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# CHALLENGES OF CREATING SUSTAINABLE GROWTH IN INFRASTRUCTURE SECTORS: THE GAP BETWEEN AMBITIONS AND CAPABILITIES

Izazovi kreiranja održivog rasta u infrastrukturnim sektorima – jaz između želja i mogućnosti

## Abstract

It is generally accepted that growth should be knowledge-based, sustainable and inclusive. Due to their direct and indirect impact on growth, as well as the fact that infrastructure sectors are often referred to as the cornerstones of the development of national economies, special attention is drawn to infrastructure investments and the ways of their financing. They are considered as very complex issues of investment and financing, which can be addressed from both macroeconomic and microeconomic perspective. The reason for that is a different understanding of the sustainability of growth and different methods of measuring growth. From the macroeconomic standpoint, growth is primarily associated with the growth of gross domestic product and creation of long-term competitiveness of national economies, without recourse to external borrowing. Besides, growth has its social and environmental dimensions. Some authors point out that this concept of growth is rather "soft" and inadequate from the perspective of companies. Namely, the presence of economic growth does not automatically mean that it will be transformed into profitable and sustainable growth at the level of individual companies, infrastructure sectors and the economy as a whole. Of course, there are several reasons for that, from low efficiency, through poor quality of corporate governance and inadequate financing, to inadequate prices. Moreover, the sustainability of the company's growth is assessed based on the quality of the capital structure and the ability to create value. Financing of infrastructure projects involves complex processes, such as provision of capital, diversification of sources of financing and their adequate combination, which also have their macro and micro aspects. However, it does not just relate to the problem of providing capital. It always also implies a question of giving priority to particular sources of financing. The possibilities of financing infrastructure projects from the budget are limited, while government-backed credit sources have their own price and can also put pressure on the budget. Also, credit sources

may cause different forms of dependency. The problem appears even more obvious at the level of individual companies. External sources of financing are necessary, but their availability also depends on borrowing capacity, which is, among other things, determined by the ability to generate internal sources. Furthermore, it is assumed that there is enough capacity for achieving expected returns in order to attract the interest of private investors in this type of investment. The foregoing and similar issues, seen through the prism of the financial position of infrastructure sectors, have been brought up and partially analyzed in this paper.

**Keywords:** *infrastructure investment, infrastructure sectors, sustainable growth, sources of financing, free cash flow, capital structure, retained earnings, value creation.*

## Sažetak

Generalno je prihvaćeno da rast treba da bude zasnovan na znanju, održiv i inkluzivan. Zbog svog direktnog i indirektnog uticaja na rast, kao i zbog činjenice da se infrastrukturni sektori često označavaju kao stubovi razvoja nacionalne ekonomije, posebna pažnja se poklanja infrastrukturnim ulaganjima i načinima njihovog finansiranja. Reč je o veoma kompleksnim problemima investiranja i finansiranja, u okviru kojih se prepliće makroekonomska i mikroekonomska perspektiva njihovog posmatranja. Razlog tome je drugačije gledanje na održivost rasta i drugačije merenje rasta. Sa makroekonomskog stanovišta rast se vezuje primarno za povećanje bruto domaćeg proizvoda i stvaranje dugoročne konkurentnosti nacionalnih ekonomija, bez povećanja spoljnog zaduživanja. Uz to, on ima svoju socijalnu i ekološku dimenziju. Neki autori ističu da je ovo ipak jedan „soft“ koncept gledanja na rast koji iz perspektive preduzeća nije zadovoljavajući. Naime, ekonomski rast ne znači po automatizmu da će se on sam po sebi transformisati u profitabilan i

održiv rast na nivou pojedinačnih preduzeća, infrastrukturnih sektora i ekonomije u celini. Naravno, za to možemo pronaći više razloga, počev od nedovoljne efikasnosti, preko niskog kvaliteta korporativnog upravljanja i neadekvatnog finansiranja, pa sve do neadekvatnih cena. Pri tome, održivost rasta preduzeća se ocenjuje na osnovu kvaliteta strukture kapitala i sposobnosti kreiranja vrednosti.

Pribavljanje kapitala, diferenciranje izvora finansiranja i njihovo adekvatno kombinovanje su kompleksni procesi kada je reč o finansiranju infrastrukturnih projekata, opet sa svojom makro i mikro dimenzijom. Ipak, to nije samo problem pribavljanja kapitala. To je uvek i pitanje davanja prioriteta pojedinim izvorima finansiranja. Mogućnosti finansiranja infrastrukturnih projekata iz budžeta su ograničene, kreditni izvori iza kojih stoji država imaju svoju cenu i takođe mogu stvarati pritisak na budžet. Uz to, kreditni izvori mogu stvarati različite vrste zavisnosti. Sa nivoa pojedinačnih preduzeća problem je još eksplicitniji. Eksterni izvori finansiranja su neophodni, ali je njihovo pribavljanje vezano i za kapacitet zaduživanja koji je, između ostalog, determinisan mogućnošću generisanja internih izvora. Uz to, podrazumeva se mogućnost dostizanja očekivanih stopa prinosa, kako bi privatni investitori bili zainteresovani za ovakvu vrstu ulaganja. Ova i slična pitanja, posmatrana kroz prizmu finansijske snage infrastrukturnih sektora, otvorena su i delimično analizirana u ovom radu.

**Ključne reči:** *infrastrukturna ulaganja, infrastrukturni sektori, održiv rast, izvori finansiranja, slobodni novčani tok, struktura kapitala, neraspoređeni dobitak, kreiranje vrednosti.*

## Introduction

The need for infrastructure investment varies in amount and structure across countries depending on their development levels. Naturally, infrastructure is less developed in developing countries, which leads to a conclusion that the impact of infrastructure investment on the growth in these countries should be higher. Moreover, substantial investment in infrastructure projects is often hampered by lack of capital for financing such projects. Thus, financing of infrastructure investment is considered as one of the key issues in developing economies.

The issue of infrastructure investment is multifaceted. Infrastructure investment has a direct impact on growth rates of national economies through the output growth of infrastructure sectors in the respective year. The indirect impact can be even more significant. By providing energy, logistics and ICT support, infrastructure investment fosters economic activities of other industries and sectors in the long run. On the other hand, the fact is that there are considerable financial constraints in providing

financing for these projects, which are especially faced by public utilities and state-owned enterprises. Therefore, governments of some countries turn to budgetary financing of infrastructure projects with the idea that by stimulating growth of infrastructure sectors they will also provide impetus for the growth of the national economy. However, the fiscal constraints, imposed to developing countries in their most severe form, limit the likelihood of providing this type of financing.

The issue of financing can also be addressed from different perspectives. Providing the necessary sources is certainly the first important step. In this context, it is evident that the government has a crucial role in creating adequate macroeconomic conditions, i.e., investment-friendly environment. Besides, given the importance of infrastructure development in invigorating economic activities in times of crisis and its potential impact on growth, governments have recognized an interest in funding certain infrastructure projects. The impact of infrastructure investment on improving the quality of people's lives, poverty reduction and more equitable distribution of income has contributed to taking political decisions in this direction. However, budgetary financing has also its downside. Fiscal constraints and fiscal consolidation requirements limit the availability of budgetary sources of financing in emerging markets and developing economies (EMDEs). The inability of some companies from EMDEs to bear the burden of this type of financing creates a need to consider alternative solutions and diversify sources of financing. In this regard, the alternatives such as the use EU pre-accession funds, commercial loans from international financial institutions and the creation of public-private partnerships are widely used.

Infrastructure sectors are often referred to as the pillars of the development of national economy and the society at large. Substantial investment in new infrastructure projects and, sometimes, even investment in infrastructure maintenance represent a major challenge for some domestic companies, from both operational and financial aspects. It is obvious that only financially sound companies can afford such investments. Sustainable growth, based on sustainable financing, profitability and the creation of value added, should be seen as the right long-term orientation.

## The link between infrastructure and growth

Today, there is no particular need to prove the interdependence between infrastructure and growth. Numerous research studies from around the world have confirmed this link, i.e., infrastructure has a positive and significant impact on growth. Straub points out that about two-thirds of the research studies that were the subject of his analysis have clearly confirmed this link [26, p. 33]. Although the issue of infrastructure investment is undoubtedly relevant in developed countries, where the focus is primarily on the improvements in the existing infrastructure, in this paper the spotlight will be on the problems related to the infrastructure investment in developing countries which will be most often analyzed through the prism of problems in the Republic of Serbia. In these countries, infrastructure is underdeveloped and new investments significantly improve the lives of citizens and create better prospects for companies and national economies. This implies a more room for investing in this area. Infrastructure investment opens up the opportunities for achieving higher growth rates relative to developed countries and contributes to closing the development gap. After all, it is often emphasized that differences in levels of development are partly a consequence of differences in infrastructure development.

Infrastructure investment can be defined as “gross fixed capital formation by the public and private sectors on fixed, immovable assets that support long-term economic growth” [10, p. 152]. In accordance with this definition, apart from new investments, infrastructure investment also includes replacement investment and spending on maintenance of the existing infrastructure with the aim of extending its life span.

Infrastructure is an umbrella term for numerous activities. We usually make a distinction between economic (“hard”) and social (“soft”) infrastructure. Economic infrastructure improves economic activities and encompasses physical components, such as roads, tunnels, bridges, railways, airports, ports, underground railways and tramlines, waterways, dams, irrigation and drainage systems, water pipes, wastewater treatment plants, sewers, power plants, transmission lines and distribution

networks, solar panels, oil pipelines, gas pipelines, telephone exchanges, telecommunication networks, district heating systems, etc. With this in mind, it follows that energy sector, water supply and management, information and communications technology sector and transportation sector are usually identified as infrastructure sectors.

There are several key features that characterize “hard” infrastructure. First, it refers to capital goods which in combination with labor and other inputs provide services to a broad range of users. Second, the construction of “hard” infrastructure takes many years while its benefits are often equal to zero in the construction period (for example, there will be no benefits from the construction of dams, bridges, tunnels, etc., despite the fact that they are 80% completed). Third, the life span of infrastructure is often very long, which implies high maintenance costs. Fourth, “hard” infrastructure is space-specific. The combination of its long-lasting durability and usual immobility shapes the economic geography and regional development. Fifth, infrastructure and the services it provides are sometimes associated with some forms of market failures, such as natural monopolies. Sixth, the relative importance of the consumption of services by households and companies varies depending on the type and location of infrastructure, but the consumption of companies seems to be somewhat greater than that of households [22, pp. 4-6].

On the other hand, “soft” infrastructure comprises a set of institutions (financial system, health care system, education system, libraries, theaters, courts, museums, etc.) responsible for advancing standards in the areas such as health care, education, culture, and so on. They are directed at energizing economic activities, but they primarily contribute to the improvement in the quality of life [8, pp. 531-532]. The above-mentioned distinctive features can help to define “hard” infrastructure, but due to the different nature of services (services are a result of workforce activities rather than of infrastructure), they cannot be used for precisely defining “soft” infrastructure.

The impact of infrastructure on growth can be direct and indirect. It is evident that infrastructure investment directly affects the amount of output in the respective year. Accordingly, there is a direct link between the growth of infrastructure investment and the level of gross domestic

product (GDP). Also, governments of some countries often undertake infrastructure investment in times of crisis to stop negative effects and revive growth. Such a decision is aimed at raising the level of activities in the national economy, increasing employment and reducing poverty.

The fact is that infrastructure investment gives a boost to the activities of other sectors and industries, and that these effects are long-lasting and far-reaching. Economic infrastructure drives the growth of private sector. Better infrastructure lowers the cost of production per unit and enhances productivity. Reliable energy supply, high-quality transportation networks and digitization of the economy increase the safety and stability of production, facilitate access to new markets, ensure greater labor mobility, and raise the competitiveness of the national economy. In such circumstances, it is clear that the development level of economic infrastructure may be considered as enabling or limiting factor of the country's attractiveness for investment, especially from the standpoint of foreign investors [31, pp. 42-43]. At the same time, economic infrastructure drives the efficiency of other inputs. A good example is a workforce which, with better infrastructure, can provide a significantly higher volume and quality of products and services. In addition, the availability of better transportation and telecommunication infrastructure enables employees to better organize themselves and save time. Economic infrastructure also stimulates the growth of social infrastructure. For example, investment in telecommunication infrastructure affects the quality of education and health services, which may also have a positive domino effect on the productivity of private investment [1, pp. 407-410].

Infrastructure development helps reduce transportation costs and contributes to closer integration of developing countries into regional and global trade flows. Better integration enables the extension of value chain to a broader spectrum of suppliers, on the one hand, and customers, on the other. The reduction in transportation costs as a result of the construction of road, rail and water infrastructure is not only important because of potential market growth and increase in return on equity, but also due to its contribution to the transformation of economic geography and more uniform regional development. Also,

we shouldn't lose sight of the fact that the obstructions in the area of investment in the infrastructure development, conditioned by political decisions, can lead to the exclusion of whole regions or even some national economies from the global production network, which may have tremendous consequences [18, pp. 23-24]. The development of individual regions can be similarly affected by the wrong political decisions taken at the country level.

It is important to emphasize that the development of infrastructure contributes not only to the increase in revenue and income, but also to their more equitable distribution. In general, high-quality infrastructure expands the possibilities of more equitable access to infrastructure services, including telecommunications, power supply, road infrastructure, water supply, etc. Consequently, it becomes much easier to integrate poor individuals as well as underdeveloped regions into the economic and social life. In this regard, "soft" infrastructure has a crucial role to play, which especially refers to the development of education system that tends to significantly increase the value of human capital. These are just some of the reasons explaining why infrastructure development has become a policy priority. Namely, some studies show that infrastructure has absorbed 40% of fiscal stimulus in emerging and developing countries and 21% in developed countries [3, p. 2].

Infrastructure maintenance can also have indirect effects on growth. In developing countries, it is often the case that infrastructure network is in very bad condition and that its maintenance requires substantial investment. Inadequate maintenance shortens the life span of infrastructure. Moreover, inadequate maintenance also causes indirect damage. For example, inadequate power supply may provoke the equipment breakdowns and production halts, which leads to a shrinking return on equity of the companies from other sectors. The same applies to transportation vehicles which may have higher maintenance cost and shorter life span due to poor road infrastructure. On the one hand, investment in the maintenance of the existing infrastructure will have a positive impact on output growth in the respective year as well as on the elimination or reduction of indirect damage to private sector. Otherwise, there will be negative effects [26, pp. 7-9].

Bearing in mind the previous observations, we can conclude that the level of infrastructure development also affects the competitiveness of national economies. It is quite logical that the competitiveness of the national economy will be determined by institutional development, economic infrastructure, macroeconomic stability, quality of education, technical and technological development, and the like. In this regard, the achieved level of infrastructure development can also have an impact on the formulation of industrial policies [19, p. 168].

Without calling into question the foregoing findings concerning the impact of infrastructure on growth, it should be pointed out that infrastructure is not the only determinant of growth that matters. For instance, some research studies show that transportation sector represents a determinant of growth and more balanced regional development. It is undeniable that the development of transportation will ensure more efficient market functioning, greater labor mobility, integration of less developed regions into all economic flows, emergence of competitive advantages, etc. However, we should not overlook some other factors, such as innovation, migration, local socio-economic conditions and so on, that can also have an impact on growth and regional development [5, p. 3], [11, pp. 495-498]. Accordingly, despite its great importance, infrastructure must be regarded as just one of the dimensions of economic growth.

### **Trends in infrastructure investment financing**

Developing countries are faced with a substantial infrastructure deficit. This deficit is partly due to a lack of infrastructure facilities (lack of transport network, insufficient and unstable electricity supply, lack of telecommunications networks, unresolved problems in the area of water supply, etc.), while the rest is mainly a consequence of poor quality of the existing infrastructure (obsolescence, inadequate maintenance, etc.). Besides, we must add that mass migrations of population between different parts of the world as well as migrations toward larger cities, due to an increasing demand for infrastructure services, present additional challenges to the renovation and expansion of the existing infrastructure. According

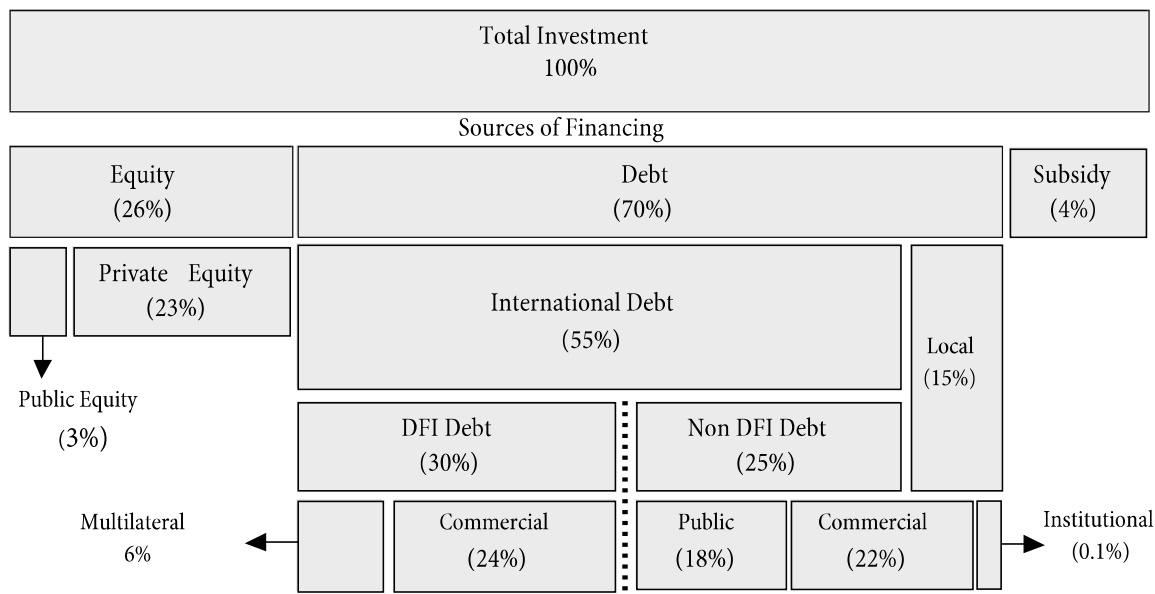
to some estimates, the urban population in developing countries will grow by 2 billion people by 2030 [9, p. 1]. All this makes dealing with the problem of infrastructure deficit even more difficult.

Companies that operate within infrastructure sectors are often state-controlled, and they are not able to bear considerable infrastructure expenses alone. These companies usually have many other problems, such as weak profitability, lack of internal sources of financing, inefficient corporate governance, inability to borrow without government guarantee, etc. The reluctance of governments to start with the privatization of such companies, as well as the underdevelopment of capital markets and the consequent inability to provide additional sources of financing through primary issues, further complicates the undertaking of major investment projects. Also, the government's direct financial support is quite limited. The priority of having a sustainable budget considerably narrows down the possibilities for direct financing of capital investments.

In the current circumstances, the diversification of sources of financing and their effective use are becoming indispensable. The availability of non-refundable sources of financing from EU funds can somewhat facilitate the closure of infrastructure gap. Commercial loans from powerful financial institutions, such as the European Investment Bank Group (EIB), World Bank (WB), European Bank for Reconstruction and Development (EBRD), etc., significantly expand the possibilities in this area. We should also mention the loans from other countries. However, commercial lending sources may also put pressure on the budget, thus hampering growth prospects.

Furthermore, the contemporary global trends point to the necessity of a greater presence of private investment in the area of infrastructure projects financing. Public-private partnerships provide the opportunity for sustainable financing of infrastructure projects, reducing the impact of these projects on the country's liquidity. In this context, there are opinions that public-private partnerships should become predominant models of financing in this area [7, p. 46]. The structure of sources of financing for infrastructure projects with private participation in emerging markets and developing economies (EMDEs) is shown in Figure 1 [30].

**Figure 1: Sources of financing for infrastructure projects with private participation in EMDEs in 2017**



□ All figures as a percentage of total investment

Source: PPI Database, World Bank, April 2018.

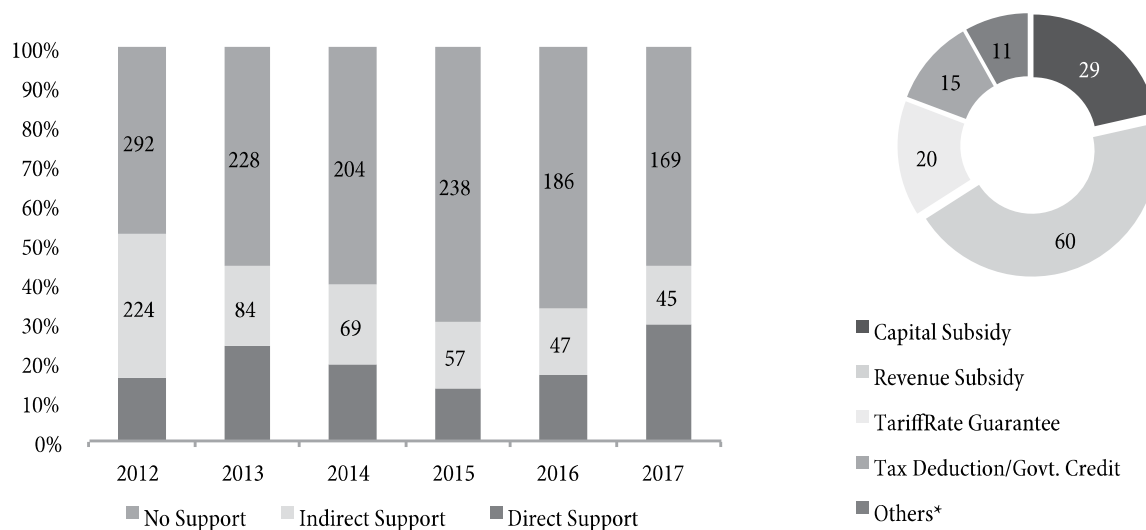
In 2017, according to the World Bank’s data, detailed information on the financing for infrastructure projects with private participation (Private Participation in Infrastructure - PPI) was available for approximately 74% of PPI projects (168 out of 232 projects). The financing for these 168 projects came from the combined sources of financing in the amount of USD\$ 61.6 billion [10, pp. 14-15]. As can be seen in Figure 1, out of the total investment of USD\$ 61.6 billion, 25% of investment was financed from public sources, 45% from private sources, and 30% by development finance institutions (DFIs). Besides, of the total equity (US\$ 14.2) provided for financing these projects, 89% came from private equity, while the remaining 11% was financed by the state-owned enterprises that participated in joint venture projects. Despite the significant private investment, debt still has a high share (about 70%) and comes primarily from international sources. This trend can be explained by the fact that the interest rates charged are lower than in EMDEs.

Financing infrastructure projects from private equity alleviates problems associated with financing from the budget. However, despite a growing importance of private equity, it is evident that its role is still not dominant. Overcoming the gap between the need for the implementation of infrastructure projects and the possibilities of their financing still requires considerable reliance on a direct or indirect government support.

The direct support of the government implies its active participation in providing financing for infrastructure projects from the budget or its participation in providing land, infrastructure, and the like. The indirect support of the government is not less important, particularly when the government assumes contingent liabilities, which may not arise, in the form of loan guarantees or provides tax reliefs, etc. Finally, we should not neglect the importance of the government’s support in creating an attractive environment for foreign direct investment. The structure of government support for infrastructure projects with private participation is presented in Figure 2.

Figure 2 shows that, in almost all years, the share of projects without government support is greater than one half. In the period from 2012 to 2015, the share of projects receiving government support gradually dropped, so that in 2015 about 70% of the projects were implemented without direct and indirect government support. However, at the same time, the number of infrastructure projects decreased from 614 in 2012 to 280 in 2016. It is interesting to note that the upward trend in investment levels in 2017 correlates with the increased government’s role in financing infrastructure projects [10, p. 18]. Moreover, it should be taken into account that investment in energy sector, especially in renewable energy sources, dominated over the entire period.

**Figure 2: Breakdown of government support for infrastructure projects with private participation in EMDEs, 2012–2017**



When it comes to infrastructure investment, it is obvious that the provision of sources of financing represents one of the priority issues that need to be addressed. Expanding a range of sources of financing is beneficial for boosting infrastructure investment and achieving higher growth rates. Financing from the budget is limited and entails its own risks. The provision of funds from international financial institutions or by taking loans from particular countries requires an appropriate credit rating. In both cases, the risks related to profitable exploitation of infrastructure services are borne by the beneficiaries of these funds. When the implementation and exploitation of infrastructure investments are carried out by the companies with a full or majority state ownership, the risks of failing to achieve desired performance are significant. The low quality of corporate governance in these companies, lack of the sense of responsibility for the project implementation efficiency and inadequate control can lead to insufficient profitability and absence of value creation. This raises the questions about the sustainability of growth and the price being paid for growth.

### Value creation and sustainable growth

The term growth is widely used, but in many contexts its exact meaning remains unclear. We usually talk about the growth of the national economy, business growth, sales growth, revenue growth, and the like. From a macro

perspective, the conventional wisdom is that growth should be smart (implies the development of a knowledge-based economy), sustainable (calls for promoting a more efficient use of resources, competitive economy and corporate social responsibility), and inclusive (supposes the equal opportunities for everyone, high level of employment, social protection, and fight against poverty). Sustainable growth of the national economy is often associated with long-term competitiveness and sustainable financing. Penman points out that growth is generally seen as a result of long-term competitive advantages, technological innovation, investment opportunities and entrepreneurial capabilities. He also emphasizes that similar ideas are valuable, but they nevertheless present a “soft” concept, which is not satisfactory [20, p. 82]. In the context of our research, we can say that increased levels of infrastructure investment and increased growth rates of the national economy are not always followed by the necessary growth of individual companies or sectors, i.e., there is a divergence between the growth of the national economy and a potential growth of the real sector. This situation arises from different attitudes to the sustainability of growth and different methods of measuring growth.

It could be said that growth is with the same ambition pursued from the perspective of individual companies as well as from the perspective of the national economy. Managers favor growth because they see it as an opportunity to preserve and improve their positions in the company,

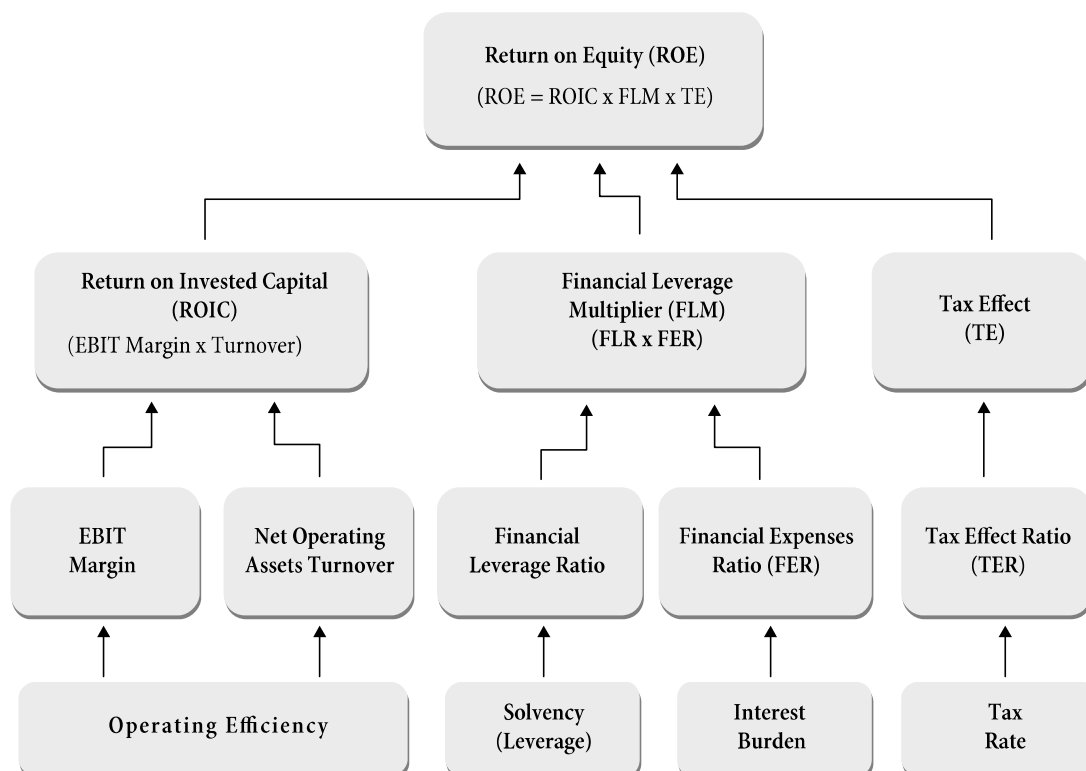
shareholders recognize the potential for future profitability and future dividends, while lenders perceive it as a promise of safe investment. However, we must keep in mind that, from the perspective of a company, not all growth is attractive. Overestimating the importance of growth and unfoundedly associating it exclusively with the growth of revenues or assets, while neglecting profitability and value creation, may have serious implications for a company and its stakeholders. Oversized growth, in financial terms, may cause a lot of trouble for individual companies. Many technology companies have paid dearly for an extreme arrogance of their managers in pushing for unfounded growth [16, p. 12]. In this regard, state-owned companies, whose losses will be covered from the budget, are in a more favorable position. Unlike them, other companies will pay a high price for potential losses in the form of loss of equity, absence of future returns or disappearance from the market.

Growth also has its micro dimension that is equally important for the successful functioning of the national economy. Besides, the problem of sustainability of growth is much more challenging when private companies are concerned. The key requirements can be described by two terms: profitability and value creation. A well-recognized

need for increasing the participation of private sector in infrastructure investment financing, primarily with the aim of reducing reliance on the budget, could be successfully met only if the essence of these two terms is properly understood. Of course, it's not that we have forgotten that sustainable growth also implies adequate financing and sustainable capital structure, only we will discuss those topics in the last part of the paper.

Achieving expected returns requires managing the key components of return on equity (ROE), as the most popular and widely used measure of profitability. The links between return and growth are fairly obvious. Profitability reflects the company's ability to generate returns for its shareholders. Since the amount and level of retained earnings in a company determine its borrowing capacity and potential for sustainable growth, profitability has direct impact on the possibilities of internal financing. Finally, profitability lies at the core of value creation, so that it represents an important criterion when deciding on the justification for growth. The complexity and close link between operational, financial and tax decisions in this area are presented through the prism of key drivers of profitability in Figure 3.

Figure 3: The drivers of return on equity





Return on invested capital (ROIC), as a measure of the company's operating efficiency and a real source of value creation, has a decisive impact on return on equity. EBIT margin and turnover, as key components of return on invested capital, point to the prospects for its increase. Since return on equity is equal to return on invested capital when a company is totally financed from internal sources, it is logical that a difference between these returns arises as a result of borrowing. A rising level of debt leads to greater indebtedness, which has a positive multiplicative effect on return on equity as long as ROIC is higher than cost of capital. The problem is that a growing debt increases the exposure of a company to financial risks, which means that a positive effect of financial leverage is limited. Nevertheless, we should not overlook the effects of taxes, which due to the differences between accounting and taxable income, i.e., nominal and effective tax rate, could be significant [23, pp. 663-672].

However, profitability is a necessary but not sufficient condition for creating value added. The reason is that the calculation of accounting income, as well as the calculation of return on equity, takes into account only explicit costs. Cost of equity is not included in the calculation. Anyway, it is logical that shareholders, who bear the greatest risk, expect to receive returns that will exceed those of creditors. Calculation of cost of equity accounts for opportunity cost that is equal to the income that shareholders would achieve by investing in other company with comparable level of systematic risk. Therefore, it is not enough for a company to generate any kind of income and return, but its income has to be at the level that allows covering the total cost of equity. If the company's income exceeds this level, we can conclude that the company creates value added, which will have a positive impact on its market value and its attractiveness to investors [16, pp. 20-21].

Consequently, from the shareholders' point of view, growth is attractive only if return is higher than weighted average cost of capital – WACC. A significant interdependence between profitability, economic value added, cost of capital and growth can be illustrated by the calculation of market value added (MVA):

$$MVA = \frac{(ROIC - WACC) \times Invested\ Capital}{WACC - Growth\ Rate}$$

Given that the nominator includes economic value added (EVA), it follows that market value added represents the present value of future expected economic value added. The value is created only when the spread between return on invested capital and weighted average cost of capital (WACC) is positive. In other words, a positive spread is the source of value creation, while a negative spread is the source of value destruction. This fact confirms the above-mentioned statement that growth by itself does not necessarily create value. Sometimes, high-growth companies may even destroy value. By contrast, companies with lower growth may create value. Only the growth that is accompanied by a positive spread can generate value [13, pp. 530-531].

The idea that any growth is good if it comes from investment opportunities is very dangerous. It's just not good enough to claim that growth leads to revenue growth, asset growth or income growth. For instance, the company Tyco International, through a series of acquisitions in the 1990s, increased its book value from US\$ 3.1 to US\$ 31.7 billion in 2001, while the company's earnings per share rose from 8 cents in 1996 to US\$ 7.68 in 2001, and the share market price increased from US\$ 53 to US\$ 236 in the same period. However, in 2002, Tyco reported a loss of US\$ 18.48 per share, and in the subsequent years the share price dropped to US\$ 40. Only residual income, as one of the measures of value creation, did not show a similar optimism about the growth [20, pp. 84-84]. It turned out that the price that Tyco paid for such growth was too high.

If a company generates income that does not provide for the above-mentioned positive spread, shareholders will not be able to receive the expected return. The criterion of performance is definitively raised to a higher level in relation to accounting income and accounting rate of return. That means that managing growth at the company level requires the management to ultimately create value for all stakeholders, including shareholders. Otherwise, a price paid for growth may turn out to be too expensive.

Why is the previous story about the relationship between growth and value creation at the company level so important? In the first place, due to the need for

making realistic assessments regarding the possibilities of attracting private equity in the area of infrastructure investment. Private investors look at growth in the context of a company's ability to create long-term value. It is nothing else but a request that their interests, in the form of expected returns, must be respected when making decisions on new investments. Otherwise, there will be no motives for investment. Moreover, the inability to achieve expected returns is not caused solely by lack of efficiency. There is also a problem with selling prices of some infrastructure services, which is sometimes a political rather than an economic issue.

### Financial strength of infrastructure sectors

After the above consideration of the importance of infrastructure sectors to the growth of the national economy, a logical next step would be to assess the financial position of these sectors in the Republic of Serbia. Many countries, particularly in crisis situations, are looking for strategic ways to create growth and revive the economy by undertaking large investments in these sectors, especially in energy sector and ICT sector. Of course, only financially healthy companies can successfully carry out the implementation of major investment projects.

Since the World Bank in its surveys identifies as key infrastructure sectors the energy sector, water supply and management sector, transportation sector and ICT sector, our analysis will be focused on these four sectors, in accordance with their scope, as defined in the Decree on the Classification of Activities [27]. The share of all these sectors together in the total number of companies is not significant. According to the report of the Serbian Business Registers Agency [25], in 2017 these four sectors accounted for 12.91% of the total number of 101,012 companies, with their respective shares being as follows: energy sector 0.82%, water supply and management 0.91%, transportation 6.20%, and ICT sector 4.98%. These sectors recorded a considerably greater share in total employment (1,072,557 employees in 2017), all four sectors employing slightly more than one-fourth of the total number of employees (25.55%). Energy sector had 40,877 employees (3.81%), water supply and management

sector 36,146 (3.37%), transportation sector 97,383 (9.07%), and ICT sector 46,238 (4.31%).

Our analysis is tailored to the specific characteristics of these sectors. We must not lose sight of the fact that infrastructure sectors are capital-intensive sectors with a very large share of fixed assets in total assets of companies. Low values of turnover ratios are also a distinctive feature of most infrastructure sectors. Consequently, their flexibility is not significant. Also, it happens quite often that prices are an uncontrollable variable for the company's management. On the other hand, individual sectors that belong to the group of infrastructure sectors differ markedly from one another in the structure of assets, sources of financing, revenues and expenses. Therefore, we think that it only makes sense to include an analysis based on financial performance measures.

The database consists of summary financial statements for a five-year period (2013-2017) [25], [6]. However, due to insufficient reliability of information for 2013, resulting from a shift in the content of financial reporting, we will present the results for just four years. Also, in the analysis we opted for some standard performance indicators that are typically used in all financial statements analyses, but for the purpose of this paper we combined them with some specific indicators which portray more clearly the particularities of the financial position and performance of these sectors.

The starting point for the analysis of financial positions of companies is the assessment of their exposure to short-term and long-term risks. The key indicators are displayed in Table 1. A company's liquidity is the best measure of short-term risks. As a measure of its ability to meet its liabilities until maturity date, liquidity is directly related not only to the smooth functioning but also to the very survival of a company. According to the Law on Bankruptcy (Article 11), some of the reasons for initiating bankruptcy proceedings are as follows: permanent illiquidity (if a company cannot meet its financial obligations within 45 days of the date they become due or completely ceases all payments for a consecutive period of 30 days), pending illiquidity (if a bankruptcy debtor makes it apparent that it will not be able to pay its existing debts as they become due), and over-indebtedness (if the liabilities of

Table 1 Indicators of short-term and long-term risks

Indicators / Sectors	Energy			Water Supply and Management			Transportation			ICT Sector			Economy							
	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017				
Current Ratio	0.95	0.73	0.68	0.63	0.76	0.78	0.73	0.73	0.60	0.89	0.84	0.79	0.91	0.91	0.95	1.03	0.89	0.87	0.91	0.95
Quick Ratio	0.70	0.49	0.50	0.43	0.53	0.55	0.50	0.49	0.45	0.70	0.65	0.59	0.60	0.64	0.66	0.72	0.52	0.52	0.55	0.56
Cash Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cash Flow from Operations Ratio	(0.01)	0.03	0.23	0.14	0.13	0.13	0.18	0.23	(0.06)	0.01	0.24	0.19	0.32	0.34	0.30	0.31	0.01	0.04	0.07	0.06
Risky Assets Conversion Ratio (%)	57.4	73.3	75.8	76.9	76.0	76.1	76.0	75.0	71.4	72.1	71.3	72.0	51.5	50.6	51.2	49.2	48.6	50.4	50.4	50.6
Solvency																				
Fixed Assets Coverage Ratio	0.84	0.76	0.75	0.74	0.85	0.85	0.84	0.81	0.64	0.85	0.81	0.80	0.63	0.67	0.71	0.72	0.77	0.79	0.80	0.82
Fixed Assets and Inventories Coverage Ratio	1.00	0.96	0.95	0.92	0.88	0.89	0.87	0.86	0.93	1.01	0.98	0.96	1.10	1.12	1.15	1.17	0.92	0.93	0.95	0.95
Debt to Equity	0.57	0.76	0.72	0.71	0.53	0.53	0.56	0.65	1.39	0.68	0.77	0.78	1.63	1.55	1.40	1.35	1.38	1.37	1.32	1.27
Cash Flow from Operating to Debt	(0.01)	0.02	0.13	0.16	0.11	0.10	0.14	0.35	(0.04)	0.00	0.14	0.25	0.14	0.16	0.15	0.30	0.01	0.02	0.04	0.08
Debt Repayment Ratio	(162.7)	66.6	7.8	6.4	9.4	9.8	7.3	2.9	(23.2)	215.4	6.9	4.0	6.9	6.2	6.7	3.4	100.3	41.1	22.9	12.2
Cash Flow from Operations to Financial Expenses	(0.13)	0.36	4.29	4.13	3.10	4.96	6.23	10.99	(0.42)	0.10	4.25	3.41	2.47	4.17	3.99	4.67	0.16	0.61	1.41	1.44
Financial Expenses Coverage Ratio	0.11	0.59	0.93	2.49	0.55	1.03	1.53	2.50	(0.94)	1.10	1.39	1.58	1.14	2.33	2.33	3.85	(0.11)	0.35	0.84	1.89
Deficiency Net Working Capital Ratio (%)	(3.0)	(4.5)	(7.3)	(9.4)	(5.7)	(5.0)	(6.4)	(8.4)	(4.3)	1.7	(0.1)	(1.9)	12.2	12.4	14.7	15.6	5.1	5.8	7.1	7.7
Net Working Capital to Inventories (%)	(178.9)	(101.9)	(269.0)	(312.6)	(130.1)	(109.1)	(129.0)	(158.2)	(124.4)	54.9	(3.7)	(61.4)	244.1	311.6	374.7	400.3	43.6	47.4	59.1	61.5
Efficiency																				
Assets Turnover	0.41	0.38	0.33	0.34	0.41	0.41	0.40	0.42	0.66	0.64	0.71	0.73	0.61	0.63	0.66	0.70	0.67	0.69	0.71	0.72
Capital Turnover	0.62	0.61	0.53	0.56	0.62	0.62	0.60	0.67	1.40	1.16	1.16	1.21	1.34	1.44	1.42	1.44	1.46	1.47	1.48	1.48
Current Assets Turnover	1.85	1.85	1.79	2.05	1.92	1.85	1.79	1.88	2.57	2.56	2.81	2.85	2.06	2.03	2.10	2.22	1.68	1.74	1.78	1.80
Inventory Turnover	23.78	12.73	9.23	11.98	9.21	9.06	8.29	8.29	16.54	19.24	22.87	23.60	11.46	14.25	16.73	17.80	5.70	5.76	5.80	5.81
Accounts Receivable Turnover	2.47	2.81	3.34	4.02	3.09	3.23	3.32	3.58	3.99	4.35	5.40	5.68	3.62	4.11	4.66	4.75	3.47	3.92	4.41	4.53
Accounts Payables Turnover	3.47	6.79	9.72	9.34	1.14	2.12	7.90	7.82	4.17	6.95	13.55	14.65	0.84	3.72	8.48	8.02	4.20	6.31	10.17	11.18
OPEX Ratio	0.95	0.92	0.88	0.93	0.95	0.93	0.92	0.94	0.97	0.95	0.95	0.95	0.86	0.88	0.88	0.88	0.96	0.95	0.95	0.95

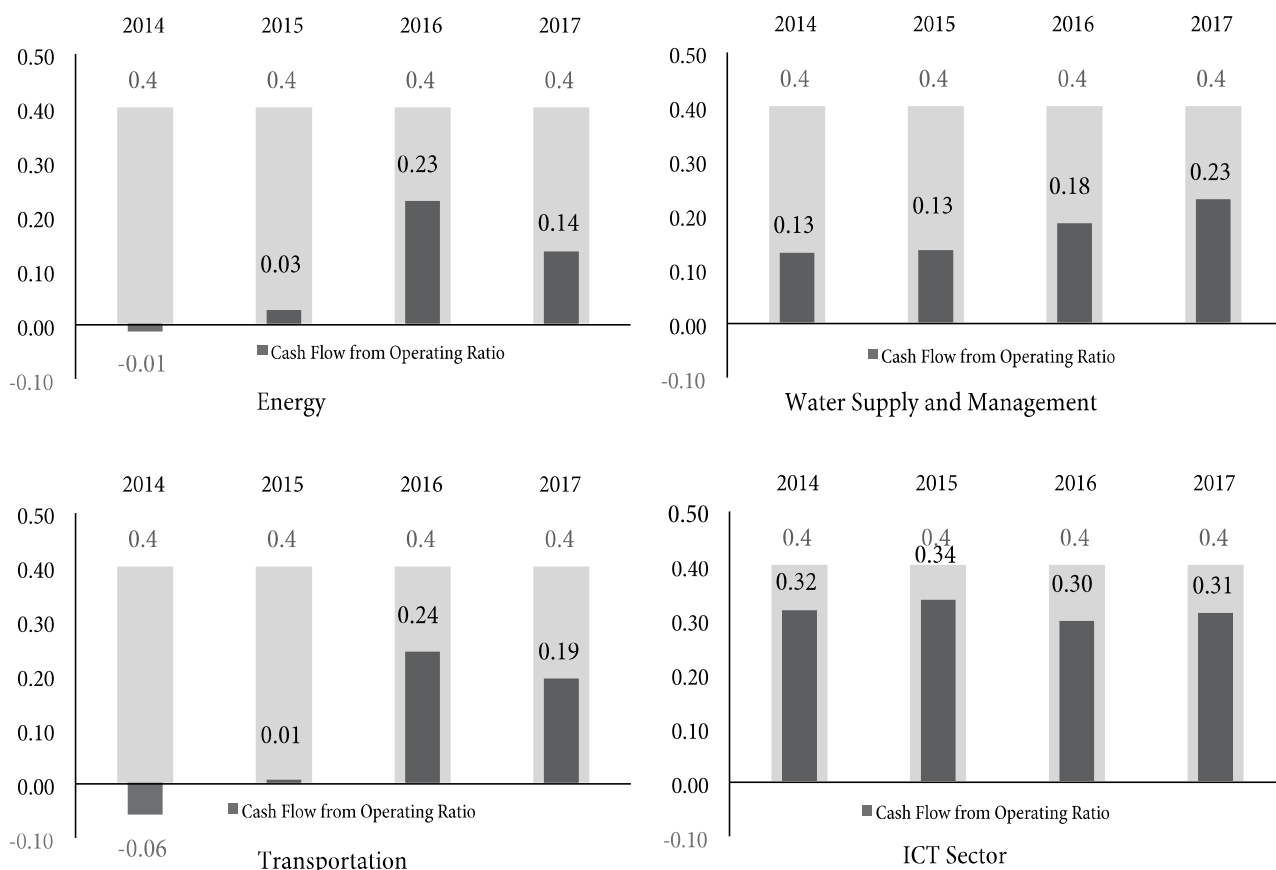
a bankruptcy debtor exceed its assets) [32]. The risks of illiquidity, by definition, are perfectly clear.

Liquidity is traditionally viewed as an issue associated with the financial structure, but nowadays cash flow measures are predominantly used to test the synchronization between inflows and outflows. Standard liquidity measures, such as current ratio (CR), quick ratio (QR) and cash ratio (CaR), take into account the relationships between working capital (total or individual portions) and short-term liabilities. As a matter of fact, the obtained results are not encouraging. The results presented in Table 1 clearly show that, in the analyzed period, all average values of these indicators are below 1 for CR, between 0.52 and 0.65 for QR, and just somewhere on the fourth decimal greater than zero for CaR. Given that in business practice, especially in banks, the ratios of 2:1 for CR and 1:1 for QR are usually considered as normal, we can easily conclude that the risk of threatening illiquidity is considerable. Truth be told, maybe we could attach less weight to these widely used standards. There are two arguments in support of the previous viewpoint. First, today companies are relying

heavily on the strategy of delaying the payments of account payables to suppliers and use those funds for financing working capital. Second, companies manage inventory more efficiently than before. In such circumstances, we might say that investors could tolerate CR values around or slightly above 1, and QR values of slightly below 1 [28, pp. 363-36]. The problem is that even with this relaxation our indicators remain significantly below newly established criteria, which points to the gravity of risks arising from illiquidity.

The final conclusions could be drawn by including some additional argumentation that comes from the assessment of liquidity on the basis of cash flow analysis. This analysis is valuable because liquidity can exist only if there is a match between cash inflows and outflows. In this regard, the most important measure is a ratio of cash flow from operations and average short-term liabilities. Cash flow from operations represents the amount of cash from business activities that remains after providing financing for net working capital requirement. The graphical representation of the results by individual

Figure 4: Liquidity analysis based on cash flow



sectors is shown in Figure 4. If we take into consideration the general opinion that financially healthy companies have the value of this ratio that is greater than 0.4, then the conclusion seems obvious. All infrastructure sectors have much lower values in relation to this reference value. The value of this ratio for energy sector and transportation sector on average amounts to 0.10, for water supply and management sector is 0.17, while only ICT sector, with the value of 0.32, is coming closer to a desirable value. The great importance that is attached to this indicator of liquidity arises from the fact that empirical research has shown that even 90% of companies that for four consecutive years recorded the values of this ratio below 0.4 went bankrupt [4, pp. 61-66].

Finally, let us take a look at the results of risky assets conversion ratio, which is calculated as a ratio of the most risky assets (including intangible assets, property, plants and equipment) and total assets of a company. So, the calculation includes the most risky assets that are unlikely to be easily converted into cash. A greater share of such assets tends to erode the company's liquidation value. In addition, the risk of bankruptcy increases with a sudden occurrence of cash outflow that cannot be covered from current assets. High values of this ratio indicate that the risk related to the conversion of these assets into cash is significant and, consequently, the risk of illiquidity is also high. That risk is at the level of average values for the economy (which are also high) only in ICT sector (about 50%), while in other analyzed sectors it is much higher, exceeding 70%. These results additionally confirm the finding that the risk of illiquidity in the analyzed sectors is at a very high level.

Long-term financial risks are determined by financial structure, financial flexibility and financial leverage. Many companies use financial leverage to boost shareholder returns [2, pp. 529-532]. That is possible if returns on new investments are higher than cost of capital, as only in such conditions shareholder returns can increase. Of course, the effect of leverage is related to an increased share of debt in the capital structure. Long-term financial risks are precisely a result of the likelihood that cash flow from operations would not be sufficient to cover increased borrowing expenses and a principal payment.

Accordingly, a company's financial flexibility reflects its ability to use the creditors' sources of financing to enhance profitability and prevent the risks that arise when increased cost of capital is greater than generated return. The close interdependence between profitability and long-term financial risks is evident, as only profitable companies can provide sufficient amount of cash to creditors and owners. This topic will be further discussed later.

Financial flexibility is linked to the financial structure and borrowing capacity, in the sense that a better financial structure increases borrowing capacity and creates space for a positive effect of financial leverage. The existing risks in this area are assessed on the basis of the solvency indicators presented in Table 1. The above-mentioned fact that infrastructure sectors are capital intensive implies the requirement that companies belonging to these sectors must have a substantial amount of long-term capital and, primarily, owner's equity as the best source of financing. The analysis clearly shows that fixed assets, as the most risky part of total assets, are not entirely covered by equity. For all four analyzed years, the average values of fixed assets coverage ratio range between 0.68 in ICT sector and 0.84 in water supply and management sector. These results clearly indicate the presence of negative net working capital in all four sectors. The situation seems slightly brighter if we add long-term liabilities to equity in order to assess the extent to which fixed assets and inventory are covered by total long-term sources of financing. Nevertheless, in this case average values are greater than 1 only in ICT sector, while in other sectors they fall below 1, which means that net working capital is negative. That happens when a part of fixed assets is financed from short-term sources, which is not a characteristic of well-structured companies. If we observe the relationship between net working capital and inventory, we will find out that deficient net working capital is several times greater than inventory, which could be a cause for concern. However, this picture appears less gloomy if we take into consideration the fact that companies from these sectors have relatively low inventory levels. Deficiency net working capital ratio shows the extent to which assets are inadequately financed.

Debt ratio, as a generally accepted measure of the quality of long-term financial structure, also reveals the

exposure to risks. The first conclusion is that the level of debt varies considerably across sectors, while it is usually stable within individual sectors. Water supply and management sector had the lowest level of debt (average value of 0.57 in the analyzed period), energy sector (0.69) and transportation sector (0.91) were in the middle, while the highest level of debt was recorded by ICT sector, whose liabilities exceeded equity by 1.48 times. This situation is certainly also related to the ability of companies to deal with the debt burden. It is important to point out that the energy sector, in relation to the period 2007-2011, has significantly increased its debt from an average of 0.4 to 0.69, which is still below the average value in the economy, amounting to 1.33 [17, p. 20].

Financial expenses coverage ratio and cash flow from operations to financial expenses show the extent to which financial expenses are covered by EBIT and cash flow from operations, respectively. Namely, a greater level of the coverage of financial expenses implies a greater safety or less exposure to long-term financial risks. In the relevant literature, the values of financial expenses coverage ratio in the range from 5 to 7 are seen as desirable, which means that the interests of creditors are quite well protected. However, there are opinions that companies are exposed to high risks when the values of this ratio are lower than 2 [28, p. 373]. In our case, the previous problem exists with average values for a four-year period in all sectors, excluding ICT sector. An encouraging sign is that the values of this ratio are showing an upward trend, reaching their peaks in 2017. The values of cash flow from operations to financial expenses exceed those of financial expenses coverage ratio, which is not very common in practice. In addition, these values oscillate significantly across periods. That may be an indication of inadequate quality of information in financial statements.

Finally, for the purpose of assessing the company's ability to repay its debts we use cash flow from operations to debt or, even better, its reciprocal value which we call debt repayment ratio. The values of cash flow from operations to debt are, on average, below a normal reference value of 0.2. Good news is that in 2017, the values of this ratio exceeded 0.2 in all sectors, excluding energy sector in which this ratio amounted to 0.16. Debt repayment ratio shows

how many years it will take to repay all debts if a company generates cash flow from operations in the respective year. The values for the last two years are acceptable and range between 3.4 and 7.8 years in all sectors. Also, there is an upward tendency with regard to the ability to repay debts. Bearing all that in mind, we can conclude that long-term risks exist, but that they are not so dramatic. These risks result mainly from a specific financial structure, marked by a dominant share of long-term fixed assets, and inflexibility of these sectors. Certainly, these risks have to be managed more efficiently.

The assessment of the exposure of companies (and sectors) to risks has several aspects. One of the key aspects is profitability. There are many reasons for that. Profitability determines the company's exposure to short-term and long-term financial risks, which we have already discussed from the perspective of the company's financial structure. Profitability is the basis for creating value for shareholders, but also a key precondition for the company's survival. It represents the main driving force in market-oriented economies. Profitability determines the attractiveness of companies, industries and sectors to investors. On the other hand, a potential occurrence of losses could cause financial and structural problems, jeopardize survival, hamper growth prospects, increase investment risk and discourage investors [17, pp. 24-25].

As far as the profitability assessment is concerned, good news is that in the last three years of the observed period all sectors generated profits, which was rarely seen in the years preceding that period. However, we should not jump to the final conclusion because the forgoing fact does not tell the whole story of the profitability and attractiveness of these sectors for investment. In this analysis, we will rely on a five-component disaggregation of ROE, as a reflection of generated shareholder returns. We will use this analysis to make a comparison between ROE and ROIC (return on invested capital) and then, based on its results, we will perform an analysis of financial leverage. The results of the analysis are presented in Table 2.

Several conclusions can be drawn from the presented results. First, according to the results based on ROE, profitability is unsatisfactory in all analyzed infrastructure sectors, except in ICT sector. In the first three sectors,

Table 2: Five-component disaggregation of ROE and financial leverage effect

Energy											
	EBIT Margin	Invested Capital Turnover	Return on Invested Capital	Financial Leverage Ratio	Financial Expensive Ratio	Financial Leverage Multiplier	Pretax Return on Equity	Tax Effect	Return on Equity	Interest Expense Ratio	Financial Leverage Index
	1	2	3 = 1 x 2	4	5	6 = 4 x 5	7 = 3 x 6	8	9 = 7x8	(10)	11 = 9 / 2
2014	4.23	0.54	2.29	1.14	0.00	0.00	0.00	(31.78)	(0.12)	15.58	(0.05)
2015	6.46	0.50	3.25	1.20	0.35	0.42	1.37	0.95	1.31	9.28	0.40
2016	8.23	0.42	3.45	1.27	0.57	0.72	2.48	0.70	1.74	5.14	0.50
2017	8.38	0.44	3.67	1.27	0.75	0.95	3.49	0.92	3.20	3.32	0.87
Water Supply and Management											
2014	4.09	0.54	2.22	1.14	0.38	0.43	0.97	0.77	0.74	10.52	0.33
2015	3.76	0.54	2.05	1.14	0.57	0.65	1.33	0.77	1.03	6.79	0.50
2016	5.86	0.53	3.12	1.13	0.68	0.77	2.41	0.76	1.82	7.83	0.58
2017	5.49	0.59	3.24	1.13	0.77	0.87	2.81	0.84	2.37	5.86	0.73
Transportation											
2014	(1.43)	0.92	(1.31)	1.53	5.93	9.05	(11.87)	1.07	(12.65)	13.13	(9.65)
2015	6.22	0.86	5.37	1.35	0.59	0.79	4.26	0.78	3.34	5.70	0.62
2016	5.57	0.95	5.31	1.22	0.64	0.78	4.14	0.82	3.38	7.51	0.64
2017	6.53	0.99	6.44	1.23	0.68	0.84	5.40	0.78	4.23	7.84	0.66
ICT Sector											
2014	14.46	0.79	11.46	1.69	0.58	0.97	11.13	0.86	9.53	8.36	0.83
2015	14.69	0.84	12.34	1.71	0.75	1.28	15.80	0.86	13.62	5.22	1.10
2016	13.13	0.87	11.45	1.63	0.75	1.23	14.05	0.84	11.75	4.93	1.03
2017	15.48	0.91	14.03	1.59	0.83	1.33	18.59	0.87	16.22	4.27	1.16
Economy											
2014	4.10	0.99	4.04	1.48	(0.25)	(0.36)	(1.47)	1.57	(2.31)	10.95	(0.57)
2015	4.72	1.01	4.76	1.46	0.30	0.44	2.08	0.54	1.13	7.06	0.24
2016	5.29	1.03	5.43	1.44	0.53	0.77	4.16	0.71	2.97	5.42	0.55
2017	7.36	1.04	7.62	1.43	0.71	1.01	7.72	0.84	6.49	4.92	0.85

return on equity was below 4.5% in all years. That is certainly not something that would satisfy the interests of investors. In the last three years, return on equity was greater than 10% only in ICT sector, which is significantly above the average in the Serbian economy. Second, the already mentioned possibility that debt increase can have both positive and negative effects has been confirmed in practice. The effect of financial leverage is negative in energy sector, water supply and management sector and transportation sector. The following conclusions can be made based on the results presented in Table 3: return on invested capital (ROIC) is greater than return on equity (ROE), a ratio of ROIC and ROE is less than 1, financial leverage multiplier is less than 1 and, finally, interest expense ratio exceeds return on invested capital. In such circumstances, negative effects of financial leverage lead to a decrease in return on equity. In other words, the interest for borrowing exists as long as return on invested capital exceeds cost of debt. Just as the excess that remains after covering cost of debt belongs to shareholders, negative

effects arising when cost of debt is greater than return are also borne by shareholders. Given that ROIC results from operating and investment activities and ROE from all activities (including financing activities), financial leverage is a consequence of the presence of financial risks. The situation is quite the opposite in ICT sector, concerning both profitability and the effects of financial leverage. By the way, all that takes place in the conditions of a significant drop in financing costs.

The performed analysis also points to the major causes of unsatisfactory profitability in the above-mentioned three infrastructure sectors. In addition to a negative effect of financial leverage, the second cause is very low values of asset turnover ratio, which is a consequence of high capital intensity. In similar circumstances, the space for profitability improvement could be found in an increase in activity levels and degression of fixed costs. High fixed costs are usually accompanied by a high operating leverage, which means that slight increases in revenues could lead to a significant increase in profitability, and

vice versa, a fall in revenues could easily take a company and the entire sector from the profit zone to the loss zone. New profitable investments that will lead to an increase in revenues are seen as a logical opportunity to improve the sectors' performance. The third important cause of low profitability is an insufficient level of operational efficiency. This can be concluded by looking at the values of OPEX ratio (see Table 2). We can see that the share of operating expenses in operating revenues is very large in all sectors, excluding ICT sector. That means that profit margins from core business are too narrow, i.e., operational efficiency is at low level. Of course, one should not lose sight of the fact that selling prices are also an important determinant of the level of profit margins. Since high capital intensity of infrastructure sectors tends to limit competition, according to economic theory, that should lead to higher profit margins [29, pp. 147-148]. This opinion proved to be true in the case of ICT sector, where a remarkable progress was made toward market liberalization and greater competition. Still, profit margins are relatively high due to high profit potential. However, this practice is not widespread in energy sector due to the existence of a monopoly, but EBIT margin is lower. The problem is definitively related to efficiency, but it has also something to do with pricing policy.

Our story about the profitability of infrastructure sectors and their attractiveness to investors does not end with this brief analysis. It will be continued in the last part of the paper.

### Prospects for sustainable growth in infrastructure sectors

Let us go back to the subject of sustainable growth. Namely, we have decided to shorten our story and focus only on the capacity of the existing infrastructure sectors to bear some burden of infrastructure investment. There are many open issues in this area and we will briefly look at some of them.

Growth is an essential prerequisite for the prosperity of the national economy, as well as of individual companies and their profitability, but its presence does not automatically mean that growth will be sustainable and that companies

will be profitable. In this paper, the sustainability of growth is considered in relation to the structure of sources of financing and value creation. Growth is always associated with the problem of providing financing, which becomes a burning issue under conditions of strong growth. Maintaining a sound financial structure, especially in the case of large investments, requires an adequate combination of internally generated sources and external sources of financing. In order to assess the investment possibilities of the existing infrastructure sectors, we will use several key indicators that are presented in Table 3.

**Table 3: Indicators of investment possibilities**

Energy	2014	2015	2016	2017
FCF to Debt (%)	(27.27)	(77.08)	(18.24)	(11.80)
CAPEX Ratio (%)	(9.22)	4.87	58.73	57.75
CAPEX to Fixed Assets (%)	3.54	17.49	12.75	7.37
Internal Growth Rate (%)	(0.88)	1.17	(0.09)	2.33
Sustainable Growth Rate (%)	(1.34)	1.84	(0.15)	3.76
<b>Water Supply and Management</b>				
FCF to Debt (%)	29.30	(29.31)	(8.21)	38.03
CAPEX Ratio (%)	422.26	57.48	87.47	200.73
CAPEX to Fixed Assets (%)	1.14	8.81	8.15	4.56
Internal Growth Rate (%)	2.03	0.60	0.84	0.43
Sustainable Growth Rate (%)	3.06	0.90	1.28	0.68
<b>Transportation</b>				
FCF to Debt (%)	(28.33)	21.99	0.61	(10.46)
CAPEX Ratio (%)	(29.58)	(3.29)	101.66	75.05
CAPEX to Fixed Assets (%)	10.87	(7.65)	9.66	11.15
Internal Growth Rate (%)	1.44	(0.71)	1.68	2.21
Sustainable Growth Rate (%)	3.04	(1.28)	2.72	3.69
<b>ICT Sector</b>				
FCF to Debt (%)	9.93	1.85	5.89	6.02
CAPEX Ratio (%)	169.38	107.80	134.10	134.55
CAPEX to Fixed Assets (%)	9.21	16.24	11.17	11.04
Internal Growth Rate (%)	2.26	4.71	1.63	3.24
Sustainable Growth Rate (%)	4.97	10.65	3.51	6.72

CAPEX ratio shows the extent to which investments in intangible assets, property, plant and equipment are financed by cash flows from operations. The results differ significantly between the sectors and fluctuate widely, from being quite worrisome to extremely favorable. This is a consequence of cash flow volatility and variability in investment levels (investments are expressed as net amount, which means that inflows from sales of intangible assets, property, plant and equipment were subtracted). Due to high volatility of this indicator, the conclusions on the availability of internally generated sources cannot be



made without some further research. CAPEX to fixed assets ratio shows the intensity of investment in new intangible assets, property, plant and equipment or in the replacement of the existing assets. The obtained results for the whole analyzed period are, on average, mostly around 10% in energy sector and ICT sector, while they are, on average, two times lower in the remaining two sectors.

The assessment of growth opportunities is usually performed by using internal growth rate and sustainable growth rate, which reflect the sustainability of growth depending on the selected sources of financing. In this regard, internal growth rate shows the dynamics of growth in these sectors in the conditions of exclusive reliance on internal sources of financing, while sustainable growth rate points to the prospects for growth when both internal and external borrowed sources of financing are used in a sustainable manner. Naturally, sustainable growth rate is always higher than internal growth rate, which our results have confirmed. The analysis shows that these rates are extremely low (in some years even negative) and only sometimes slightly higher than 1 in all observed sectors, except for ICT sector. It is now becoming clear that sometimes unrealistically high values of CAPEX ratio, recorded in the past periods, are a consequence of insufficient level of investment rather than of substantial cash flow. Also, it should be taken into account that our calculations of these rates were based on the assumption that generated retained earnings are not used to cover incurred losses but exclusively to support growth, which is not so realistic.

Growth that goes beyond a sustainable rate may adversely affect the company's financial structure and increase the risks of bankruptcy. Thus, the structure of sources of financing determines the sustainability of growth. Also, we should keep in mind that all sources of financing are not always equally available and attractive. Financing growth solely from debt is not sustainable. By the way, financing through the issuance of shares is not always a viable option, since it entails the risks of less or more significant dilution of control. The cost of equity is higher than the cost of other sources of financing. The reluctance of companies to issue new shares may come from the fact that new issue causes a drop in earnings per

share in the first couple of years, which is not the case with borrowing. If shares are overvalued, the news on new issue is interpreted by potential investors as an intention to sell shares above their real value. On the other hand, if shares are undervalued, there is no interest in raising finance by issuing new shares because the existing shareholders would suffer loss. A long duration of issuance procedure (several months) entails an additional dose of uncertainty. On the basis of the previous facts, Higgins concludes that some companies may express reservations when considering whether to base their growth strategies on this source of financing [14, pp. 144-145].

The forgoing observations again turn the spotlight on the crucial role of internally generated sources in growth financing. Internally generated sources of financing are a precondition for sustainable growth and, therefore, one of the most important sources of financing [12, pp. 79-91]. In this regard, the position of infrastructure sectors is very bad, no matter whether the availability of internally generated sources is assessed based on retained earnings or generated free cash flow. In accordance with the pecking-order theory, the first rule of investment project financing calls for the use of internal sources of financing. The second rule states that, in the absence of internal sources of financing, a logical decision should be to resort to external sources of financing, starting from the least risky to the most risky ones from the perspective of investors. That means that, in the first place, companies have to rely on borrowing, but in the right order, including traditional debts first (loans and bonds) and then convertible debts, as long as there is a borrowing capacity, which could depend on the value of collateral, financial distress costs or burdensome safeguard contractual clauses. After that, they can start issuing shares, also respecting the order: preferred shares first and then ordinary shares [24, pp. 450-453]. Bearing all that in mind, we can say that the analyzed sectors do not have many options in terms of providing adequate financing for their growth. This conclusion can be made based on the information in Table 4.

A common characteristic of many well-positioned companies is a significant share of retained earnings (as an internal source of financing) in equity. The situation is markedly different in the case of infrastructure companies

**Table 4: Availability of internal sources of financing**

Years	Energy			Water Supply and Management			Transportation			ICT Sector		
	RE/TL*	RE/E**	FCF/D***	RE/TL	RE/E	FCF/D	RE/TL	RE/E	FCF/D	RE/TL	RE/E	FCF/D
2014	17.65	3.97	(27.27)	101.27	15.11	29.30	17.36	30.28	(28.33)	43.41	60.53	9.93
2015	13.22	7.17	(77.08)	103.41	15.34	(29.31)	33.24	19.13	21.99	52.19	68.05	1.85
2016	13.90	6.38	(18.24)	98.94	16.34	(8.21)	38.64	22.15	0.61	53.89	68.46	5.89
2017	22.65	10.26	(11.80)	77.52	17.76	38.03	45.28	25.13	(10.46)	64.15	70.98	6.02

Note:

\*Retained earnings & Reserves to Total Losses (%)

\*\*Retained earnings/Equity (%) (equity is reduced for all losses)

\*\*\*FCF to Debt (%)

in Serbia, especially in energy sector (on average, close to 17%). On the other hand, ICT sector is the exact opposite. There are two possible explanations: whether profitability is unsatisfactory or there is an outflow of retained earnings from the company as a result of distribution. We think that both explanations are valid. The fact that retained earnings cannot cover accumulated losses (including losses over equity) is even more worrisome. That problem was found even in ICT sector. Therefore, it seems highly questionable whether significant internally generated sources for financing growth actually exist. Finally, the percentage of the coverage of debt by free cash flow confirms the previous findings. A half of analyzed years were marked by negative free cash flow, while in other years it was quite modest, which also points to the threats to shareholder interests.

An assessment of the quality of equity is also important for the analysis of the existing growth and evaluation of prospects in the area of growth financing. For that purpose, we decided to considerably simplify the structure of equity and make the problem much more apparent. Given that all sectors record losses and that these losses, to a greater or lesser extent, exceed equity, as well as that losses are first covered at the expense of reserves and retained earnings, we added (or deducted) repurchased shares, reserves, unrealized profits (losses) from securities and retained earnings to the existing common equity. Then, we deducted reported losses and losses over equity from the obtained amount. In this manner, we reduced total equity to only two items: common equity and revaluation reserves. The results are displayed in Table 5.

The conclusions that arise from this analysis are not very encouraging. A share of revaluation reserves in total equity is on average about 65% in energy sector, in

water supply and management sector about 37%, and in transportation sector about 31%. A share of these reserves is small only in ICT sector and, on average, accounts for about 5%. Since an increase in assets is on the opposite side of revaluation reserves, it follows that a significant portion of the increase in assets does not result from actual investment, but rather from the correction in their value. An additional problem is that a part of revaluation reserves may end up in retained earnings, which can explain why in some years net earnings were lower than the increase in retained earnings. That changes the perception of real growth. Neither the growth of a considerable part of assets comes from an actual increase in investment activities, nor on the side of sources of financing there are actual cash inflows. These are examples of quasi-investment and quasi-financing, which do not result from cash inflows or outflows. An actual increase in activity level would require a substantial investment and greater presence of real sources of financing.

**Table 5: Equity structure (%)**

Energy	2013	2014	2015	2016	2017
Equity	100.00	100.00	100.00	100.00	100.00
Common Equity	51.90	51.84	31.30	29.07	29.34
Revaluation Reserves	48.10	48.16	68.70	70.93	70.66
<b>Water Supply and Management</b>					
Equity	100.00	100.00	100.00	100.00	100.00
Common Equity	63.29	62.81	64.57	63.91	62.44
Revaluation Reserves	36.71	37.19	35.43	36.09	37.56
<b>Transportation</b>					
Equity	100.00	100.00	100.00	100.00	100.00
Common Equity	63.06	51.48	72.59	76.96	76.40
Revaluation Reserves	36.94	48.52	27.41	23.04	23.60
<b>ICT Sector</b>					
Equity	100.00	100.00	100.00	100.00	100.00
Common Equity	94.60	93.88	94.84	95.16	95.66
Revaluation Reserves	5.40	6.12	5.16	4.84	4.34

Finally, let us return to the analysis of sustainable growth from the perspective of the ability of companies and sectors to create value added. The accounting concepts of income do not have the right answer to this question. The problem is that net income does not take into account all costs of capital. The calculation leaves out cost of equity. It is true that shareholders bear the greatest risk, but that does not mean that they will invest and then wait to be left without returns. The respect for the interests of investors implies accounting for their expected return. Companies do not create value unless they can also provide the expected returns to their shareholders. This way of thinking requires raising the bar regarding the targeted profitability. Accordingly, shareholder returns are equated with opportunity cost of equity, i.e., profits that investors would make by investing in another company of comparable risk. Growth that ignores the need for creating shareholders returns cannot be sustainable in the long run.

The growth is definitely at risk, since there is a probability that the equity value will not increase as expected [21, pp. 694-696]. On the one hand, growth is directly linked to the increase in asset investment and, on the other, asset growth largely depends on the possibilities of increasing sales and recorded earnings. Poor sales performance leads to modest earnings as well as to a low level of their retention in a company for the sake of financing profitable projects. Insufficient revenues, especially if they are influenced by inadequate sales prices,

will not provide satisfactory profitability, which will not stimulate investors.

In the absence of space for more thorough elaboration of this issue, we will use a “trick”. To avoid required calculations of cost of equity due to lack of space, let us suppose that shareholders expect a minimum return which would be equal to the cost of debt, i.e., equal to the rate of financial expenses. Although this is far from a perfect substitute for cost of equity, this approach will help us to see what will happen to the reported earnings in infrastructure sectors if we include these additional costs in the calculation of residual income, as a measure of value creation. Bearing in mind that investors expect greater returns than creditors, the actual results, summarized in Table 6, could turn out even more disappointing.

Based on the presented results, we can easily draw a conclusion that these sectors recorded positive results in 14 out of 16 analyzed years. However, the situation became completely opposite with the inclusion of cost of equity in the calculation. Now there is a negative presumed residual income in 12 of 16 analyzed years. More precisely, it existed in all sectors and in all years, excluding ICT sectors. In such circumstances, there are no grounds for talking about value creation, but rather about its destruction.

The key conclusion is that investors have no interest in investing, especially in infrastructure projects, if they cannot achieve the expected returns. In practice, it is hard

**Table 6: Presumed residual income**

Energy	2014	2015	2016	2017
Net Income	(1,352,027)	13,851,733	17,938,028	34,364,502
Minimum Required Return	176,362,989	93,133,192	55,164,540	36,221,658
Presumed Residual Income	(177,715,016)	(79,281,459)	(37,226,512)	(1,857,156)
<b>Water Supply and Management</b>				
Net Income	1,326,972	1,852,421	3,421,418	4,407,292
Minimum Required Return	18,568,689	12,573,192	14,884,089	10,713,754
Presumed Residual Income	(17,241,717)	(10,720,771)	(11,462,671)	(6,306,462)
<b>Transportation</b>				
Net Income	(49,993,408)	14,664,729	16,013,844	20,570,056
Minimum Required Return	53,519,922	27,007,370	35,723,646	39,060,620
Presumed Residual Income	(103,513,330)	(12,342,641)	(19,709,802)	(18,490,564)
<b>ICT Sector</b>				
Net Income	22,403,140	33,061,886	31,174,980	45,536,417
Minimum Required Return	19,183,731	13,410,437	13,526,323	12,270,741
Presumed Residual Income	3,219,409	19,651,449	17,648,657	33,265,676

to imagine a situation where creditors, who bear lower risk, would achieve higher returns than shareholders, who bear the greatest risk. The unsustainability of that situation is more than obvious. Therefore, one should not overlook this fact when talking about private investment in infrastructure projects. There is a need for a shift in mindset when it comes to creating a stimulating environment for attracting capital. Of course, it is also necessary to ensure legal security, political stability, developed capital market, risk sharing, and the like. However, all that will not be enough if there is no capacity for creating value added. Foreign investors will not understand that. If their motives are disregarded, there will be no inflow of infrastructure investments. Only the growth that is connected with the increase in residual income or economic value added can be considered as relevant.

## Conclusion

Growth is undoubtedly the cornerstone of the prosperity of national economies and individual companies. In this context, infrastructure investment is of utmost importance, as it has direct or indirect impact on economic growth. Infrastructure investment directly affects the growth of infrastructure sectors in the respective year. Indirectly, it affects long-term growth through fostering the economic activities of other companies and sectors. Large infrastructure investments are often out of reach of some companies due to the difficulties in providing financing. In order to overcome this problem, there is a need for the diversification of sources of financing, starting from budgetary sources, through providing loans, borrowing from international financial institutions and capital markets, to private investment. Strategic partnerships as well as public-private partnerships could play a significant role in the process of the implementation of large infrastructure investments.

A portion of infrastructure investment should be borne by the companies belonging to the existing infrastructure sectors. However, the analysis has shown that some companies do not have a sufficient financial capacity to bear the burden of large capital investments. They are not able to provide a part of the funds needed for their financing from available cash flow or to enhance

their borrowing power. The key reasons are related to unsatisfactory liquidity, exposure to long-term financial risks, low profitability and a lack of internally generated sources for ensuring sustainable growth. State-owned enterprises and public utilities that operate within infrastructure sectors deserve special attention. Raising their performance requires a wide range of carefully selected measures, such as an improvement in corporate governance, differentiation of the government's ownership function from its regulatory function, full or partial privatization with different dispersion of ownership, operational and financial restructuring, inclusion of some companies in the capital market, and so on [15, pp. 48-55].

All growth entails certain risks. Growth at the level of national economy does not necessarily lead to the profitable growth at the level of individual companies. The absence of sustainable growth is an additional problem. On the one hand, the sustainability of growth is related to the problem of maintaining the desired financial structure. Borrowing is useful as long as there is a positive effect of financial leverage. In this regard, the combination of financial sources must be selected in such a manner to prevent that a company, due to increased debts and threat of heavy costs of financial distress, faces bankruptcy. Another important determinant of sustainable growth is the ability to create value added. This means that not all growth is attractive, but only the growth which makes it possible to cover the expected shareholder returns from generated income. Unless this condition is fulfilled, private investors will have no interest in infrastructure investment. Growth should not be pursued at all costs. Unfounded growth may cost too much.

In general, when it comes to developing countries, the problems of financing infrastructure projects are due to a lack of private capital. It could be said that the problem primarily comes from the lack of confidence in institutions and the consequent unwillingness to undertake long-term and more risky investments. Attracting private capital calls for creating an adequate business environment and solving some serious problems. Stable regulations and legal security must be provided if there is an orientation toward attracting investment. The implementation of projects in many cases lasts for several years, while the

effects usually become visible only after the completion of projects. This implies a long-term engagement of sources with delayed effects, which increases risks and requires resorting to long-term hedging mechanisms.

Besides, the sustainability of growth is not only a question of the efficiency of individual companies. It is also a matter of political will to create a favorable climate for achieving sustainable growth. Profitable growth will depend on a number of factors, including the attractiveness of investment projects, profit potential, operational efficiency, etc. Nevertheless, growth may be hampered by pricing policy. Since these investments most often result in the provision of infrastructure services to the broadest spectrum of users, political and social circumstances in developing countries are the reason why decisions on the prices of services are not made based on their commercial values. Of course, it is not easy to make these tough decisions, but it is also obvious that the inability to achieve expected returns discourages private investors. Only the growth that leads to the creation of value added matters. Foreign investors will be motivated only by the opportunities coming from that growth.

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