Facebook	173,5
Tencent	138

COMPANIES' USER NUMBERS AT THE TIME OF THE ACQUISITION

Company	Amount (in $ million)
WhatsApp	450
Facebook	1230
FB (Mobile)	945
FB (Mobile Only)	296
WeChat (Tencent)	272
Twitter	241
Twitter (Mobile)	184
Instagram	150
Snapchat	30

5) DISCUSSION NOTE

Risk of the deal

There are some concerns that suggest that Facebook might collapse over the next years. One possible hypothesis may be represented to not having competitors anymore in the industry in which Facebook operates. After it bought its main rival, Facebook, by destroying any form of competition around it, is ready to walk alone in the Global Internet Media Industry. But, as shown by empirical researches, competition leads customers' choices among different services that an industry can provide them: competition between different companies that play in the same industry drives future stock market performances: based on an analysis of about 670 U.K. companies, the higher the number of competitors, wider is the rate of productivity growth that it may be obtained[5].

Another risk that can affect Facebook in a long-term perspective is due to lack of diversification. The latter allows investors to reduce firm-specific risk exposure during their asset allocation. By acquiring WhatsApp, Facebook can not ensure diversification to investors anymore: the latter may not consider Facebook and its poorly diversified industry, in their portfolio selection over the future.

Thirdly, a large portion of long-term risk for Facebook is due by the overvaluation of its stock prices. The overvaluation made by the acquiring company on its shares can lead the latter to suffer lower long-run expected stock returns, aggravated by worse operating performances.[6] The best example to support this assessment was represented by Netflix. Netflix's stock increased roughly 153% in 12 months from February 2013 to February 2014, and, on the first week of March 2014, it was trading at over $450 a share. On the middle of October 2014, it reached the lowest level in its history, after it slumped more than 20% from 15th October 2014 to 17th October 2014. Stocks that

[5] Nickell Stephen. 1996. "Competition and Corporate Performance", The Journal of Political Economy, Vol.104, No. 4, 724-746

[6] Fangjian Fu, Leming Lin, Micah Officer. 2008. "Acquisitions Driven by Stock Overvaluation: Are They Good Deal?" Pag. 1

seem extremely overpriced presage to a dizzying fall, and consequently lead to poor long-term expected returns. Netflix and Facebook are quite overvalued within their trading industry.

Finally, an other cause of concern for Facebook over the next years can be due to a failure of integrating WhatsApp into its main products and offerings: lot of Facebook's customers use the social network just to send and receive messages without paying any fee, and most of Facebook's users are WhatsApp's users as well. Now days, WhatsApp repesents a real time mobile service faster than Facebook. A missed integration among the two services can lead Facebook's costumers to leave their account in the long-term period. In May 2011, Microsoft bought Skype for $8.5 billion. Two years after, there were no signs that Skype generated a positive impact within Microsoft. The integration of Skype into all Microsoft's business was difficoult, and it led to a huge amount of dollar billion less in Microsoft's bank accounts and lot of users lost, after Skype joined it.

A critical and professional analysis of the deal

The main conclusion of this research project refers to the idea that WhatsApp was undervalued by Facebook. Even in the hypothesis of a lower ARPU level (mentioned in Section 3), the user number and engagement rate are still the dominant drivers: Facebook boasted 556 million mobile active users per day on 19th February 2014, whereas WhatsApp had already reached 450 million active daily users. Considering the issue related to long-term shareholders value described on Section 3, even with an hypothesis of WhatsApp's overvaluation (which considers $16.78 billion instead of $19 billion as the fair transaction value), Facebook's long-term shareholders value would be even positive (+1.26%). Thereby, the amount generated by the synergy ($3.38 billion), after tax breakeven income ($2.94 billion) and Facebook's long-term shareholders value (+2.53%) are the main proofs to support the assessments above. The low Facebook's EPS performance (it went down by 8% few hours after the acquisition) in the keydays following the deal needs to be attributed to

other factors. Since EPS refers to the ratio between a company's net income (after have subtracting dividends on preferred stocks) and its number of shares outstanding, holding the former stable, the latter has widely increased due to the need of financing the deal through an issue of 230 million shares. Stocks' overvaluation significantly contributed to dilute EPS on the keydays following the agreement. The latter definitely cancels out two different critical scenarios: the first one which was referred to the hypothesis that WhatsApp was overpaid by Zuckerberg, whereas the second one linked to the idea which believes that WhatsApp can not realize significant profits over the years. This consequently leads to two important conclusions: the first one that states Zuckerberg was definitely smart by overvaluing its shares because it allowed him in turn to keep on the table a huge amount of money to allocate for purchasing WhatsApp. On the other hand, Facebook's stockholders probably will be not able anymore to sell their shares in the market due to their overprice. Also, Koum, even if he has the power to sell Facebook's shares at any time he prefers ("lock-up-shares" period is only applicable to the IPO, not to M&A transactions), will be penalized in a long-term run.

Looking to the respective enterprise values, WhatsApp's comparable multiples were definitely Twitter and LinkedIn. Taking into account the huge amount of WhatsApp's users (450 million, more than LinkedIn and Twitter, and only below Facebook) and, although unknown, its positive net income on 19th February 2014 compared to the negative's showed by Twitter (-$645 million), on a valuation per comparable firms, the price tag would be fair. However, looking to the dollar amounts paid on WhatsApp's comparable transactions, $19 billion seems quite high: the mitigating factor is represented by the 50 billion messages and 500 million images shared per day, unthinkable for the other companies under analysis. Conversely, through a valuation per users, $19 billion seems low: on 19th February 2014, Facebook's enterprise value was almost eight times more than WhatsApp's, while the price paid per each respective user was only three times more in favor of Facebook. Even Supercell and Snapchat, both evaluated $3 billion each, had a price per user more than $90 billion.