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Determinants of CEO Investment Horizon. A Literature Review

Dmitry Podukhovich
Researcher, Corporate Finance Center, School of Finance, National Research University Higher School of Economics, Moscow, Russia,
dpoduhovich@hse.ru, ORCID

Abstract

This paper conducts a comprehensive literature review of the factors influencing the emergence of the CEO investment horizon problem – a preference for short-term investments over long-term ones. The root cause of this CEO issue, as indicated in existing literature, is often attributed to the CEO's personal risk attitude, shaped by factors like age, tenure, and cultural background.

Numerous sources contributing to the short-term investment problem in public companies are described in the current academic literature. Prominent among these determinants are the challenges of quarterly reporting, the association of corporate performance with short-term metrics, market pressures, and the company's specific risk profile. A study by McKinsey & Company, focused on the short horizon problem, demonstrates that companies inclined toward short-term investments exhibit weaker fundamentals and performance. The consulting firm Ernst & Young has introduced the Long-term Orientation Index, offering a basis for cross-country comparison of decision horizons. In 2010, Antia and colleagues introduced a metric for measuring CEO decision horizons, which relies on CEO personal characteristics. Despite these efforts, a comprehensive literature review addressing the specificity of the CEO investment horizon problem and its distinctions from the broader corporate investment horizon problem has been absent.

This paper not only investigates the initial empirical exploration of the short investment horizon problem but also raises questions about its cross-country manifestations, its potential correlation with economic crises, and the relevant personal traits of CEOs for its study. Finally, the paper proposes various strategies to mitigate the CEO investment horizon problem within companies.

Keywords: CEO investment horizon, corporate short-termism, CEO horizon problem, CEO behavioral characteristics, behavioral corporate finance

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Anybody can manage short. Anybody can manage long.
Balancing those two things is what management is.

Jack Welch, CEO of General Electric

Introduction

Balance between short-term and long-term planning is an integral part of growth of a public company's market value [1]. Jack Welch quoted in the epigraph to the present paper may have understood it like no other because in the 20 years of his CEO tenure at General Electric his company's capitalization increased by over 2,800%[1].

Some decisions we make provide instant results, but there are decisions that take months and sometimes years to show an observable advantageous effect. Modelling of the decision-making process gets more complicated when actions that result in long-term benefits force managers to disregard short-term results [2]. The converse statement is also true. However, it is more natural for a human to neglect a long-term perspective for the sake of an instant benefit. This is the way decision-making works: due to a fundamental aversion to excessive risk by the cognitive part of our mind we are afraid of a high degree of uncertainty and focus on short-term planning horizons more often than on long-term ones [3].

CEOs may be considered economic operators whose decision-taking enables companies to exist in the market environment, provide capitalization growth as well as maintain and improve their competitive advantages [4]. Therefore, in corporate finance when we consider CEOs in particular, choosing of short-term investment decisions was called, apart from short-termism, the CEO investment horizon problem [5]. Examples of manifestation of the CEO horizon problem are as follows: pursuit of short-term quarterly performance (quarterly reporting problem) [6], especially EPS; distribution of profit to shareholders for dividend payout to the detriment of long-term projects; full or partial abandonment of R&D investments [7] and indisposition to follow innovation trends due to a high degree of their uncertainty [8].

Up to a point one may believe that the CEO horizon problem is a specific problem of several companies, and to solve it one merely has to refrain from interfering and let the invisible hand of the market do its job [9]. However, it is not true. The horizon problem pertains not just to CEOs of companies and shareholders [10]. It affects the interests of all stakeholders [11]. When the investment horizon problem arises in one large company, it subsequently manifests itself in the capital market and, which is even more destructive, at the macroeconomic level – the level of the government. In particular, the pursuit of short-term benefit by the largest banks in 2007 and the global crisis which followed it manifested obvious features of short-termism, and the CEO investment horizon problem is rooted in it. This once again emphasizes the relevance of the issue considered in the present paper.

The paper is a review of the CEO investment horizon problem, based on an analysis of a range of academic sources and business literature. It answers the following questions: where does the study of the CEO investment horizon problem start; how is the insufficiently explored CEO investment horizon problem related to the well-known short-termism problem; how is the CEO investment horizon formed, measured and how can it influence decision-taking in companies; how is culture, through the example of countries, able to influence CEO investment horizons; and finally, what are the ways of solving the horizon problem?

Origin: What Do We Know About the Short-Term Planning Problem in the World?

To ensure the successful growth and improvement in corporate performance, a company needs a steady balance between short-term and long-term investments. However, nowadays the amount of evidence that companies disregard long-term projects is increasing because companies focus a lot on short-term goals. This phenomenon was called "short-termism" across the world. Academic research and study of the largest public companies showed that short-termism results in deterioration of companies' competitivity, an increase in their systemic risk and a decrease in the potential of the whole economy [12]. For example, the study of the short-termism problem conducted by the McKinsey Global Institute showed that companies with strategies focused on a long-term growth in 14 years (since 2001 to 2015) outperformed their competitors in terms of profit by 36%, in terms of revenue – by 47%, market capitalization – by $7 bln. and economic profit growth – by 81%[2].

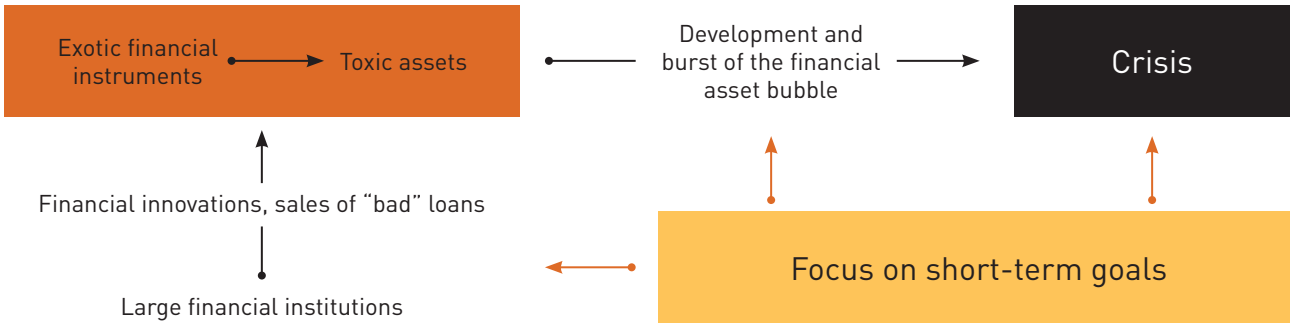
K. Laverty in the paper Managerial Myopia or Systemic Short-Termism? [13] points out the difference between the terms "managerial myopia" and "corporate short-termism," which is of great importance for understanding the approaches to the study of the problem under consideration. For Laverty *corporate short-termism* is a systemic characteristic of an organization that overestimates short-term benefits and underestimates long-term consequences, while *managerial myopia* is a characteristic of the adopted decision when short-term benefits are overestimated and long-term consequences – underestimated. Cultural characteristics, organizational and routine procedures taking place in the company may be factors of short-termism, while the scientist speaking of the market pressure on managers and erratic investment strategies are myopia-related factors. Thus, the optimal temporary decisions for managers become suboptimal for the company.

It is remarkable that English scientists have been discussing the short-termism problem since the late XIX – early XX centuries, since the time of domination of political economics.

[1] GE (2014). Past Leaders, John F. Welch, Jr., Chairman & CEO 1981–2001. URL: http://www.ge.com/about-us/leadership/profiles/john-f-welch-jr

[2] URL: https://www.mckinsey.com/~/media/mckinsey/featured%20insights/long%20term%20capitalism/where%20companies%20with%20a%20long%20term%20view%20outperform%20their%20peers/mgi-measuring-the-economic-impact-of-short-termism.ashx

Figure 1. Short-termism and financial crisis



Source: Study by EY.

W. Jevons wrote: "The untutored savage, like the child, is wholly occupied with the pleasures and the troubles of the moment; the morrow is dimly felt; the limit of his horizon is but a few days off" [14]. A Marshall believed that economic operators act "like the children who pick the plums out of their pudding to eat them at once" [15]. A.C. Pigou asserted that "our telescopic faculty is defective, and we see future pleasures on a diminished scale" [16]. J.M. Keynes when performing his own speculations pointed out that excessive short-term strategies are "antisocial, destructive of confidence, and incompatible with the working of the economic system" [17]. A little later in the post-war period, B. Graham, a teacher of W. Buffett and supporter of value investing [18], was not the only one in America to criticize short-termism. Buffett himself, the investment guru, was of the same opinion. In his 1987 letter to shareholders he quoted B. Graham: "In the short run, the market is a voting machine but in the long run, it is a weighing machine"[3].

Nevertheless, empirical evidence of the short-termism problem was found only in 1964. P. Neild [19] who published his research later in the scientific journal of the University of Cambridge, was the first in the world to compile a questionnaire intended to verify the short-termism hypothesis. The researcher managed to show that the firms, typically expect a return on their investment as quickly as three-five years, while the lifetime of the equipment that provides this return on investment is on average 10 times longer. Soon, using the example of American and British capital markets, which are considered to be the most developed capital markets in the world. evidence was found. It stated that managers were short-sighted in terms of investments, especially those related to advanced technologies, which may pay off only in the long term [20]. It is customary to emphasize in literature a combination of factors that results in managerial short-termism when decisions are made [21]. Different sources distinguish the following factors: commitment of popular managerial methods to short-termism [22], managers' eagerness to build their reputation as soon as possible [23], peculiarities of the national [24] and corporate culture [25].

In order to prove that short-sighted managerial decisions have a negative impact on companies, one may define the following string of factors. First, in 1982 T.K. Lee indicated that horizon of managerial decisions decreased, and investments of companies in R&D were also reduced [26]. Second, in 1985 M.C. Jensen and C.W. Smith reached the conclusion that managers' decision horizons were shorter than those of investors [27]. Third, after the study of managerial myopia in his model, J.C. Stein reveals that managers are always more concerned with stock value at a certain moment [28]. Fourth, it was shown that commitment of corporate managers was limited to their tenure in the company, which started decreasing at the beginning of 2000s [29]. Finally, fifth, M. Antia et al. showed that in the companies with the CEOs who prefer short decision horizons agency costs were higher, the assets' market value was lower and information risk was higher [30].

Finally, the short-termism problem played a key role in causing the global financial crisis of 2007 (Figure 1). Everything started when large US financial institutions aimed to sell as many loans as possible as fast as feasible [12]. The idea was that banks could issue mortgage loans even to those unable to repay them. So called NINJA ("no income, no job and no assets") loans appeared in the banking market. Low interest was established for the issued loans and the loans themselves were gathered in a rather complex financial instrument intended to distribute risk between the financial market participants. The participants were interested in the number of issued loans rather than their quality because the number influenced the resulting bonuses. Therefore, a strong demand for mortgage loans was created, and a bubble formed as a result of a rise in prices of real estate, which, it seemed, would never stop. And then the consequences of short-termism in decision-making became apparent: exotic financial instruments fell short of expectations and were recognized as "toxic assets". A need for an urgent order in banks' balance-sheets, where "toxic assets" prevailed, produced a negative impact on non-financial companies because the majority of them failed to get financial support to continue operations. As a consequence, the crisis spread beyond the boundaries of the USA and affected the whole world.

[3] To the Shareholders of Berkshire Hathaway Inc. URL: https://www.berkshirehathaway.com/letters/1987.html

From Short-Termism in Companies to CEO Investment Decision Horizon

As stated before, people's preference for shorter investment periods manifested itself in economics and finance simultaneously with the beginning of study of the behavioral component of decision-making – since the times of political economics. Nevertheless, there is a key difference between the short-termism problem and the investment horizon problem, which should be discussed here. The studies in this field put an emphasis on the factors that cause short-termism without showing how it influences performance indicators and company's operations [30]. For example, M.E. Porter [31] provides evidence that short-termism is characteristic of the companies that invest little in capital expenditures. R. Henderson [32] indicates insufficient investments in new technology, while R.E. Hoskisson et al. [33] shows that the same happens in case of insufficient investments in R&D. However, the investment horizon problem seems understudied against this background. It happened because of the absence of an organized source of summary information or a unified database containing the cases of public companies, whose analog is presented by Bloomberg for financial data or by CapitalIQ for the data on CEO and boards of directors. While in the existing literature sufficient attention is put on short-termism and the degree of exploration excludes any doubt of its importance, the investment horizon problem, no less the CEO investment horizon problem, is just becoming the subject of frequent discussions, which makes it interesting to consider in the present paper.

First, we are going to give the definition of investment horizon provided by modern academic papers. Nowadays *investment horizon* is understood as the forecast period limited in length, within which it is possible to plan investments in the projects implemented by the company [20]. Investment horizon is the key component of the strategy of any company, which constitutes daily behavioral procedures of decision-making. It should be noted that in particular these decisions allow companies to augment income and competitiveness [34].

Second, we distinguish the CEO investment horizon problem as a special case of the investment horizon problem. According to the upper echelons theory, all decisions made by companies may be reduced to decisions made by the CEO. Putting the CEO at the forefront, we are going to define the role of the human factor in CEO's decision-making to subsequently consider the problem from the viewpoint of CEO's personal traits. In order to solve this problem, we identify two features: personal traits and the cultural background.

Third, we point out the prerequisites of modern scientific theories from the sphere of behavioral corporate finance, which explain the nature of CEOs' decision-making. These prerequisites are as follows: some prerequisites from the theories preceding behavioral economics; prerequisites of the prospect theory; and prerequisites of the behavioral agency theory.

The *agency model* of interaction between managers (agents) and company owners (principals) offered by the Nobel prize winners M. Jensen and W. Meckling [35] is the classical theory which is the first in the study of corporate finance. In the agency theory the key problem is that of opportunistic behavior of managers who are better informed about the state of things in the company than shareholders. This problem is solved by means of incentive mechanisms for managers offered by the owners, which make the managers' preference for short-term and private benefits disadvantageous [36].

The second theory that approximates to behavioral models in corporate finance is the prospect theory of Kahneman and Tversky. In this theory decision-making is considered as a choice made by an economic operator in an uncertain environment, and it affects the economic operator's personal wealth or the expected value growth. The prospect theory provides us with the loss aversion concept, whose extent is individual for each operator and depends on his view of wealth: for some people, loss of $ 1,000 has a serious impact on their wealth, while others won't even notice such an amount.

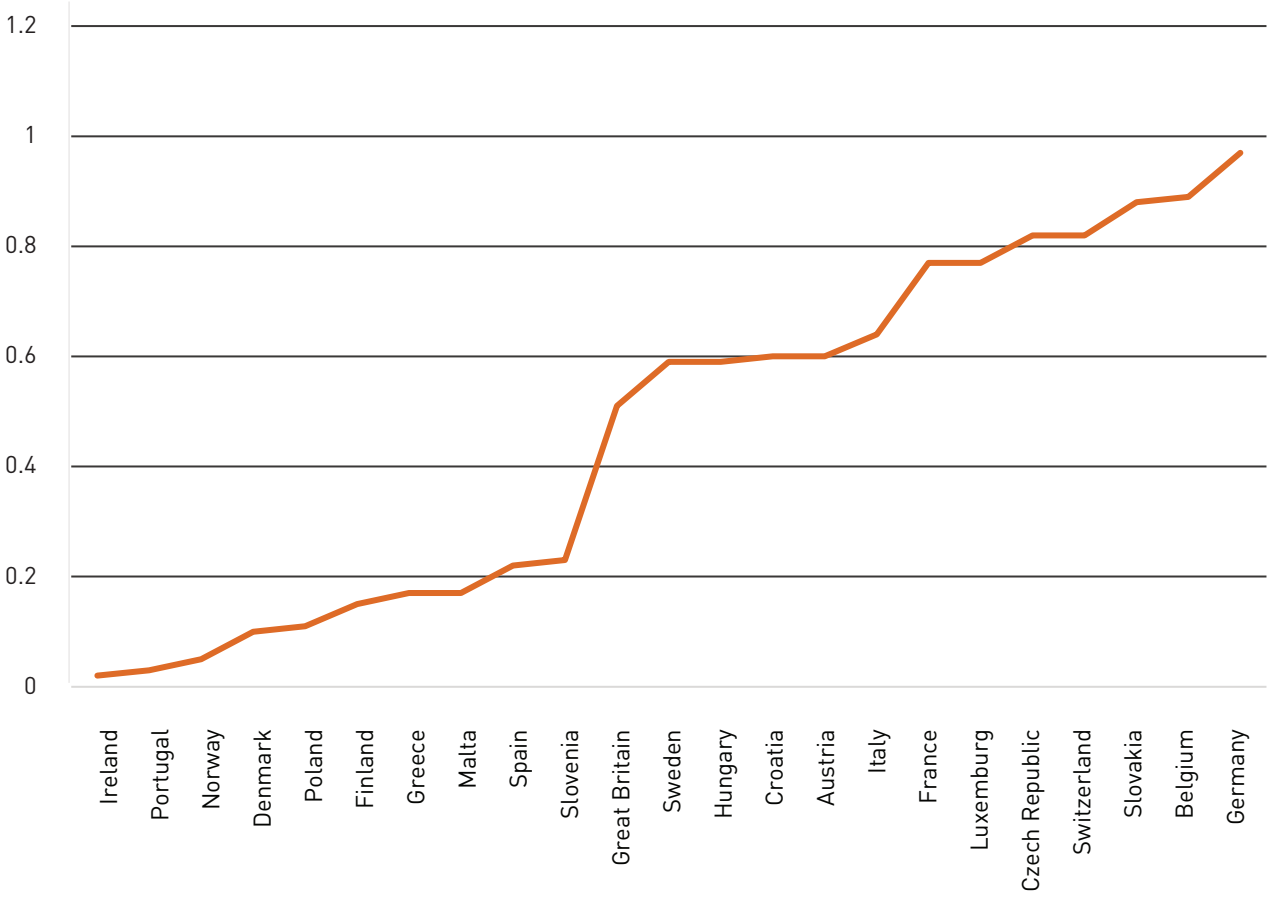
The third theory that determines the behavioral principles of CEO's decision-making is the concept of behavioral agency model. The behavioral agency theory differs from the traditional agency theory in three main aspects, which arise from the prerequisites presented in Table 1.

Table 1. Prerequisites of CEO's behavior within the traditional agency model and behavioral agency model

Prerequisite	CEO in the traditional agency model	CEO in the behavioral agency model
Shareholders' attitude to risk	Shareholders are risk-neutral	Shareholders are risk-neutral or inclined to assume excess risks
CEO's utility function	CEO's utility depends positively on monetary incentive and depends negatively on made efforts	CEO's utility depends positively on monetary incentive and depends negatively on made efforts but with limitations related to rationality, motivation, losses, risk, uncertainty and time preferences

Prerequisite	CEO in the traditional agency model	CEO in the behavioral agency model
CEO rationality	CEOs make rational investment and strategic decisions	CEOs are limited by the obtained information, thus they are rational to a limited extent in their decisions
CEO motivation	Any motivation unrelated to material benefit is absent	The motivation is intrinsic and extrinsic. The two motivation types are not additive and not independent of each other.
CEO's attitude to risk	CEOs demonstrate risk aversion	CEOs demonstrate loss aversion
CEO's attitude to time	The function of CEO time preferences is calculated on the basis of the exponential discount factor	The function of CEO time preferences is calculated on the basis of the hyperbolic discount factor

Figure 2. Empirical function of cumulative distribution of the long-term orientation index



Source: Calculations of EY based on the data by SPIQ, Thomson Reuters and Hofstede (2010).

The behavioral agency theory asserts that the model of the CEO who makes decisions within the traditional agency theory is oversimplified and needs rethinking; the development of a new model that implies limited rationality (instead of complete rationality) acknowledges the importance of human capital of agents (considering human capital as the function of abilities and work motivation). Prerequisites of this theory indicate that when managers are driven by the incentives that relate them to corporate equity, they start using heuristics in strategic decision-making. As a result of use of such heuristics of a completely psychological nature, managers try to change their own wealth by means of influence on corporate business processes.

Thus, the shift from the classical agency model to the behavioral one is contingent on a chain of the following three prerequisites: 1) agents make decisions in an uncertain environment and their choice may have both a positive and negative impact on their own wealth; 2) agents evaluate the expected consequences of their decisions in different ways;

3) agents are short-sighted in their preferences related to loss aversion [37]. Hence, we may say that now we have a set of prerequisites that allows to analyze various CEO investment decisions depending on the personal traits of such CEOs and their cultural background.

Cultural Specifics of CEO Decision-Making

Using the example of Long-Term Orientation Index of Hofstede. which was compiled using the sample of European countries, it is possible to observe how planning depends on culture. As we see in the cumulative distribution schedule (Figure 2) constructed by experts from Ernst and Young, the longest terms are characteristic of Germany, Switzerland, the Netherlands and France, while the shortest ones (short-termism in decision-making) are intrinsic to Ireland, Portugal, Greece, Finland and Poland. Consequently, we may conclude that decision horizons may differ more than tenfold even in geographically close countries.

Nowadays studies in finance examine with increasing frequency the fact that culture is capable of explaining the differences in economic operators' decision-making [38]. However, first, we have to define what is currently understood by culture. For example, G. Hofstede, one of the most prominent researchers in this field, understands culture as "the collective programming of the mind that distinguishes the members of one group or category of people from others" [39, p. 25]. The economist L. Guiso, in his turn, defines culture as "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation" [40]. Professor of the University of Chicago L. Zingales [40] subsequently notes that cultural constructs represented as beliefs and values may, while transforming into individual preferences, be used in behavioral models. Hence, considering the role of cultural specifics in CEO decision-making within the horizon problem may produce results significant for the research [41]. Nevertheless, when considering the CEO horizon problem, it is also highly important to distinguish between national and corporate culture [42–43]. The idea is that national culture is a broader concept based on the nation's values, while corporate culture is based on organizational values of companies formed when they implement certain organizational practices.

Any long-term planning or long-term decision horizon turns out to be risk-bearing. Therefore, we start considering the reasons for the differences between cultural specifics in decision-making in behavioral finance from the research results of M. Statman. Statman titled the principal part of his with comparing people's behavior in the USA and Estonia; then he confessed that "one voice in me said that people are the same all over the world, similar not only in physical features but also in cognition and emotions" [44]. However, this myth was dispelled after he heard two men on a train talking. One of them (from Israel) told the other that he was not planning to support his daughter after the college. Statman was astonished because he knew that in that country it was the other way around, and parents supported children long after they graduated from educational institutions and, probably, that astonishment led him to the empirical results described in his paper. Polls of over 4,000 respondents from 22 countries showed that Americans were ready to risk and switch their current job for a similar one in order to increase their life income (the probability was previously established at 50%) only if the amount of the annual income increase exceeded the amount for which the income could decrease 5 times. It is also remarkable that Chinese and Vietnamese turned out to be most prone to risk. They were ready to change employment if the expected life income was only 3 times more than the possible loss. Even more remarkable is the fact that people from Switzerland and Germany turned out to be the least inclined to risk. In the research presented at the beginning of this section and conducted by Ernst and Young they were long-termists, hence, most risk-prone. These contradictions are quite natural and depend on the methodology applied in the research.

Let us consider and compare management approaches in Russia and China. Russian management practices are often different from the western ones. As noted by Manfred F. Kets de Vries, professor of the business school INSEAD, "an autocratic managerial style is characteristic of Russian managers, they try to impose total control, overreact to uncertainty and have their own way in coping with contemporary challenges"[4]. Ichak Adizes[5] says almost the same about Russian management, adding that the autocratic style stems from Russian culture and history where a manager, leader, seeks and will fight whoever challenges their authority, otherwise their power will be reduced. As a consequence, in such a cultural environment a CEO will be less inclined to take risks and implement changes in the company. It is natural for Russian CEOs to appreciate stability a lot and prefer short-term prospects. Managing director & senior partner at BCG Vladislav Boutenko says the same about the Russian society in general: "According to OECD.stat in Russia life insurance, which is an indicator of planning horizon, is obtained 3.5–5.5 times less than in the OECD countries and China. It means that Russians live right here, right now"[6].

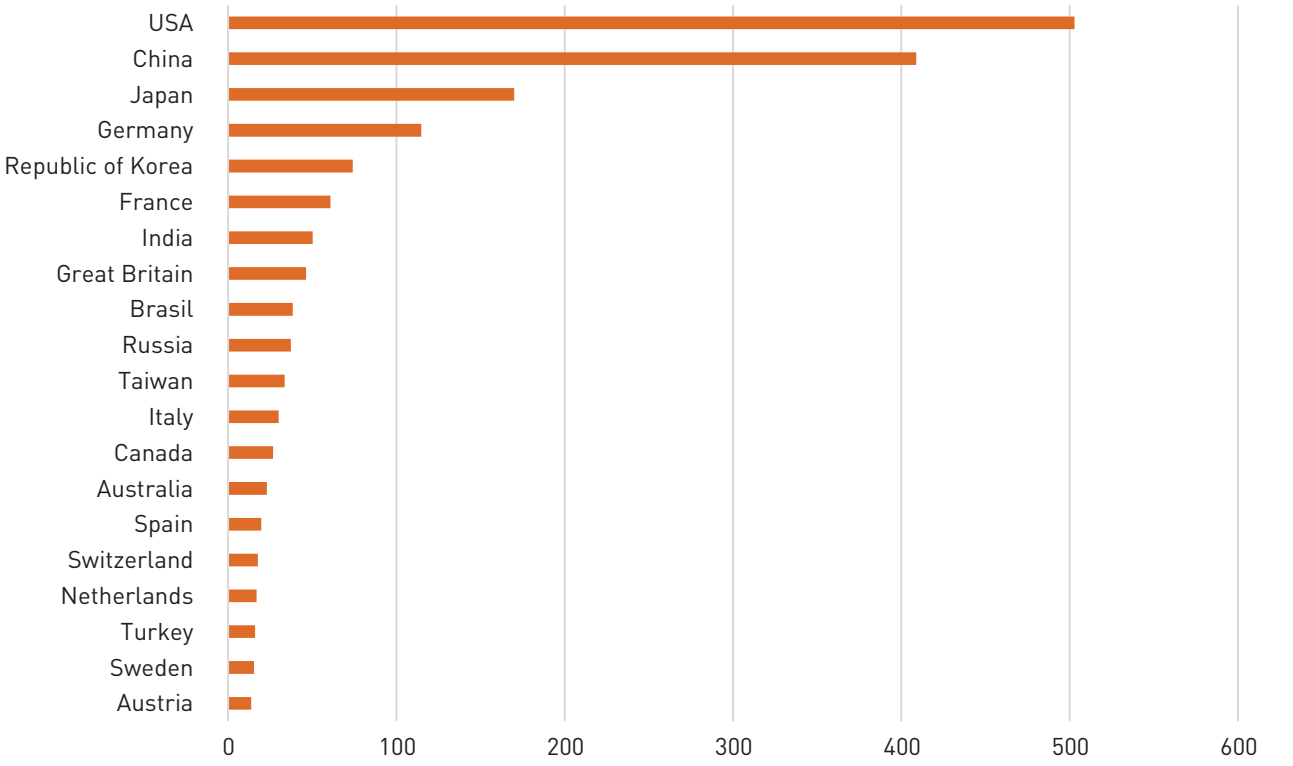
As for China, management practices there differ from both western and Russian practices. Nowadays in China, they take it for granted that the future lies in innovations. After adopting technology from across the globe Chinese managed to get rid of poverty and develop their own world-class technology innovations.

[4] URL: https://hbr-russia.ru/management/upravlenie-personalom/792111/

[5] URL: https://hbr-russia.ru/management/upravlenie-personalom/a11479/

[6] URL: https://hbr-russia.ru/management/strategiya/a24991

Figure 3. List of leading countries in terms of internal research and development costs ($ bln, calculated with regard for the purchasing power parity of national currencies)



Today CEOs of Chinese companies are the leaders who operate in the sphere of artificial intelligence, biotechnology and space exploration; they created Alibaba and Tencent. At the same time, R. Mitter, professor of history and politics of modern China at the University of Oxford, says that authoritarianism still prevails in Chinese culture, but this does not change the fact of innovations[7]. Moreover, the Chinese approach to decision-making and risk perception has little in common with the western perspective. A high volatility of the capital market made Chinese top managers disregard the long-term perspective, therefore, the farther their decision horizon, the more apprehensive they are about risks (another contradiction: but this time it contradicts the results of M. Statman's research about risk proneness). It manifests itself in the investment style. According to E. Johnson, a senior lecturer at the MIT School of Management, 81% of Chinese managers reduce the long-term value of their companies by investing and adjusting blocks of stocks[8]. This indicator is higher not just in comparison to any western country (in the USA it equals 53%), but also in comparison to the neighbouring Hong Kong, whose population is made up of the same nationality. Such conclusions on the influence of culture on investment preferences and horizons are frequently true for CEOs as well.

Thus, in spite of similarity in CEO authoritarianism, CEO attitude to risk, aversion to long-term investment horizons and disposition towards living for today, Russia and China differ rather considerably from each other if we compare these countries from the cultural component perspective. The amount of investment of various countries in research and development may be traced in the same way [45]. Based on the findings of the research conducted in the NRU HSE,[9] in 2016 Russia is the 10th among leaders in this indicator. Russia is behind the USA, which occupy the first position ($ 502.9 bln), almost by a factor of 13 and behind China (the 2nd, $ 408.8 bln) – by a factor of 11 (Figure 3).

In conclusion we would like to state an intriguing difference between CEO remuneration across the globe[10]. According to data for 2014, the lowest remuneration is in Israel, and constitutes the equivalent of 44 salaries of a worker, in Great Britain a CEO earns on average 84 times more; in Australia – 93 times; in Germany – 147 times; finally, in the USA – 354 times. There may be numerous determinants of this difference, from economic to political ones, but, in our opinion, cultural determinants have an important share in this case.

[7] URL: https://hbr-russia.ru/biznes-i-obshchestvo/ekonomika/870324/

[8] URL: https://hbr-russia.ru/biznes-i-obshchestvo/ekonomika/870324/

[9] URL: https://iq.hse.ru/news/209276310.html

[10] URL: https://hbr-russia.ru/biznes-i-obshchestvo/fenomeny/p17835/

Age, Tenure and CEO Investment Horizon

Today one of the principal problems faced by researchers studying CEO decision-making is the unavailability of a sufficient amount of data regarding personal traits to describe a stable sample when the results are transferred to the parent population [46]. D. Hambrik, the author of the upper echelons theory, asserts that it is very difficult to obtain such data because "it is necessary to talk to a lot of directors who, as a rule, are too busy to participate in a poll, experiment or in-depth interview" [47, p. 337]. For this reason, it is determined by history that since it is impossible to measure CEO personal traits (overconfidence, leadership, narcissism etc.) directly, researchers rely on measuring the demographic characteristics [48], which are more easily available. It may comprise age, CEO tenure, professional experience and education, although this list is not exhaustive. In this way, one of the few current indicators measuring the CEO decision-making investment horizon emerged. It consists of two indicators: age and tenure, and was introduced for the first time in 2010 [27]. More on this below. At the same time, we should point out that the above-described approach of financial experts to opening the "black box" of the organization is called in question by psychologists and sociologists who are more experienced in personality evaluation [49].

CEO retirement is one of the most commonly analyzed milestones in his careerv. For example, the research by D. Kahneman and D. Lovallo [50] demonstrates that individuals are inclined to avoid risk more when the expected irreversibility of the consequences of such decision is closer in time. Risk-generating decisions may jeopardize a company's operations and CEO reputation, especially in the last years of tenure. The burden of failure turns out to be very heavy for a CEO because the most of the blame rests with him. Thus, the research by B. Eckbo and K. Thorburn showed that 32% of liquidated trusts blamed CEO's incompetence. Besides, CEOs value their reputation because after retirement some of them continue their career as directors of other companies. J. Brickley, J. Linck and J. Coles [52] revealed that 8% of CEOs continue to cooperate with their firm for two or three years after retirement. Since degradation of corporate performance indicators may damage the reputation that CEO values so much and lessen the likelihood of CEO's getting on the board of directors after retirement, we may assume that CEO investment horizon shortens because the CEO tries to minimize risks when making decisions, guarding his reputation, and thus choosing not to invest in long-term projects [53].

Apparent and unapparent, explored and unexplored personality factors define the formation of CEO investment horizon. The apparent and explored factors are age and tenure, unapparent and unexplored – CEO power. Education, professional experience, narcissism, optimism, reputation and CEO success are also unexplored factors. In the present paper we discuss the first group of factors – apparent and well-explored – because they allow to quantitatively demonstrate how CEO investment horizon influences corporate performance indicators on the basis of statistics and econometric research.

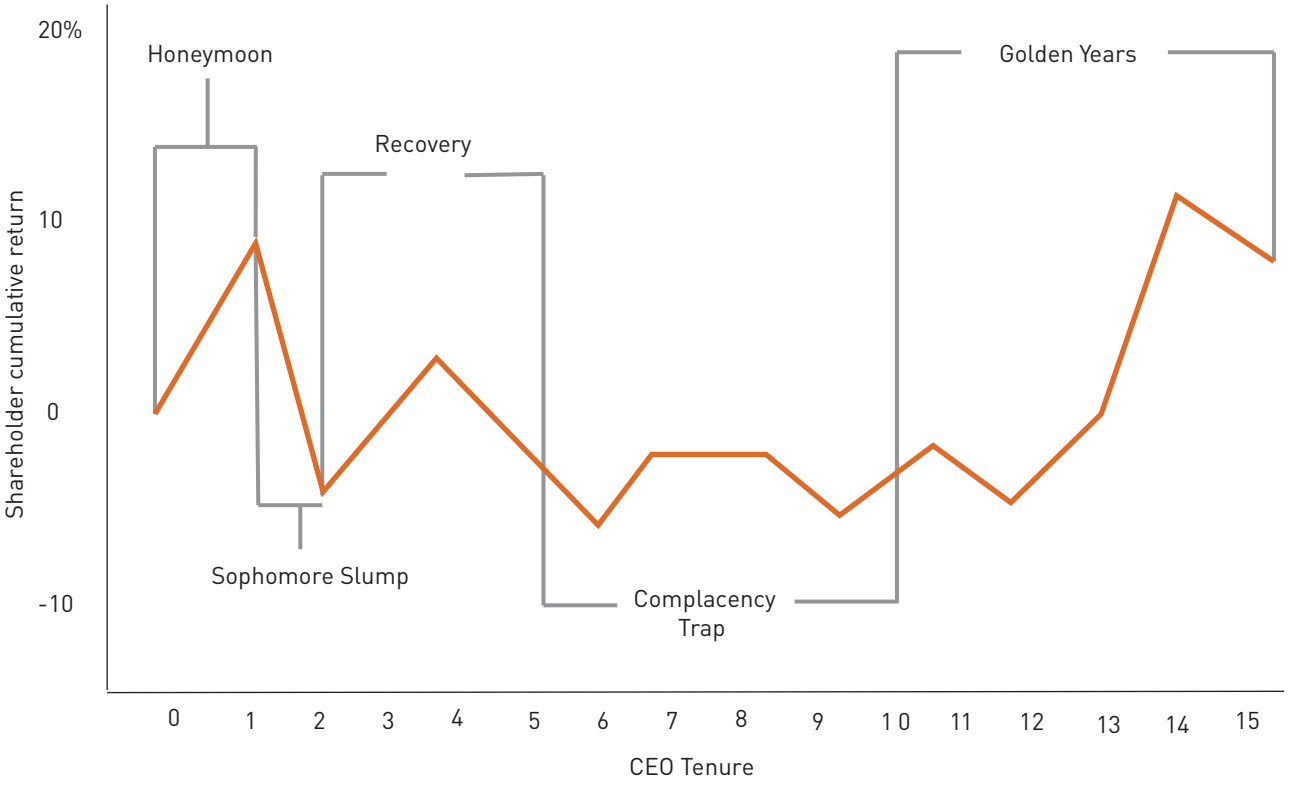
The first considered feature is age. Over the past 20 years, researchers have said a lot about the way in which CEO age may influence their investment preferences [54]. In particular, age (along with tenure) is one of character features that replace or approximate cognitive specific features of decision-making that are difficult to measure. When measuring horizon of this variable the effect of CEO "youth", in fact, is assessed as well as the effect of the number of years left to CEO's retirement. It should be noted that for the first time the term "horizon problem" was used in relation to CEO age and was considered within the context of career horizon [55, p. 198]. While younger CEOs are inclined to implement risk-bearing strategies, older CEOs are less prone to risk due to only this factor. If we add to this assumption the fact that CEO age approximates the retirement age (irrespective of tenure), we may point out with a high degree of confidence that the older the CEO, the shorter their decision horizon should be. Moreover, the CEO will agree to assume additional risks if he expects to get investment pay-off before he retires. In most cases these actions are related to the amount of corporate investments in R&D [56], capital expenditures [56] or international transactions of company acquisition [57].

CEO tenure is the second considered characteristic feature. In 2019 Harvard Business Review compiled a rating of the most efficient CEOs in the world[11]. It is remarkable that on average CEOs from this list have been running their companies for 15 years, which is twice as long as the average tenure of CEOs from S&P 500 (7.2 years). It is also remarkable that on average companies of efficient CEOs adhere to a more aggressive investment policy and riskier strategies. A term "CEO life cycle" was introduced for such directors. It demonstrates rather clearly that even the most successful CEOs suffer setbacks at some point in their career. In order to construct the diagram presented in Figure 4, the researchers studied the results of work of 747 CEOs and conducted 41 in-depth interviews with CEOs and members of the board of directors. The researchers determined three parameters to measure CEO efficiency: total shareholder return adjusted for the country; total shareholder return adjusted for the industry; change of market capitalization in US dollars corrected for inflation. Another interesting result of the research conducted by HBR is the fact that according to the poll "CEOs and members of the board of directors are of different opinion on ideal tenure"[12] CEOs believe that the ideal tenure should be seven years, while the members of the board of directors think that it is 9.5 years. After that period, corporate performance indicators stop growing. However, neither group could indicate the factors on which their opinions are based.

[11] URL: https://hbr-russia.ru/liderstvo/lidery/815146/

[12] URL: https://hbr-russia.ru/liderstvo/lidery/815146/

Figure 4. Five stages of CEO life cycle



Source: J. Citrin, C. Hildebrand, R. Stark (2019) The CEO Life Cycle // Big Ideas. URL: https://big-i.ru/liderstvo/lidery/815146/

If we appeal to empirical scientific research, we may single out the following range of detected factors that are related to CEO tenure. First, this indicator has diminished in the American market from the average value of eight years to four years over the past few years [58]. Second, after analysis of a sample of 1,024 European companies, we may conclude that in Europe this value is lower than in the USA and amounts on average to 3.5 years. Third, according to the most recent data for China, this indicator is almost the same as in Europe and amounts to 3.48 years [3]. Besides, CEOs with little time left until retirement will not invest in long-term assets that do not generate short-term profit [6]. It is common knowledge that the less time the CEO has until retirement, the less the volatility of the market stock value of the company.

Since a lot of attention was given to age and tenure in the past decade, these two indicators became the principal ones for measuring CEO investment horizon. In 2010 M. Antia et al. [29] created a CEO decision horizon indicator and applied it to a sample of companies from S&P 1500. The research began with the assumption that the expected decision horizon of the CEO in question depends on age and expected CEO tenure, which he compares to the same indicators of other CEOs who operate in the same industry. As a result, the researchers derived the following formula:

$$Horizon_{i,t} = (CEOAge_{i,t} - CEOAge_{average} + (CEOTenure_{i,t} - CEOTenure_{average}), \quad (1)$$

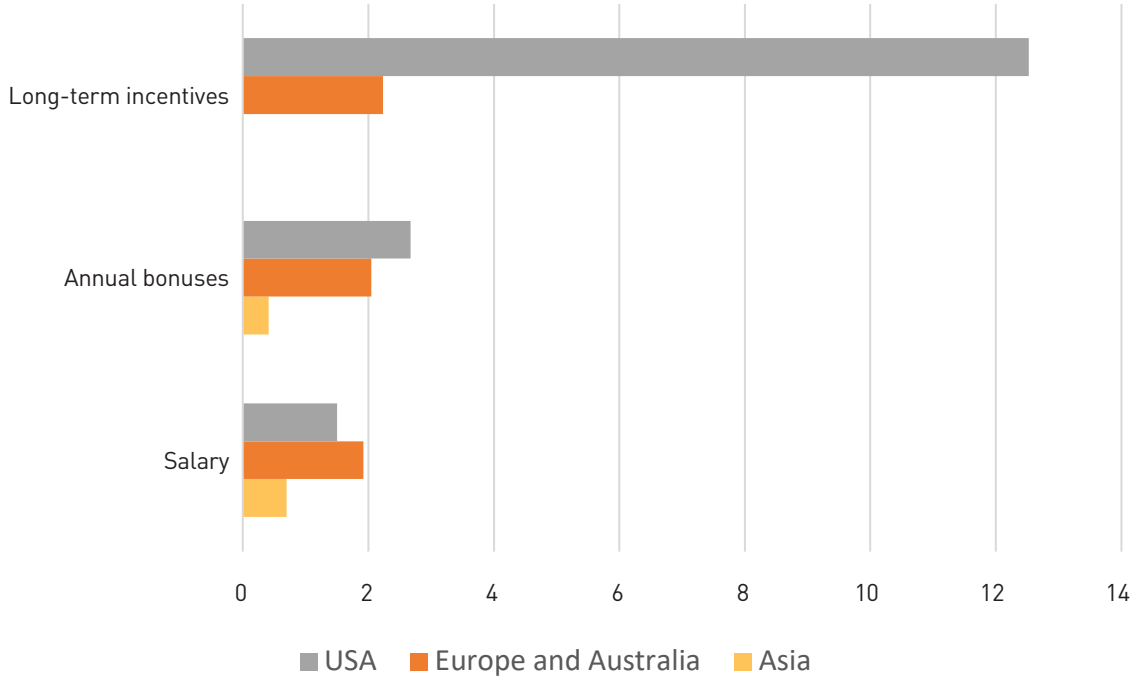
where $CEOTenure_{i,t}$ – CEO tenure in company i in year t; $CEOTenure_{average}$ – industry average value; $CEO\ Age_{i,t}$ – CEO age in company i in year t; $CEO\ Age_{average}$ – industry average value.

On the basis of the study results, researchers arrived at the conclusion that the span of the decision horizon is related positively to financial indicators' growth and depends negatively on information risk and agency costs [59]. Thus, companies with longer investment horizons will have a higher market value and make a good impression on investors. It should be noted that the indicator used in the paper also suits to measure investment horizon. The only difference is the choice of the dependent variable in the economic model: R&D expenses, capital expenditures (*CapEx*) or any other indicator of long-term investment, which manifests growth prospects both for the company's market value and its long-term performance indicators.

Can we Solve the Problem of CEO Short-Term Investment Horizon?

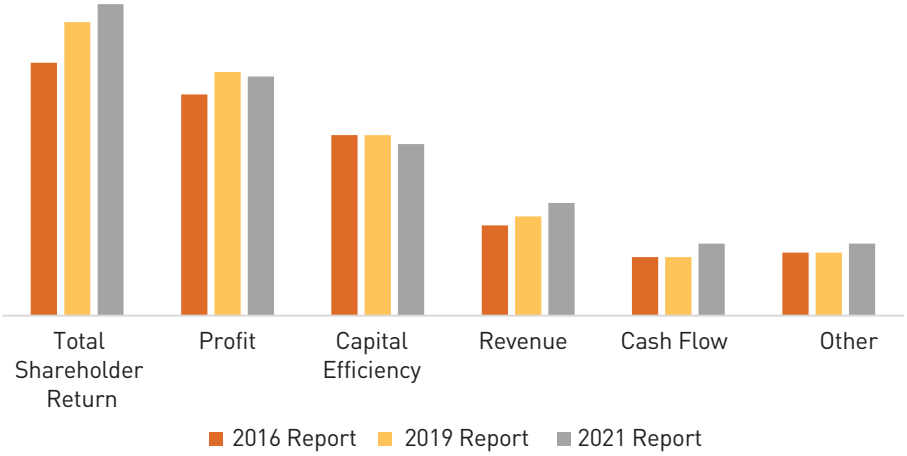
The following quotation from the book Bezonomics by B. Dumaine is dedicated to Jeff Bezos, Amazon founder, who had been its CEO up to 2021: "If everything is to work in two or three years your action spectrum is limited. But if one is ready to wait for seven years one gets a lot more opportunities" [60].

Figure 5. Median amount of total remuneration to CEOs according to regions



Source: B. Groysberg et al. (2021) A New Approach to Calculation of Top Managers' Compensation // Big Ideas. URL: https://big-i.ru/management/operatsionnoe-upravlenie/858464/

Figure 6. Criteria of corporate performance efficiency



Source: FW Cook 2021 Top 250 Report. URL: https://www.fwcook.com/Publications-Events/Research/2021-Top-250-Report/

Who would have thought that Bezos' decision in 2003 to work on a long-term project of creating a cloud environment would make Amazon the owner of the largest cloud platform in the world in 2018? One may assert various things about the CEO investment horizon problem, but at the same time one has to think of the actions to be taken by companies in order to solve this problem. Even more interesting is the question that arises: is it possible to solve this problem at all?

The first and currently most effective way of solving the short-term CEO investment horizon problem involves long-term incentives [61–62]. Examples of such incentives are restricted stock, stock options, stock-appreciation rights, performance shares and phantom equity.[13] In 2018 the American corporate governance consulting company FW Cook together with the British FIT Remuneration Consultants and Hong Kong Pretium Partners Asia Limited carried out global research on compensations for top managers from 250 largest companies. Research results demonstrate that long-term incentives are uncharacteristic of Asian companies at all (mainly because companies are owned and controlled by the government), in Europe

[13] URL: https://hbr.org/2021/01/compensation-packages-that-actually-drive-performance

and Australia long-term incentives amount to 36% of compensation, and the USA holds a record of 75%. The Asian countries also have the lowest median CEO compensation[14] (Figure 5).

The report by FW Cook of 2021 provides examples of other financial and corporate performance indicators to which CEO incentive contracts may be tied[15]. They are: total shareholders' return, EBIT, EBITDA, operating profit, ROE, ROA, ROIC, free cash flows (FCFF) and an individual KPI. Data by FW Cook divides these indicators into five categories represented in Figure 6.

Thus, we may conclude that over the past five years the use of financial metrics still prevails. Shareholders' return is still one of the most frequently used metrics, which was used by 69% of companies (4% more than in 2019 and 13% more than in 2016) in 2021. As a rule, this indicator is used together with other financial and strategic indicators (80% of companies draw a plan for the CEO, which comprises several indicators). Profitability and capital efficiency indicators are the next in popularity. They are applied by 53 and 38% of companies, respectively. It should be noted that one of the advantages of such an incentive system is that companies may adjust long-term indicators depending on the market and economic situation. For example, in 2020 due to the COVID-19 pandemic many companies decided not to take into consideration all the planned indicators in full. The bright side of the crisis consisted in the companies' need to add to their plans the indicators that take into account stakeholder interests to a greater extent than those of shareholders, which is another way of solving the short-term CEO investment horizon problem and which will be described below.

The second possible way to solve the short-term investment horizon problem was offered as a result of a round-table meeting of Business Roundtable in 2019. The association of CEOs of America's leading companies organized another round table, which adopted the Statement on the Purpose of a Corporation. It was signed by over 200 executive officers including the CEOs of Apple, GM, Walmart and BlackRock. The Statement proposes that managers depart from the goal of profit maximization and change the focus to value maximization for stakeholders, i.e., company employees, consumers, suppliers and other parties interested in the company business.

After the adoption of this Statement, Kellogg School of Management immediately convened a round table, where five professors of finance (C. Frydman, R. Jagannathan, R. Korajczyk, J. Maria Liberti and A. Yoon) discussed its possible consequences[16]. The main conclusion made at that meeting that deserves attention from the perspective of the CEO investment horizon problem is that neither the executive officer, nor the board of directors are obliged to maximize shareholder value or company profit, because the current corporations law does not set it as the CEO's top priority objective, especially to the detriment of all other aspects. A CEO's objective is currently long-term value maximization, and to achieve it, first, it is necessary to abandon the pursuit of short-term performance results. Abandoning of this pursuit is presented in the report of non-commercial organization FCLTGlobal published in October 2017[17]: the share of companies from S&P500 that use the long-term value of the company in implementation of their strategy and then publish quarterly reports decreased from 36% in 2010 to 27% in 2016. Moreover, in 2016 only one in three companies (31.4%) provided guidelines for short-term reports. Thus, we may conclude that at present an active transfer is performed from the traditional model of CEO-shareholder interrelation within the classical agency theory to the model of CEO-stakeholders interrelation that fits into the behavioral agency theory. An important reason to study the CEO investment horizon problem within the behavioral agency theory is the fact that it is consistent with the upper echelons theory, which states that top management teams produce a significant influence on corporate performance indicators. The behavioral agency theory makes us pay attention to personal traits and CEO motivation when they make investment and strategic decisions and to creating proper incentives, which enable the parties interested in the company's efficiency to influence CEO's motivation.

The third possible way of solving the CEO investment horizon problem is the implementation of ESG practices in corporate governance and in creation of company value. Indeed, calculation and comparison of ESG ratings and comparison of the influence of each component – E, S and G – on company performance is usual practice today. However, 10–20 years ago the situation was different because this methodology was subjected to experts' serious criticism and skepticism [63].

Getting back to the CEO horizon problem, we may point out that the addition of new indicators for evaluation of CEO efficiency is discussed rather often nowadays. Thus, for example, in the Harvard Law School Forum there are the CFA Institute's recommendations for companies to prevent short-termism[18]. Among other things, emphasis is laid on implementation of ESG practices when making CEO compensation packages. And as we noted, in the majority of cases CEO compensation, along with ESG indicators, is an incentive for long-term activity. The environmental component is centered around CEO

[14] URL: https://hbr-russia.ru/management/operatsionnoe-upravlenie/858464/

[15] URL: https://www.fwcook.com/Publications-Events/Research/2021-Top-250-Report/

[16] URL: https://insight.kellogg.northwestern.edu/article/shareholder-value-purpose-corporation

[17] Moving Beyond Quarterly Guidance: A Relic of the Past (FCLTGlobal, October 2017). URL: https://fcltglobal.org/wp-content/uploads/Moving-Beyond-Quarterly-Guidance-A-Relic-of-the-Past.pdf

[18] URL: https://corpgov.law.harvard.edu/2020/10/11/short-termism-revisited/

decisions and actions related to energy utilization by the company, non-pollution of the environment and natural resource conservation. The social component comprises the conduct of business principles and maintenance of relationships with stakeholders: taking into consideration their values and expectations. Finally, the governance component takes into account decision-making regarding shareholders and other internal control mechanisms. In spite of the fact that the offered method is still at the emerging stage a study by PricewaterhouseCoopers of 2018[19] showed that 29% of the board members in the USA considered the institutional investors' behavior excessive in relation to the discussion of ESG issues. This is indicative of a serious concern with this issue. At minimum the following organizations may be indicated as an example of companies comprising the very "multitude" that creates, standardizes and publishes ESG indicators: Carbon Disclosure Project (CDP), G20-based Financial Stability Board, Sustainability Accounting Standards Board (SASB), Global Reporting Initiative (GRI), International Integrated Reporting Council (IIRC) and the UN-led Principles for Responsible Investment[20]. At the same time, the existence of a large number of ESG sustainability metrics and a limited time range of their implementation still has not allowed to conduct a satisfactory analysis of sustainability. The latter would have allowed to make the conclusion on inalienability of these indicators for the analysis of each CEO's horizons or at least of investment decisions of the CEO of each major company.

Thus, we come to the conclusion that today the solution of the CEO investment horizon problem exists not just in the form of plans and theory, but also as attempts of practical implementation by companies.

Discussion

The difference between the outstanding and just good is that the outstanding is always the result of a marathon rather than a single successful breakthrough. It is proven by economy of countries, annual corporate reports, decisions made by economic operators and people's actions based on their preferences. It is not good when the investment horizon is too short (companies face short-termism), but it is also not good when companies try to look too far ahead (with high uncertainty and a risk of being unable to accomplish even one project successfully and improve efficiency). In order to improve efficiency, a company has to define the balance between short-term and long-term planning of investment beforehand and try to maintain both horizons in the optimal correlation.

In the present paper we managed to show how corporate short-termism in one of its highest degrees is able to bring economy to a global crisis; how and why it became necessary to single out a new problem in corporate finance – that of CEO investment horizon; how 12 years ago a synthetic metric to measure CEO horizon was discovered; why the most efficient CEOs in the world occupy their positions at least for 15 years, while the tenure of an average CEO does not exceed four years; how the cultural component of a CEO's life may be related to the length of his investment horizon; and finally, that today there are at least three possible ways to solve the problem of short-term CEO investment horizon.

All of the above provides a lot of clues concerning the actions to be taken by companies to improve their performance. At the same time, there are a lot of unanswered questions.

Which factors, apart from age and tenure may be added to the CEO investment horizon indicator? It has already been established that the degree of risk assumption by chief executive officers depends on demographic indicators, such as education and professional experience, personal traits such as narcissism, optimism and CEO power. However, in terms of the horizon problem researchers still have neither theoretical, nor empirical models.

Which of the cultural metrics of investment decision-making is suitable for use in the same model with an investment horizon indicator? Moreover, is there a unified metric applicable to different groups of countries: for example, for Eastern Europe, Western Europe, Asia etc.? Nowadays there are just separate assumptions concerning the relations between CEO decision horizon and the cultural aspect when a person makes decisions, however, as of today there is no empirical evidence of this fact.

Which way of solving the problem of short-term CEO investment horizon is the most efficient one: long-term incentive contracts, dependence of CEO compensation on long-term indicators or implementation of ESG metrics? As long as the number of observations is insufficient, except for certain companies, the researchers have no unambiguous answers to this question.

Today it is possible to presume with a high degree of confidence that human factor and personal traits in CEO investment decision-making will play a leading role in economics and finance research, and an understanding of the influence of the CEO investment horizon on corporate operations will help practical specialists improve corporate performance indicators. CEO investment decisions are proportionate to personal traits, cultural values and setup of the environment where decisions are made while corporate performance, in its turn, is proportional to CEO investment decisions. In the near future we are likely to see how CEO portraits are made for companies in order to forecast their optimal investment horizons .

[19] "ESG in the Boardroom: What Directors Need to Know," Governance Insights Center (February 2019). URL: https://www.pwc.com/us/en/services/assets/pwc-esg-directors-boardroom.pdf.

[20] URL: https://www.integratedreporting.org/resource/sp-global-long-termism-versus-short-termism-time-for-the-pendulum-to-shift/

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