

Problems and Peculiarities of the Methods for Valuation of the Fastest-Growing Companies

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Abstract: Approaches and methods for valuation of companies described by a rapid growth of key financial indicators in a short time period have been reviewed. The fastest-growing companies have been formulated as a separate industry for research. The preconditions have been substantiated for considering the fastest growth as the most important factor of value formation at the present stage. The main problems in the fastest-growing companies' valuation have been identified, and possible solutions have been suggested. The method for valuation of the fastest-growing companies has been focused on the use of specialized multipliers within the comparative approach, as well as on due consideration for the survival rate of companies after the active growth phase and the peculiarities of value formation in the income-based approach.

Index Terms: fastest-growing companies, problem of uncertainty, cash flow forecast, market multipliers, expected growth, stages of the company's life cycle, business value.

I. INTRODUCTION

There have been deals with young, relatively recently established companies valued at tens of billions of dollars in the market. Below are some examples of such deals¹:

- social network Facebook closed the deal on acquiring WhatsApp messenger for \$19 bln in 2014;
- online giant Google Inc. agreed to acquire the US cell phone manufacturer Motorola Mobility Holdings Inc. for about \$12.5 bln in 2011;
- according to CNBC, Xiaomi received \$1.5 bln in investments in 2014. Major investors were Airbnb, Facebook, Alibaba, and DST. The company was valued at \$40 bln at the time; and
- Yandex.Taxi and Uber business merge in Russia was valued at \$3.8 bln in February 2018.

These companies do not account for a century-long presence in the market and a global spread of capital-intensive manufactures, do not use administrative resources to capture

new markets, and do not belong to the financial sector. Why are they valued so high?

The competitive advantage is based on information technology. They accumulate millions of Internet users worldwide and spread their influence on all areas of society, regardless of the economy development and political regimes. Each company is unique, but they all have one thing in common: the explosive growth in their earnings over the past decade. This assumption has been clearly demonstrated by the dynamics of the largest IT companies' earnings in recent years. Instant dissemination of information as a basic product of modern technological corporations allows to achieve a fold increase in earnings from year to year.

This trend also applies to Russian high-tech companies. Companies such as Yandex, Mail.ru and others have been observing a steady trend towards an increase in earnings in the past five years, according to the information from public sources, i.e. they can be called the fastest-growing companies. The dynamics of earnings of the largest technology companies in Russia for 2012 – 2016 are demonstrated in Figure 1.

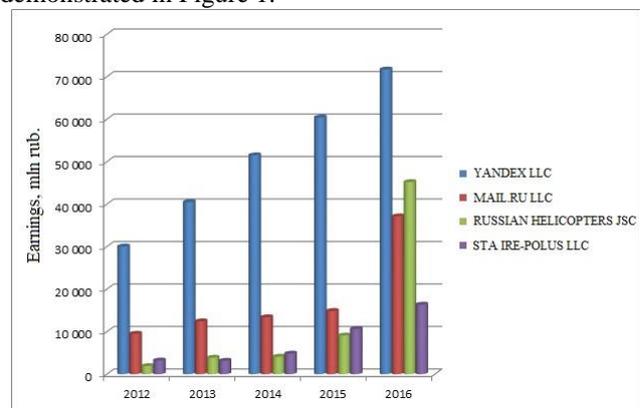


Figure 1. Dynamics of earnings of the largest technology companies in Russia for 2012 – 2016

Source: Calculated by the authors based on the data from the SPARK-Interfax information system

II. METHODS

Theoretical and methodological basis of the article. When writing the article, the authors relied on scientific works and applied developments of Russian and foreign scientists and practitioners on the problems under study in the field of valuation of the fastest-growing companies. The dialectical method of knowledge and the systematic approach to the study of the problem are used in the article; general scientific and special methods of research are applied:

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¹ According to public Internet sources

analysis (including comparative analysis), synthesis, analogy, classification, approaches and methods of valuation activity, as well as tabular and graphical techniques. The information basis of the article includes international standards in the field of valuation activity, laws and other regulations of the Russian Federation that regulate valuation activity and business valuation, and papers of Russian and foreign scientists in the field of business valuation. The data from official websites of research agencies and other organizations are used in this article.

III. RESULTS

A. Concept of the fastest-growing companies and problems of their valuation

The term "fastest-growing companies" in international publications refers to young firms or start-ups newly formed around some idea [1]. The novelty of a product or service serves as the main competitive advantage and secures the growth potential. The structure of the ranking of the fastest-growing companies in Russia annually conducted by RBC allows to see the advantage of retail chain companies, road construction companies, and other firms working with state customers.

According to 2017 ranking, the top 10 were the following ones [2]:

- 1) Bamstroypu (construction of infrastructure);
- 2) RPC United Wagon Company (transport);
- 3) VkusVill (retail);
- 4) IRE-Polus (high-tech);
- 5) South Center (agriculture and food products);
- 6) Peterburgsky Traktorny Zavod (transport);
- 7) Kurganstalmost (construction of infrastructure);
- 8) Farmasyntez (medicine and pharmaceuticals);
- 9) Auto-Trade (cars);
- 10) Uta-NN (distribution).

The RBC experts have noted the following peculiarities in the ranking in 2014 – 2016 [2]:

– the ranking of the fastest-growing companies changes by more than 70% each year. This time there were 14 participants from the past year (there were 13 of them a year ago). Seven companies dropped out of the top 10 ranking from the past year this time, including the former champion, SeverEnergy: the earnings of the company created from a part of the former YUKOS assets grew by less than 6% in 2016;

– Bamstroypu became the new leader in the ranking: the company, which began with the BAM construction, also made its way to the ranking of the country's largest companies RBC-500 for the first time, following its 2016 operation results. The average annual revenue growth of Bamstroypu amounted to 163% – the leader of the previous ranking, SeverEnergy, demonstrated an average growth of 192% over the past three years;

– top 50 companies grew more slowly on average than their predecessors a year ago: the average growth of their earnings in 2016 amounted to about 40%, while companies from the previous ranking showed 68% growth; and

– the industry-specific profile cut has also been updated: while Oil and Gas sector was the largest in terms of revenue a year ago, Retail Trade brought more than half of the total revenue this year. Ten retailers entered the top 50 in total –

the same was a year ago, but they brought only 18% of the total revenue at the ranking at the time. Overall, it can be said that the fastest-growing companies are a new phenomenon of the past decades. As a special characteristic or property, fast growth allows to unite companies that have achieved such growth in a separate group. Traditional principles for performance and future prospects' evaluation change during the review of the key financial indicators within this group. The expanding scale of activity of the fastest-growing companies also allows to predict the need for developing new concepts and methods in valuation of such companies at the present stage.

The appraiser [3] faces three major problems in the business valuation of the fastest-growing companies:

1) high uncertainty of forecasts – it is impossible to know the growth rates that the company expects in the future, whether it can maintain the current rate in the near future or quit the market;

2) no retrospective data – as a rule, the fastest-growing companies are new and have no history of operation; it is impossible to find out the level of working capital required for the company and the typical profitability for a company in a retrospective period. This is why it is impossible to secure the forecast with retrospective data, and therefore the credibility of such a forecast is the lowest;

3) incompatibility of most of new projects and ideas with those existing in the market. A company needs a new idea or a new product (service) that has not yet been on the market to secure an explosive growth, thus, it is very difficult to compare such a company with its counterparts. There are no indicators for valuation or confirmation of the results obtained by the income-based approach either [4].

All these problems make market valuation of the fastest-growing companies extremely difficult, nontransparent, and largely disputable.

Approaches to valuation of the atypical fastest-growing companies also vary. There are some methods that allow to take future changes in the company yield in consideration today, including the Monte Carlo method, which allows to estimate the investment project attractiveness more realistically and select the best project indicators using computer modeling [5].

The forecast growth rates are also considered in the "Method for adjusting market multipliers" proposed by A.G. Vasiliev. Basic formulas for finding P/E , P/S and P/BV multipliers in this method are modified in accordance with the difference in the growth rates of a counterpart and a company under valuation. At the same time, even the largest authoritative views on the applicability of calculation methods in valuation of the fastest-growing innovative companies may be opposite. For example, Ernst&Young does not recommend applying an income-based approach to high-tech companies in published sources but makes emphasis on the use of various market indicators and industry-specific ratios within a comparative approach [6]. On the contrary, Asvat Damodaran insists on using the income-based approach in the valuation of the fastest-growing companies in the latest edition of the book *Investment Appraisal* [7].

A. Damodaran devoted whole chapters to this topic. The book includes a life cycle chart for the newly created fastest-growing companies. This chart demonstrates different stages of growth, where growth is presented as the longest

period in the company's life. A sample chart reflecting the specifics of the life cycle taking three stages of growth into account is presented in Figure 2.

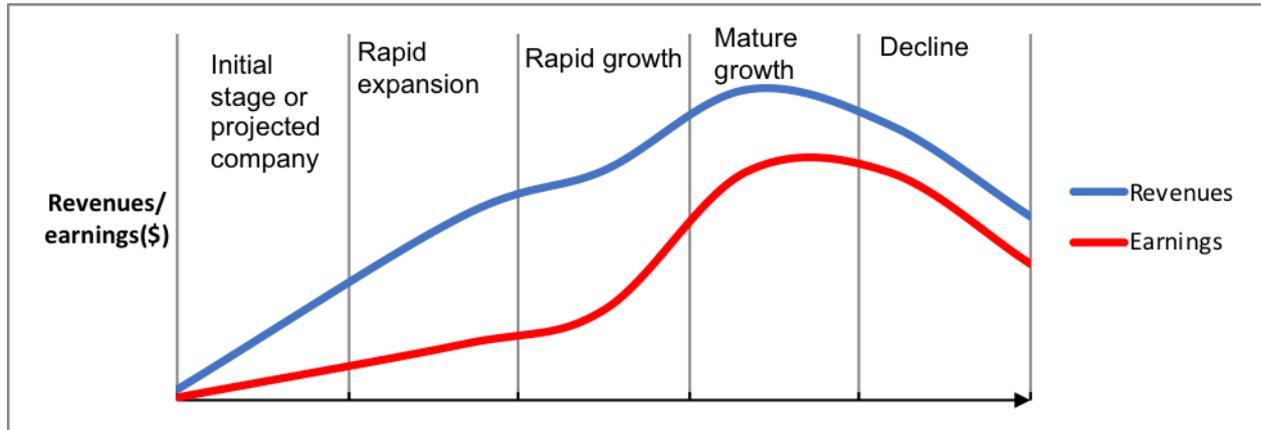


Figure 2. Life cycle chart for the fastest-growing company [7]

A. Damodaran [7] classifies the main sources for building a cash flow model and possibilities of using valuation

approaches at different stages of a firm operation based on this cart (see Table 1).

Table 1. Valuation parameters during the life cycle [7]

Indicators	Initial stage or projected company	Rapid expansion	Rapid growth	Mature growth	Decline
Revenue	No or low revenue, negative operating profit	Revenue grows, profit is still low or negative	Revenue rapidly grows, operating profit also grows.	Revenue growth slows down, operating profit still grows	Revenue and operating profit decline
Operational history	No	Quite limited	Some operational history	Operational history can be used in the valuation	Significant operational history
Comparable firms	No	There are some but at the same stage of growth	More comparable firms at different stages.	Many comparable firms at different stages	Number of comparable firms declines, most of them are mature
Value source	Future growth only	Mostly future growth	Partially existing assets, growth still dominates	Existing assets rather than growth	Existing assets only

As such, future growth is the source of value at the earliest stages of the company development, and the use of comparative and cost-based approaches is limited. An income-based approach is largely used [8; 9].

A company can be compared with other similar market players and valued using both income-based and comparative approaches at more mature stages of development. Besides, the company accumulates assets, which allows for an indicative application of the cost-based approach. As soon as at the stage of decline, the main value source is assets accumulated over the company life, prospects for further growth are unlikely, and comparable companies are more likely in more or less favorable market conditions. The value of the company will most reliably be determined using the cost-based approach based on the appraisal of the existing assets and liabilities at this stage.

This study can be considered as some general recommendations for the selection of valuation approaches

and methods at each stage of the life cycle of the fastest-growing companies [10]. Further, the ways of improving the reliability of the valuation results should be summarized for the market valuation of the fastest-growing companies. Analysis of various public sources, scientific articles, and publications allows to identify several key ways to solve the problems of uncertainty, as well as new issues that arise during the practical implementation of valuation methods.

Application of various forecast scenarios

Various forecast scenarios should be used in valuation, which allow to assume both the most optimistic results of the company operation and to predict a slowdown and even the company's withdrawal from the market.



Each scenario is built on the basis of expert estimations and comparison of the company under study with similar ones in related sectors, taking the analysis of the survival rate of companies in the retrospective period into consideration. In this case, the company growth rate in the future is the main criterion determining the difference in scenarios:

- under the optimistic scenario, the forecast is that the company growth rate will remain at the current level in the coming years;
- under the moderate scenario, the growth rate will decline until the inflation rate is reached, and after that the company will continue its operations at a stable level;
- the pessimistic scenario is based on the premise that the company's life is confined to a certain period until competitors enter the market.

The results of estimating the market value under different scenarios may significantly vary. The problem of weighing the results by scenarios arises when considering various scenarios, and the expert opinion of the appraiser can significantly influence the final result of the value.

Analysis of the so-called customer value is possible at the stage of weighing the results under various scenarios by probabilities, which consists of the following indicators [7]:

- average annual revenue per customer;
- total number of customers;
- margin per customer (before deducting the cost of attracting customers);
- cost of attracting a customer; and
- indicator of the customer base "foaming" (share of customers lost annually).

Analysis of indicators describing the customer base allows to obtain the information required for assessing the correctness of the probabilities assigned to various scenarios.

As such, various forecast scenarios can be used in valuation, taking the current performance indicators of the company into account, but they also require an in-depth analysis of the industry which the valued company belongs to.

B. Use of multipliers considering for the expected growth rates within the comparative approach

The value can be found using market multipliers calculated with due consideration for the expected growth.

Various ways of accounting for growth in the multipliers are proposed in the last edition of the Asvat Damodaran's book Investment Appraisal [7].

When finding the *P/E* multiplier (price/earnings) for the fastest-growing companies, it is proposed to divide the expected growth rate of earnings into two phases: the phase of rapid growth and the phase of stable growth. In this case, the stronger the expected growth rate is, the higher the *P/E* multiplier value is. The forward *P/E* multipliers can also be used, when the denominator reflects not retrospective or current earnings but rather the expected earnings per share in the next fiscal year.

It is proposed to use a specialized multiplier based on the expected growth rate (*PEG*) for the valuation of technology companies. This multiplier is defined as the result of division of the price/earnings multiplier by the expected growth rate of earnings per share:

$$PEG = \frac{P/E}{Expected\ growth\ rate}$$

Use of this multiplier allows to mitigate differences in the growth rates of various companies. The formula for calculating the expected growth rate may be as follows:

$$Expected\ growth\ rate = (1 + Growth\ rate_{for\ year\ 1}) \times (1 + Growth\ rate_{for\ year\ 2-n})^{\sqrt{n}} - 1.$$

As such, the company (one share) value obtained using this multiplier will be calculated using the following formula:

$$P = PEG \times E \times Expected\ growth\ rate.$$

At the same time, as shown by the studies published in [11], the average *PEG* multiplier for technology companies is higher than that for non-tech companies.

There is a foreign practice of using this multiplier by analysts of the stock market for determining the prospects for changes in the value of shares. At the same time, the *PEG* multiplier is found for firms in the same sector, and then the obtained values are compared. Firms with lower *PEG* multipliers are usually considered undervalued even if the growth rates of comparable firms differ, which is not entirely correct. The use of this multiplier has greater reliability for assessing the undervaluing/overvaluing of firms when growth rates of counterparts are also comparable.

The use of companies with different growth rates as counterparts can lead to the following problems [7]:

- relationship between the growth and the *PEG* multiplier is unstable. First, when the growth rates increase, the multiplier decreases, but this relationship changes to the opposite at a certain point. Firms with very low and very high growth rates will have higher *PEG* values than those with average growth rates;
- firms with more significant risk will have lower *PEG* values and seem more undervalued than firms with lower risk, because *PEG* multipliers decrease when the firm risk grows; and
- firms with lower return on equity will have lower *PEG* values and seem more undervalued than firms with high return on equity and higher payout ratio. Another way to use multipliers in practice is the so-called multipliers of future profits. For example, in the valuation of a newly established telecom company, the value can be found based on the company's future forecast earnings in five years (conditionally $S = 5$ bln rub.) and the current value of the Price/Earnings multiplier for the companies in the industry (conditionally $P/S = 0.7$). In this case, the value of the company in five years will be $V_{in\ 5\ years} = S \times P/S = 5\ bln\ rub. \times 0.7 = 3.5\ bln\ rub.$ As such, the current value of the company can be found based on the obtained value, adjusted by the discount at the rate of return on equity of the company under valuation.

Overall, a review of the above methods for the market valuation of the fastest-growing companies using multipliers suggests that there is a wide range of tools for finding the company's market value in the comparative approach, taking the expected accelerated growth into account.



C. Modification of the basic calculation parameters in the income-based approach

The traditional principles of forecasting revenues, costs, and profitability of the company in the long term should be changed to implement the income-based approach. In case when the company's revenue has doubled in recent years, the appraiser cannot apply the current rate of the revenue growth to the entire forecast and post-forecast period. In this case, a gradual slowdown in the revenue growth to a stable average market level will be the most relevant version of the forecast. As such, the forecast should not be limited to several years; a forecast for 7 – 10 years or more is required. In the revenue forecast, its growth rate in the first forecast years remains as high as at the date of valuation, but then gradually decreases in the subsequent years and achieves stable growth rates at the level of long-term inflation or at the level of the industry growth rates. An appraiser should explore the general growth in the industry and the barriers to the market for new companies. The higher is the growth rate in the industry, the longer it will take the company under valuation to achieve a high growth rate. The likelihood of a high growth rate increases over a long period if a sustainable competitive advantage is available.

The interrelation of such parameters as expected growth, the company's need for reinvestment, and the profitability of capital should be taken into account in the forecast preparation. For example, as the growth rate slows down, the return on equity also falls, and the dividend payout ratio grows.

The concept of an unlimited lifetime of a company after the completion of the forecast period used as a basis for traditional companies' valuation should also be tested for attainability for the fastest-growing companies. In this case, the survival rate of the newly created fastest-growing companies in the long term should be taken into account.

There are three models of the company cash flow formation:

1. Model of zero growth,
2. Model of constant growth (Gordon model), and
3. Model of variable growth.

Risk and uncertainty are specifics of the fastest-growing firms and the formation of the innovative project value.

The authors propose to use a three-tier growth model that would be suitable for the valuation of the fastest-growing companies with due consideration for their specifics. The idea behind the three-tier model is the following: growth rates are high (rapid growth is observed) at the initial stage and phases of rapid expansion and rapid growth, after which growth rates fall in the phase of mature growth and stabilize in the terminal period. In other words, the three-tier model includes three stages: the initial phase, the transition phase, and the period of stable growth.

The formula of the three-tier model can be represented as follows:

$$V_{gc} = \sum_{i=1}^n \frac{CF_i}{(1+r_1)^i} + \sum_{n=1}^m \frac{CF_n}{(1+r_2)^n} + \frac{V_{term}}{(1+r_2)^m} \quad (1)$$

where

V_{gc} is the value of the fastest-growing company based on a three-tier growth model;

CF_i is the cash flows in the initial stage and phases of rapid expansion and rapid growth;

CF_n is the cash flows in the phase of mature growth;

r_1 is the discount rate at the initial stage and phases of rapid expansion and rapid growth (this rate is comparable to venture projects/start-ups);

r_2 is the discount rate at the phase of mature growth and the terminal stage (this rate is used for the current business of a mature company);

V_{term} is the terminal value of the business;

i is the period of the initial stage and phases of rapid expansion and rapid growth (until moment n), in years;

n is the period of the mature growth phase (until moment m), in years; and

m is the number of periods of the mature growth phase, in years.

According to the earlier research [7], only 44% of the US companies founded in 1998 lived for more than four years, and only 31% of the companies lived for seven years. Survival also depends on the industry where the company operates. This is why additional studies of the companies in the industry are required to substantiate the probability of the company's survival [12].

In a summarized form, the market value of the company can be found considering the survival rate as follows:

$$V = p_s \times V_{gc} + (1 - p_s) \times V_l \quad (2)$$

where

V is the value of the fastest-growing company considering the survival rate;

V_{gc} is the value of the fastest-growing company based on a three-tier growth model;

p_s is the probability of the company's survival as operating; and

V_l is the liquidation value of the company.

The calculation of the discount rate requires special attention in the valuation using the income-based approach [13], as it is influenced by the following factors:

- young firms are more vulnerable to macroeconomic risk, and therefore their beta is higher;
- lack of diversification increases the risks of a particular project; and
- yield is a matter of negotiations between the investor and the idea creator and depends on the negotiation leverage of the parties.

All of this should be considered when calculating the rate of return for equity and requires a substantiation for each of the calculation parameters.

As such, the application of the income-based approach to valuation of the fastest-growing companies is very promising if the peculiarities of the companies under consideration are taken into account in the calculations.



IV. DISCUSSION

It can be summarized that the valuation of the fastest-growing companies in the near future may take a significant place in the market for valuation services. In the opinion of the authors, the method for valuation of the fastest-growing companies can be separated as a specific area of research that requires the development of new valuation methods and standards.

Such valuation requires a thorough study of the input calculation parameters, a detailed analysis of the industry and external factors that influence the company. A key task in the valuation is to determine the life cycle stage the evaluated company is at, because methods and principles of valuation vary at different stages. Taking different stages of growth into account allows to select valuation methods that will be most reliable for the business under consideration at the valuation date. It can be summarized that the valuation of the fastest-growing companies in the near future may take a significant place in the market for valuation services. In the opinion of the authors, the method for valuation of the fastest-growing companies can be separated as a specific area of research that requires the development of new valuation methods and standards.

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V. CONCLUSION

The conducted review of the methods for valuation of the fastest-growing companies leads to the following conclusions:

- the fastest-growing companies should be evaluated by building various scenarios for the company operation in the future. The current parameters of operation throughout the industry the evaluated company operates in should be analyzed, and the industry average indicators should be compared with the indicators of the evaluated entity to coordinate these scenarios;
- if different multipliers for valuation are used within the comparative approach, the prospects for the future growth of the evaluated company should be taken into account in comparison with the growth prospects of its counterparts. The expected growth rate may significantly influence the deal values in this case and therefore must be taken into account in the calculations; and
- cash flows of the fastest-growing company cannot be predicted in accordance with the method used for traditional companies; the specifics of the rate of change in cash flows and the percentage of survival must be taken into account; specific risks for business and other factors directly influencing the market value must be reflected.

Overall, despite all the complexity and uncertainty of the valuation of the fastest-growing companies, there are tools available for substantiation of the calculations made by the

appraiser and obtaining reliable results.

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