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The development over time of valuation bases and drivers in the online retail industry

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Abstract

As industries mature, the bases and drivers on which company valuation is based evolve. Generally, during the introduction phase, when a new technology emerges, the perceived potential of this technology is what drives the valuation as the company does not yet generate revenues nor profitability. As the company and industry develop, revenues and market position become more important than technology, and at a later point in time, once companies become profitable, profitability becomes the main valuation base and driver. This paper explores the development of the valuation bases and drivers for the online retail industry over time. While there are, several studies tackling the importance of revenues compared to the importance of profitability at a certain point in time, there are no studies looking at this topic over time. The study draws two main conclusions. Firstly, it confirms the conclusion of similar studies showing that the key valuation base in online retails has evolved from being revenue based to being profitability based and secondly, it demonstrates that the key valuation driver in the online retailing industry has evolved from being revenue growth to being profitability margin. The second finding is very surprising as it marks the development of the online retailing industry to a new development phase.

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1. Introduction

1.1. History and development of the online retail industry

The online retail industry has its roots in Michael Aldrich's modified TV and telephone based system which connected to a central computer processed transactions. While the system was initially used by businesses only, Tesco and WM Morrison implemented the technology for home use and offered together with it home delivery (Aldrich, 2011) (Winterman & Kelly, 2013). Despite the innovative nature of the home shopping system, and even though the first true online retailer launched in 1989, Peapod – the first online grocery store (Peapod, 2016) it took until 1995 for the first large online shops to appear. Both Amazon and eBay launched their businesses in 1995 (Amazon, 2014) (eBay, 2017). The appearance of the World Wide Web played an important role and acted as an enabler for the launching of these two online shops (Peter, 2004). These two shops represent the beginning of the online retail industry as we know it.

The online retail industry, not only represents a new distribution channel for businesses, which comes with its own challenges and opportunities (Webb, 2002) it also offers access to a global market compared to a local audience in traditional retail while providing many benefits to consumer including convenience and transparency (Anwyn, 2013). Furthermore, the online retail industry offers the perfect case study to observe the development of the valuation bases and drivers over time as it has developed over the last 30 years and can be observed relatively easily over its development phases. Furthermore, together with the development of the industry, many players became public further helping the overall transparency of the industry.

1.2. Status quo of the online retail industry

Today, the online retail industry is comprised of hundreds of thousands if not millions of stores. Rachamim identified in 2014, 12 to 14 million online shops of which 650,000 generating annual sales of over 1,000 USD (Rachamim, 2014) while Moore identified 110,000 online shops “generating revenue of meaningful scale” (Moore, 2014). All these shops are expected to generate sales of over USD 2.3 billion in 2017 representing 10% of the entire retail industry (eMarketer, 2016).

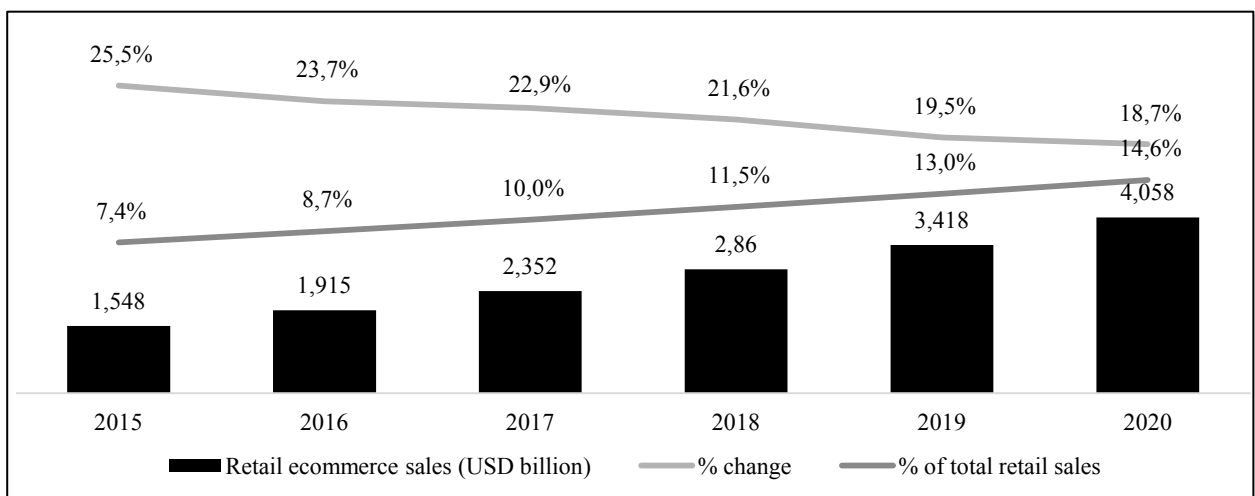


Figure 1. Retail Ecommerce Sales Worldwide, 2015-2020 (eMarketer, 2016)

While the development of the online retail is very impressive, especially considering the scale it has reached, with growth rates of over 20% in 2017 and 2018, and with a continuously growing share of the total retail industry, one must notice that the growth rates are decreasing every year. From 25.5% in 2015, these are expected to reach only 18.7% in 2020. Decreasing growth rates generally represent a new development phase of an industry potentially meaning the maturity phase of the online retail industry.

1.3. Research objective

Considering the fast-evolving nature of the online retail industry, this study aims to look at the development of the relevant valuation bases and drivers over a period of 5 to 10 years and identify inflection points when the valuation of online retailers switched from being revenue driven to being EBITDA (earnings before tax depreciation and amortization) driven. Generally, as industries mature and start showing a certain level of profitability, valuation also becomes profitability based as opposed to being revenue or technological potential based like in the case of fast growing companies or start-ups.

2. Related literature

While this field is relatively unstudied, there are a few sources which tackle this topic from either a theoretical or professional experience based point of view such as Roth in 2014 describing over 8 different dimensions, the key drivers of revenue based multiple compared to the key drivers of an earnings based multiple, as well as sources which focus on the valuation of online retailers or the broader online business segment at a certain point in time.

While Roth's analysis is primarily targeting start-ups as seen in Table 1: Valuation Hallmarks as defined by Roth , some of the dimensions are relevant even for much larger players and an industry as a whole (Roth, 2014). The first dimension "Disruptive model" while being a characteristic of online retailers during the growth phases of the industry, together with stronger competition, it is very difficult for players to be disruptive especially when selling goods that anyone can sell. The second dimension "revenue growth profile" is relevant for the entire industry as a whole as the current online retail industry growth rates of c. 20% are far away from the "hyper-growth" mentioned by Roth of over 50%. Other dimensions such as "reorder rates" or "company as a brand" are likely also shaped by the increasing competition in the field.

Table 1: Valuation Hallmarks as defined by Roth (Roth, 2014)

Markers	Revenue multiple	Earnings multiple
Disruptive model	Core competency difficult to replicate	Crowded competitive field
Revenue growth profile	Sustained hyper-growth (>50% p.a.), rapid customer acquisition	Revenue growth <30% p.a.
Scalability	Credible path to over \$5 million in revenue; serving a large addressable market	Niche focus with limited addressable market
Capital efficiency	Relatively low working capital requirements; high inventory turns; selling third-party goods	Capital-intensive model with higher working capital requirements
Reorder rate	Continuity model enabling higher customer lifetime value	An item business with lower reorder rates
Assortment	Broad product set, yet focused on a specific demographic	Narrow product set; focused on sub-categories
Tech infrastructure	Robust and highly scalable systems	Patchwork of proprietary and off-the-shelf systems
Company as brand	Customers know that the company stands for and are loyal to its brand	Characteristics of a distributor; the company is known more for the brands sold

A study conducted by Habott in 2012 which included a total of 71 companies from various sub-industries of online businesses (e.g. community, content, ecommerce, infrastructure, marketplace, service provider, software) concluded that “Revenue is the dominant driver of Internet market value” (Habott, 2012). While this study analyzes all online businesses together, without differentiating between different business models in the online business industry (many of which have different economics and drivers) and performs the analysis at a single point in time, it analyses a multitude of drivers including internet KPIs such as page views and website rank and provides a valuable conclusion for the research in the field at that particular point in time.

A second study conducted by Trușculescu, Drăghici, & Albușescu in 2015 in a similar manner, but more focused on the online retail segment with inventory risk (excluding marketplaces and similar models) and more focused on financial KPIs as opposed to financial and internet KPIs, reaches a different conclusion highlighting that while revenue based valuations are still relevant, EBITDA based valuations are significantly more relevant (Trușculescu, Drăghici, & Albușescu, 2015). While this study, similarly to Habott, only performs the analysis at a particular point in time, it provides just as Habott a valuable conclusion at a particular point in time. Despite the differences in focus industries, after reading both studies, one can conclude that valuation drivers in the online retail segment evolved from being revenue based in 2012 to being EBITDA based in 2015.

3. Data, methodology and results

In order to perform the analysis this study aims; several key aspects need to be taken into account:

1. Business models: It is essential that the companies included in the study have a similar business model to compare companies with similar economics. Particularly in the online retail segment, it is important to differentiate between companies that assume inventory risk and companies which act only as marketplaces by bringing together sellers and buyers as these two types of companies have very different economics and accounting reporting particularly regarding revenue recognition
2. Data available: It is important that companies included in the study have an on-going transparent valuation as well as transparent reported financials and enough broker coverage. To satisfy all three conditions, the companies need to be publicly listed companies at a minimum. While transparent valuations and financials are a given feature of all publicly listed companies, broker coverage can sometime be an issue for newly listed companies. Broker coverage is important as expected future financial performance often represents an important driver in company valuation.

3.1. Data – Companies included in the study

To identify the relevant companies in the field, two main sources have been consulted:

1. FactSet: financial information database offered by FactSet Research Systems Inc. based in Norwalk, United States. The database offers financial information and analytical software for investment professionals and is one of the four comprehensive databases available worldwide (FactSet Research Systems Inc, 2016).
2. Altium Digital, Media & Internet Monitor – Q4 2016: This is a publication of Altium, a German M&A Advisory firm which offers on a quarterly basis and update on the “global market data, sector valuation and M&A activity” (Altium, 2016).

Once the relevant companies have been identified, the business model of each of the companies has been analyzed together with the period since when these companies are publicly listed. Altogether, 21 relevant companies have been identified. Of these 21 companies, 12 have been listed for more than 5 years and can consequently be included in the study. Including companies that have only been listed for a portion of the observed period would lead to comparing different sets of companies at different points in time. Lastly, of the 12 companies, Oponeo had no brokerage coverage until March 2016 meaning not forward looking valuations could be used while Qliro and zooplus had a “patchy profitability” meaning that companies became profitable and then started losing money again leading again to potentially analyzing different company sets at different points in time. Table 2: Companies included in the study shows an overview of the companies.

Table 2: Companies included in the study

Company	Country	Description	IPO Date	IPO	Inclusion / Exclusion
1-800-FLOWERS	US	Online florist and gift shop	03/08/1999	18	Yes
Amazon	US	General merchandise online retailer	15/05/1997	20	Yes
AO World	UK	Online retailer with focus on kitchen	26/02/2014	3	3 years since IPO
ASOS	UK	Online fashion and beauty retailer	03/10/2001	16	Yes
boohoo	UK	Online fashion retailer	14/03/2014	3	3 years since IPO
Delticom	DE	Online tire retailer	26/10/2006	11	Yes
ePRICE	IT	Online retailer of electronics	16/02/2015	2	2 years since IPO
JD	CN	Online retailer of electronics	22/05/2014	3	3 years since IPO
LightInTheBox	CN	Online retailer of consumer products	06/06/2013	4	4 years since IPO
Ocado	UK	Online retailer of groceries	21/07/2010	7	Yes
Oponeo	PL	Online tire retailer	13/11/2007	10	No broker reports
Overstock	US	General discount online retailer	30/05/2002	15	Yes
PetMed Express	US	Online pet pharmacy	16/09/1997	20	Yes
Qliro	SE	Online retailer of consumer products	15/12/2010	7	"Patchy" profitability
Shop Apotheke Eu.	NL	Online pharmacy	30/09/2016	1	1 year since IPO
U.S. Auto Parts Net.	US	Online provider of automotive parts	09/02/2007	10	Yes
Wayfair	US	Online provider of home furnishing	02/10/2014	3	3 years since IPO
windeln	DE	Online retailer of baby and children's prod.	06/05/2015	2	2 years since IPO
YOOX Net APorter	IT	Online fashion retailer	03/12/2009	8	Yes
Zalando	DE	Online fashion retailer	01/10/2014	3	3 years since IPO
zooplus	DE	Online retailer of pet supplies	09/05/2008	9	"Patchy" profitability

3.2. Data – Data sources, bases and drivers used

The data necessary for the empirical study was sourced from FactSet Research Systems Inc., a well-regarded provider of extensive company and industry intelligence for investment professionals. All data has been downloaded using the Factset proprietary Excel plug-in and analyzed with the help of Excel. All data has been downloaded on the 15/07/2017 on a monthly basis. The analysis has been done on a monthly basis as well.

The valuation metrics considered include Enterprise Value (EV) based multiple in which the EV is divided by revenue as indicator of the revenue driven valuation and EV divided by EBITDA as indicator of the operating profitability driven valuation. All financial information was sourced from FactSet using the standard definition of Enterprise Value, revenue and EBITDA. In order to allow for a both valuation relative to historical financials and valuation relative to forward looking financials, both historical multiples based on last-twelve-months (LTM) financials and next-twelve-months (NTM) financials have been used yielding 4 separate multiples: EV / LTM Revenue, EV / NTM Revenue, EV / LTM EBITDA, EV / NTM EBITDA.

To derive the valuation drivers relevant for the analysis, the same dataset has been used. A total of 3 drivers were considered: revenues growth, calculated as the growth between LTM and NTM revenue, LTM EBITDA margin calculated by dividing LTM EBITDA by LTM Revenue and NTM EBITDA margin calculated by dividing NTM EBITDA by NTM Revenue.

3.3. Methodology

The primary goal of the study is to identify which valuation metrics (dependent variable) and which valuation drivers (independent variable) best explain the overall valuation of companies in the online retail industry at certain points in time and evaluate the development of the bases and drivers over time. Given its goal, the study requires a statistical tool which measures the correlation between the valuation base and the valuation driver and simultaneously side ensures that the resulted correlation is relevant and intuitive. The simplest and but also efficient tool providing these benefits, is the simple, linear, cross-sectional regression. The study uses this regression type and

performs the analysis at 83 different points in time, each month since August 2010. Each identified relevant company represents an observation at every given point in time. The date August 2010 was chosen simply because starting with this date reliable data is available for the chosen 9 companies.

3.4. Relevancy of empirical results

Considering that the analysis has performed 12 separate regressions on a monthly basis over a period of c.7 years it is very difficult to show all results, however, by using a “Min, 25% quartile, Median, 75% quartile and Max” analysis one can observe which regressions are relevant. It can easily be observed that the regressions LTM EV/EBITDA and LTM EV/EBITDA versus LTM Margin and NTM Margin yield very low R-Squared values representing little correlations and consequently will be excluded from the analysis. With the exception of a few sections in which regressions yield counterintuitive relations (negative slopes implying that higher growth or margins yield a lower multiple) or a few regressions which have extreme intercepts (17.2 implying that a company is valued at 17.2x EBITDA despite having a growth rate of 0%) most regressions are useful and can be used for the analysis. Table 3: Overview of the results of the empirical study, monthly analysis covering 31/08/2010 - 30/06/2017 (83 observations) shows an overview of the results of the regressions.

Table 3: Overview of the results of the empirical study, monthly analysis covering 31/08/2010 - 30/06/2017 (83 observations)

R-Square (monthly covering period 31/08/2010 - 30/06/2017)

	<u>LTM EV/Rev.</u>			<u>LTM EV/EBITDA</u>			<u>NTM EV/Rev.</u>			<u>LTM EV/EBITDA</u>		
	Growth	LTM Margin	NTM Margin	Growth	LTM Margin	NTM Margin	Growth	LTM Margin	NTM Margin	Growth	LTM Margin	NTM Margin
Min	12%	10%	16%	10%	0%	0%	7%	16%	21%	0%	0%	0%
25% Quartile	50%	22%	25%	46%	0%	1%	37%	26%	31%	32%	0%	0%
Median	67%	27%	30%	66%	1%	2%	54%	32%	35%	61%	2%	2%
75% Quartile	73%	34%	37%	77%	2%	4%	70%	42%	47%	77%	5%	7%
Max	86%	71%	70%	91%	10%	13%	80%	80%	79%	90%	16%	20%

Intercept (monthly covering period 31/08/2010 - 30/06/2017)

	<u>LTM EV/Rev.</u>			<u>LTM EV/EBITDA</u>			<u>NTM EV/Rev.</u>			<u>NTM EV/EBITDA</u>		
	Growth	LTM Margin	NTM Margin	Growth	LTM Margin	NTM Margin	Growth	LTM Margin	NTM Margin	Growth	LTM Margin	NTM Margin
Min	-0.2	-0.2	-0.5	0.0	7.6	7.1	-0.1	-0.2	-0.4	1.0	6.5	6.7
25% Quartile	0.2	0.2	0.0	5.2	15.7	14.9	0.3	0.2	0.0	4.8	10.8	9.9
Median	0.3	0.3	0.1	7.7	17.2	16.3	0.4	0.2	0.1	7.4	13.1	12.5
75% Quartile	0.5	0.4	0.2	9.8	20.7	18.2	0.6	0.3	0.2	9.5	15.2	14.4
Max	0.9	0.9	0.6	17.2	35.2	28.0	0.8	0.6	0.4	30.2	45.0	47.4

Slope (monthly covering period 31/08/2010 - 30/06/2017)

	<u>LTM EV/Rev.</u>			<u>LTM EV/EBITDA</u>			<u>NTM EV/Rev.</u>			<u>NTM EV/EBITDA</u>		
	Growth	LTM Margin	NTM Margin	Growth	LTM Margin	NTM Margin	Growth	LTM Margin	NTM Margin	Growth	LTM Margin	NTM Margin
Min	2.6	6.6	8.7	23.2	-89.5	-103.3	1.3	6.1	7.8	-17.1	-259.4	-278.6
25% Quartile	4.4	12.8	14.7	52.5	0.6	17.6	2.6	10.6	12.4	29.5	7.4	11.3
Median	7.1	15.2	16.0	83.9	29.0	41.2	4.9	13.0	13.8	54.9	28.1	31.5
75% Quartile	9.4	16.8	19.5	112.7	47.6	67.3	7.2	14.6	15.6	77.5	47.8	53.9
Max	16.9	28.3	36.6	184.6	139.7	190.7	13.1	22.7	29.6	139.7	140.9	205.7

3.5. Empirical results

The first piece of analysis is to understand which multiple or valuation base matters the most in evaluating online retailing companies. When comparing the development of the R-Square of the LTM EV/Revenue vs. Growth regression with the one of the LTM EV/EBITDA vs. Growth regression one can easily observe that while historically, the two move together with the revenue multiple based regression often being slightly higher than that of the EBITDA multiple regression, in the last 12 months the two lines have diverged significantly with the revenue based regression yielding an R-Squared of c. 40% at the time of the analysis while the EBITDA regression yields R-Squared values above 80% (see Figure 2). This observation leads to the conclusion that about 12 months ago, the EBITDA multiple has surpassed the revenue multiple as key base in the evaluation of online retail players.

Looking at the same regressions, done using NTM figures as opposed to LTM figures leads to the same conclusion. While historically, this was not always the case, it seems like in the last 12 months the two coincide (see Figure 3). While this finding is not surprising, one would expect that NTM has a higher prediction power compared to LTM as investors generally look at future performance compared to historical performance.

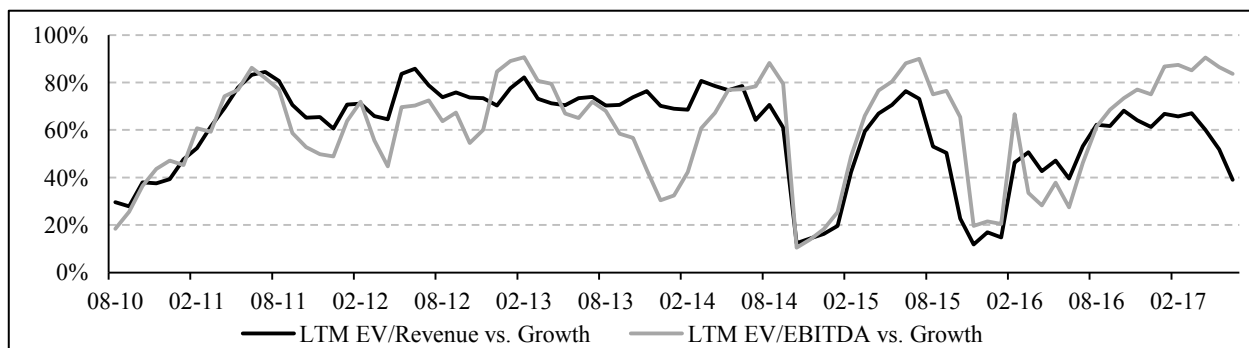


Figure 2: Development of R-Square of LTM EV/Revenue vs. Growth and LTM EV/EBITDA vs. Growth regressions

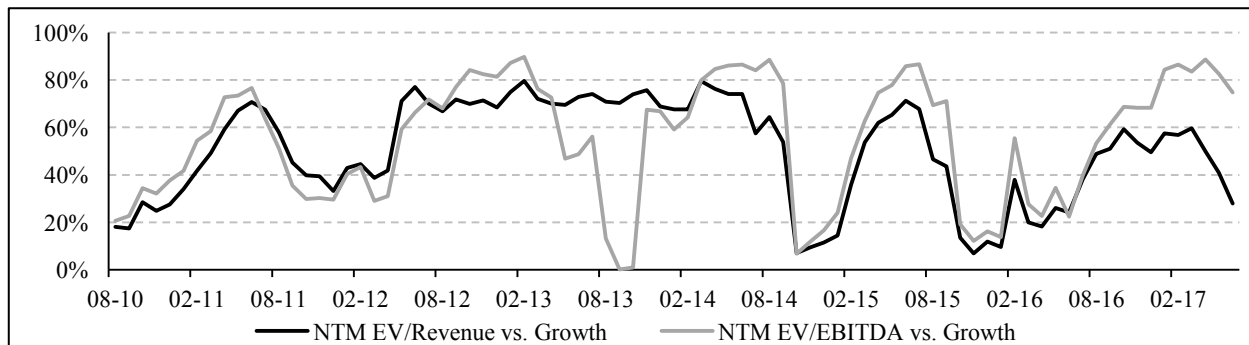


Figure 3: Development of R-Square of NTM EV/Revenue vs. Growth and NTM EV/EBITDA vs. Growth regressions

The second piece of analysis concerns the drivers of the valuation of online retail companies. In order to find the key driver, one must take the multiple that yield statistically significant results and regress it against the drivers considered (growth, LTM EBITDA margin and NTM EBITDA margin). The results of this analysis can be seen in Figures 4 and 5. The results are very surprising, as the analysis shows that for the first time in the observed history, the regressions with EBITDA margin as drivers have not only surpassed those based on growth, but even reached

historically high R-Squared values of above 80%. This finding is extremely interesting as it means that the online retail industry has reached a completely new level of maturity with EBITDA margins becoming, from a driver perspective, more important than growth. It can be observed that the regressions with margins as independent variable present constantly growing R-Squared values over the observed period, but have rarely reached R-Squared values of over 40%.

Performing the analysis with NTM margins instead of LTM margins as well as with NTM multiples instead of LTM multiples yields similar results independently of the combination analyzed.

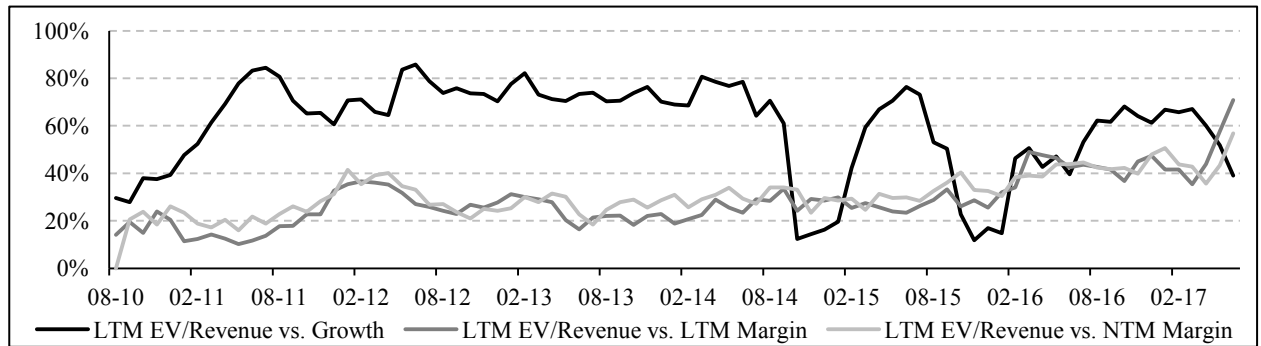


Figure 4: Development of R-Square of LTM EV/Revenue vs. Growth, LTM EV/Revenue vs. LTM Margin and LTM EV/Revenue vs. NTM Margin

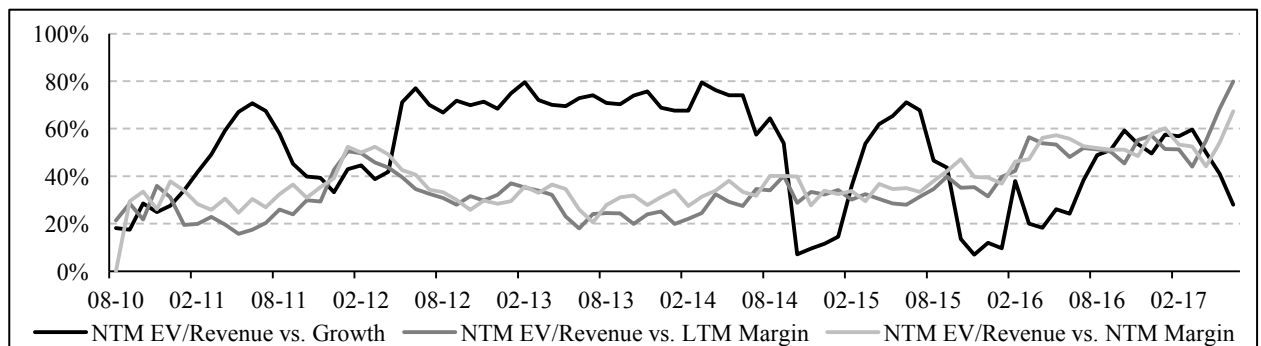


Figure 5: Figure 4: Development of R-Square of NTM EV/Revenue vs. Growth, NTM EV/Revenue vs. LTM Margin and NTM EV/Revenue vs. NTM Margin

4. Conclusions

The current paper adds to the current understanding the topic in two major ways. Firstly, it provides the first historical analysis of key valuation bases and drivers with observations of nearly 7 years in the online retailing industry, and secondly it identifies the increasing importance of EBITDA margin compared to revenue growth as a valuation driver in the online retailing industry.

While the finding that EV/EBITDA multiples are the key valuation bases for online retailer and the fact that there was a switch between revenue based bases and EBITDA based bases is just a confirmation of the conclusions of similar studies in the field, the importance of EBITDA margins as a driver compared to revenue growth is surprising and marks the evolution of the online retailing industry to a completely new development phase in which being profitable is significantly more important than growing rapidly.

The finding is of importance for researches as well as managers and investors in the field. It provides a tool to adjust particular corporate strategies aiming to maximize corporate valuations.

The study can easily be expanded by applying more advanced statistical tools including multi-variate regressions, by expanding the universe of companies and the universe of observed bases and drivers, however, likely needing significantly longer explanations, individual pieces of analysis and conclusions being consequently a good target topic for a book chapter or long article.

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