Revenue and valuation of companies with digital platform business models

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REVENUES AND VALUATION OF COMPANIES WITH DIGITAL PLATFORM BUSINESS MODELS [1]

Abstract: Multisided, digital platforms attract considerable attention in business and academic circles. Seven out of ten most valuable companies in the world derive much of their value from multisided platforms. The problem of defining and measuring value remains a major challenge in management literature. In this paper I analyze the relationship between sales (revenues) and market capitalization of companies with digital platform business models. I use data from a sample of 19 companies that used platform business models in 2017. To assess the correlation, I used Pearson correlation coefficient. Results indicate that there was a significant positive relationship between revenues and market capitalization in 2017. This suggests that revenues may be used as the main variable in valuation of companies using platform business models. Results point to future research problems that may be addressed using case-based methodology.

Key words: platforms, business model, valuation

JEL Classification: O32, O33, M16, M15, M13

1. Introduction

Multisided platforms attract attention of entrepreneurs and investors. In the third quarter of 2018 market capitalization of two of companies – Apple and Amazon exceeded one trillion USD and seven of the ten most valuable companies in the world derive much of their worth from multisided platforms. Tracing business successes, articles appeared in business but also academic literature, especially after Jean Tirole received the Nobel Prize in Economic Sciences for his analysis of market power and regulation. Most studies, at this point, describe platform business models, platform structures and design as conceptual frameworks. As the concept matures and financial data becomes

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available at least some concepts should be supported using quantitative methods. In this paper I discuss the link between revenues (sales) and value (market capitalization) in companies that use platform business models.

1.1. Business models

In 2002 Chesbrough and Rosenbloom observed that "business models were perhaps the most discussed and least understood aspect of the web [Chesbrough and Rosenbloom 2002]. There are multiple definitions of the business model concept and several comparisons have been published [e.g. Zott, Amit and Massa 2011, Birkinshaw and Ansari 2015].

Management literature on business models concentrates on business activities with a network of partners, focusing on cooperation or coopetition [Zott, Amit and Massa, 2011]. Some authors however acknowledge the idea of competition through business models [Casadeus-Masanell & Ricart 2010] and state that business models can be a source of competitive advantage [Markides & Charitou, 2004], superior value creation [Morris, Schindehutte & Allen, 2005] or reshape entire industries [Magretta, 2002].

The popularity of the business model canvas created a milestone in business model considerations in literature. According Osterwalder and Pigneur [2011], the authors of the concept of the business model canvas, business model "describes the rationale of how an organization creates, delivers and captures value".

As observed by Teece and Linden [2017], consequent definitions base upon Osterwalder and Pigneur dividing the business model into three main categories: value proposition, revenue model and cost model. In this context value proposition is a marketing term referring to product or service properties (utility) rather than value for shareholders.

The problem of defining and measuring value remains a major challenge in management literature. Teece and Linden [2017] further observe that „A successful business model will provide a customer solution that can support a price high enough to cover all costs and yield profit that is at least sufficient to support the business and its growth". This concept is similar to shareholder value creation based on current and long-term profitability, which in fact is the main driver in the discounted cash flow valuation model [Pomykalska and Pomykalski 2017].

A context was earlier considered by Amit and Zott [2001] who defined the business model as one that depicts content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities.

1.2. Platform

The word platform has many meanings. The origins of digital platforms in management literature can be traced to mass production, computer studies or credit cards. Product platforms were described by Wheelwright and Clark [1992]. Works by Bresnahan and Greenstein [1999] and Cusmano and Gawer [2002] focus on computer industry. Credit cards platforms were researched by Rochet and Tirole [2002, 2003] and resulted in a comprehensive theory of multisided markets. After Tirole received the Nobel Prize in Economic Sciences for his analysis of market power and regulation, this concept has attracted considerable attention. This happened at the right moment as applications of digital platforms started to appear in various industries and services.

Reillier and Reillier [2017] define platforms as businesses creating significant value through the acquisition, matching and connection of two or more customer groups to enable them to transact. Van Alstyne, Parker and Choudary [2016] state that platforms provide the infrastructure and rules for a marketplace that brings together producers and consumers.

The European Commission [2016] provided for a list of characteristics of platforms:

- they have the ability to create and shape new markets, to challenge traditional ones, and to organize new forms of participation or conducting business based on collecting, processing, and editing large amounts of data;

- they operate in multisided markets but with varying degrees of control over direct interactions between groups of users;

- they benefit from 'network effects', where, broadly speaking, the value of the service increases with the number of users;

- they often rely on information and communications technologies to reach their users, instantly and effortlessly;

- they play a key role in digital value creation, notably by capturing significant value (including through data accumulation), facilitating new business ventures, and creating new strategic dependencies.

1.3. Platform business models

Amit and Zott [2001] observed that value creation in e-business goes beyond configuration of the value chain (Porter, 1985), firm-specific core competencies (Barney, 1991) or strategic networks (Dyer and Singh, 1998) as e-business firms often innovate through novel exchange mechanisms and transaction structures.

The concept of platform business models was introduced recently by Choudary [2013]. In this article it was contrasted with a traditional "pipeline" business model, with input, transformation and output, which was developed by Michael Porter in his value chain [1985].

The platform business model can be seen as a way of creating revenues or as system of creating value.

Google had to decide how to place advertisement on their site to monetize the popularity of their web browser. Their choice to offer search services free of charge and keep their website without banners allowed them to differentiate from competitive browsers (e.g. Yahoo and AOL) and to succeed in a very competitive market. Their system of selling advertising services is their business model in the context of creating revenues.

To create revenues platform companies, have to attract a critical mass of customers, find a way to match them, connect them, enable to transact and optimize their system [Reillier and Reillier 2017].

Amazon.com, which started as a book shop, had to attract the customers and book sellers, create a system of finding books and information about books (match and connect), enable convenient transaction, payments and delivery and work on optimizing their system.

Digital platforms are not a homogenous group. They vary in terms of number of users, revenue and its growth rate and in terms of profitability.

2. Method

In this paper I use case study methods to create the sample [Yin 2014] and quantitative research analysis (Pearson correlation coefficient) to assess the correlation between value (market capitalization) and sales (S2017) of platform companies.

This is a part of a larger study where multiple-case study procedure described by Yin [2014] was used. Platform companies are identified using descriptive data from their annual reports. The main challenge was to gather accounting and stock market data for quoted and unquoted companies that use platform business models.

As companies in this sample vary in terms of legal systems in which they are established and operate, accounting systems and currencies I identify individual companies in figures. Analysis is based on data available to the public.

3. Data

The sample consists of 19 companies with biggest market capitalization which use platform business models. 17 companies of these companies are publicly quoted on the stock exchange, data for 2 companies comes from private equity funds public announcements.

Market capitalization data was obtained from marcotrends.net (for companies quoted on NASDAQ, NYSE) and from Hong Kong Stock Exchange (for Tencent

Inc.). Data in Hong Kong Dollars was calculated to USD using closing exchange rate from 31.12.2017. In addition to stock quoted companies I have decided to use data for two unquoted companies - Airbnb and Uber as both often appear in publications referring to platforms.

Market capitalization of Airbnb and Uber was estimated based on private equity financing rounds (data crunchbase.com).

Revenues were taken from annual reports of quoted companies and news agencies reports for Airbnb and Uber.

The companies included in the sample vary with respect to both revenues and market capitalization and an additional description of its specificity is important to understand the results, conclusions and limitations of this study. This approach is consistent with case study methodology [Yin 1994] adopted for this analysis.

3.1. Revenues of Platforms

Prospects of future revenues is a key component in business valuation [Damodaran 2018, Pomykalska and Pomykalski 2018]. Revenues of companies utilizing platform business models, even those founded many years ago, like: Alphabet (Google) (founded in 1998), Amazon.com (1994) or even Apple (1976) are still growing rapidly (Fig. 1). In some companies (Twitter, eBay, TripAdvisor) revenue growth stopped in the last few years.
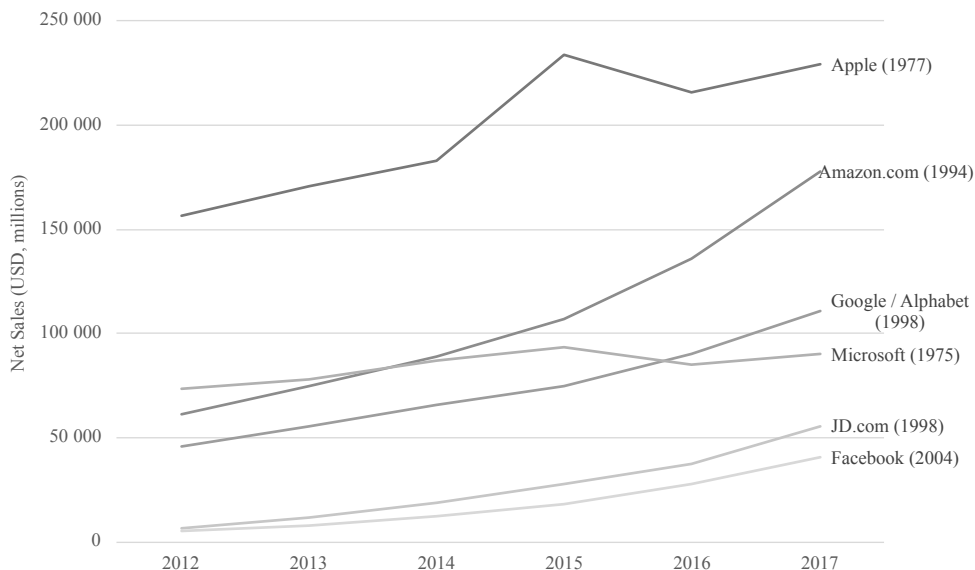
Fig. 1. Revenues of Apple Inc., Amazon.com Inc., Alphabet Inc., Microsoft Inc., JD.com Inc. and Facebook Inc. in the years 2012-2017

Source: own, based on annual reports

Although most companies offer their products globally, for some their markets are actually limited to a niche. Growth of revenues in Twitter Inc. followed the traditional product lifecycle curve and seems to have reached maturity in 2016 just 10 years after its founding (Fig. 2). Twitter attracted 335 million users but mainly in English speaking countries.
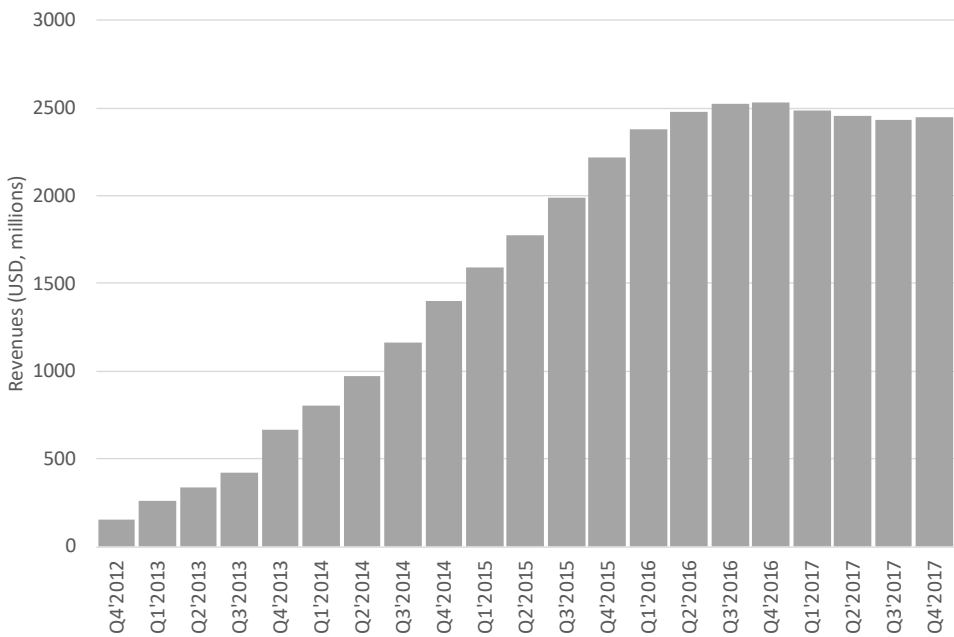
Fig. 2. Revenues of Twitter Q4'2012-Q4'2017

Source: own, data company's quarterly financial reports.

The customary conclusion that revenue growth slows with time and value of revenues [Pomykalska and Pomykalski 2017] is not supported in this sample. Further, it cannot be assumed that smaller companies are "younger" versions of the companies with large revenues, that in time will grow to be equal.
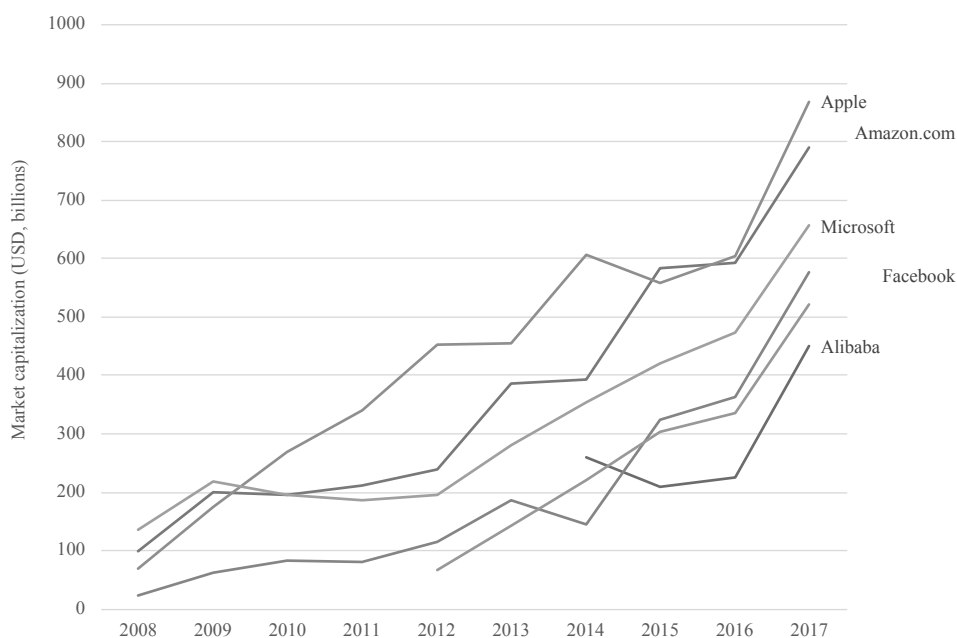
3.2. Value (market capitalization) of platforms

Market capitalization, the most objective measure of businesses' value, is measured by multiplying the number of shares (n) by the closing price per share (p_t):

$$CAP = n \times p_t$$

Growth in market capitalization can be explained by two main factors: increasing prices on the stock exchange and growing prices of specific stock.

Market capitalization during the last 5 years of most companies in the sample increased, except for TripAdvisor Inc. In the case of Snapchat Inc. market capitalization fell compared to IPO (in March 2017). For most of the 5 companies with biggest market capitalization this growth was constant (Fig. 3).

Fig. 3. Revenues of Apple Inc., Amazon.com Inc., Alphabet Inc., Microsoft Inc., Facebook Inc. and Alibaba Inc. in the years 2012-2017

Source: own, data company's quarterly financial reports.

3.3. The link between revenues and value (market capitalization)

Growing price of specific stock can be attributed to many factors, depending on the assumptions used by investors. In DCF valuation model, which is used for fast growing

companies, investors often assume percentage of sales method for forecasting cash flows [Pomykalska and Pomykalski 2017, Damodaran 2018]. In this model revenues (sales) are the key variable.

Damodaran in his valuations of Amazon, Facebook, Apple or Alphabet clearly points to differences resulting from business models and value creation decisions, which he divides into investment decisions, financing decisions and dividend decisions [Damodaran, 2018]. It should be noted that Damodaran in his work is using individual cases, presenting in depth analysis and is not limited to platform business models.

In his work business models become "stories" for investors, that play a decisive role in their valuations of individual companies.

In this study I investigate the link between sales and market capitalization in companies using platform business models. This investigation is part of a larger study where I investigate the factors that influence the value of platform business models.

4. Results

Pearson correlation coefficient indicates that there is a significant positive relationship between revenues (S_{2017}) and market capitalization of companies with digital platform business models (CAP_{2017}), $r(17)=0,83$, $p <0,001$. Data for individual companies is depicted in fig 4. (for all companies) and fig. 5 (focusing on companies with revenues below 50 billion USD and market capitalization under 200 billion USD). Graphical interpretation indicates that for some companies, with revenues approaching 30 billion USD and exceeding 100 billion USD, there may be additional variables (to sales) impacting valuation. This confirms earlier observations made by Damodaran [2018] on selected companies. Results of this study indicate that revenues (sales) are the key component of "stories" and valuations of companies using platform business models.
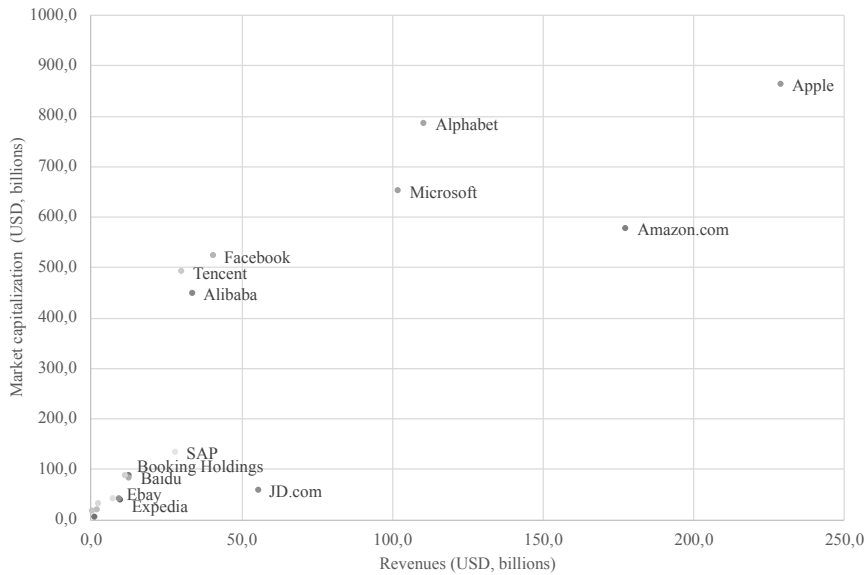
Fig. 4. Market capitalization and revenues of companies using platform business models in the years 2012-2017

Source: own, data company's quarterly financial reports
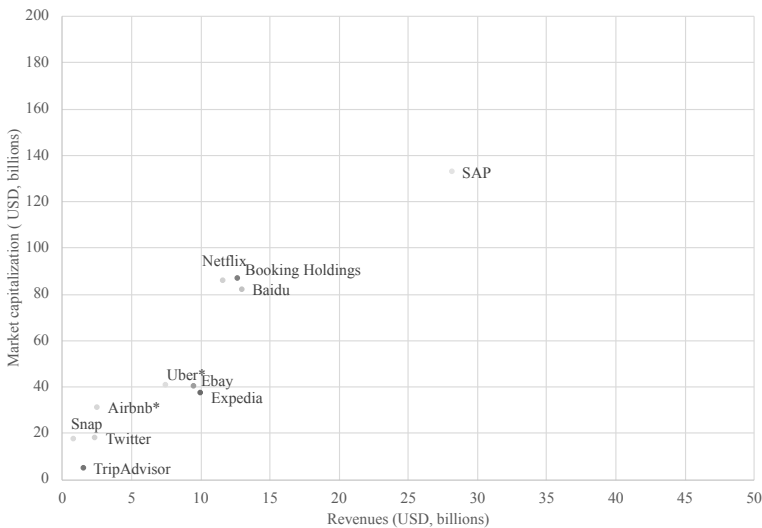
Fig. 5. Market capitalization and revenues of companies using platform business models in the years 2012-2017 (revenues < 250 billions USD and market capitalization < 200 billions USD)

Source: own, data company's quarterly financial reports.

In further research case-based methods should be used to explain the differences in companies with revenues exceeding 50 billion USD and market capitalization exceeding 200 billion USD.

4.1. Limitations

The combined market capitalization of the companies in this sample, end of December 2017, was 4.967,84 billion USD. Total revenues for 2017 amounted to 881 billion USD. Taking into consideration total revenues and market capitalization this sample is substantial but it fails to account for: start-ups and SMEs, some of which may become major companies in the future.

Time span of this research is limited to one year. This simplifies calculations and conclusions. Different results may be obtained in different period. During the last 5 years the stock market indexes were increasing (bull market) and it is the change from bull market to bear market that may provide interesting conclusions, as it did in 2001 and 2008.

A major part of revenues can be attributed to products which are part of platforms but their sales also depend upon other factors. An obvious example are iPhone smartphones in the case of Apple. They contribute to Apple platforms (owners buy apps and media through Apple platforms) and benefit from Apple platforms (functionality provided by apps, access to music and movies) but their sales also depend upon other factors (e.g. technical specifications, price, ability to sell in selected markets).

Data for companies quoted in the US, China and Germany is used. Those companies operate under different legal and accounting systems. Stock market valuations are impacted by country risk.

To address the problems related to the diversified characteristics of the companies I identify individual companies in the graphical interpretation of the analysis.

5. Conclusions

Results of the calculation of Pearson correlation coefficient indicates that there was a significant positive relationship between revenues (S_{2017}) and market capitalization (CAP_{2017}) in the sample. This means that revenues may be used as the main variable in valuation of companies using platform business models. Bigger differences were observed for companies with highest valuation in the sample. This indicates that other factors may be important and further analysis is required to explain the differences. Results of this study are subject to limitations resulting from the size and characteristics of the companies researched, period under research.

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PRZYCHODY I WYCENA PLATFORM CYFROWYCH

Streszczenie: W ostatnich latach platformy cyfrowe przyciągnęły uwagę środowisk biznesu i akademickich. Siedem z dziesięciu spółek o największej kapitalizacji na świecie wykorzystują model biznesu platformy. Problem definicji i pomiaru wartości pozostaje znaczącym wyzwaniem w naukach o zarządzaniu. W artykule przedstawiam wyniki analizy relacji pomiędzy przychodami i kapitalizacją. Wykorzystałem dane 19 spółek, które stosowały model biznesu platformy cyfrowej w 2017 roku i obliczyłem współczynnik korelacji Pearsona. Wysoki współczynnik korelacji sugeruje, że przychody mogą być wykorzystane w wycenie spółek stosujących model biznesu platformy cyfrowej. Wyniki wskazują również na ograniczenia i problemy, które należy rozwiązywać wykorzystując metody analizy studiów przypadków ze względu na duże zróżnicowanie badanych spółek.

Słowa kluczowe: platforma, model biznesu, wartość

Table 1. Revenues and market capitalization of companies with platform business models.

USD, billions	Revenues	Market capitalization
Company	S_{2017}	CAP_{2017}
Apple	229,2	863,0
Amazon.com	177,9	576,6
Alphabet	110,9	785,6
Microsoft	102,3	651,1
JD.com	55,7	56,4
Facebook	40,7	521,6
Alibaba	33,8	448,2
Tencent	30,4	490,0
SAP	28,2	132,6
Baidu	13,0	81,9
Booking Holdings	12,7	86,8
Netflix	11,7	85,8
Expedia	10,1	37,4
Ebay	9,6	40,2
Uber*	7,5	40,3
Airbnb*	2,6	31,0
Twitter	2,4	17,6
TripAdvisor	1,6	4,8
Snap	0,8	17,0

* Market capitalization is estimated based on most recent funding round

Source: own

Table 2. Regression statistics of revenues (S_{2017}) and market capitalization (CAP_{2017})

Regression Statistics	
Multiple R	0,834384563
R Square	0,696197598
Adjusted R Square	0,678326869
Standard Error	168,08407
Observations	19

ANOVA

	df	SS	MS	F	Significance F
Regression	1	1100635,079	1100635,079	38,95742463	0,0000089430
Residual	17	480288,3282	28252,2546		
Total	18	1580923,407			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	83,17145089	47,98900963	1,733135389	0,101170565	-18,07650919	184,419411	-18,07650919	184,419411
S2017	3,845304476	0,616077877	6,24158831	8,94299E-06	2,545493774	5,145115179	2,545493774	5,145115179

Source: own