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Foreword

With this issue, we are happy to finish the seventh year of regular publishing. Our authors suggest the insight into the correlation between financial profitability and stock market performance of companies listed on the Bucharest Stock Exchange, health tourism trends, and the development potential of Northwestern Croatia, spatial patterns of affordable housing needs in Portugal, and electricity market liberalization in Bosnia and Herzegovina. Four different countries with four separate cases, but all relevant for social aspects of economic development. We hope our readers will find some inspirations for their further researches. However, Vol.VII/2 is the last issue in such a format because the editor follows the suggestion to focus on a more specific area of social and economic development. We plan for the next year to start with our Journal of Economic and Social Development: **Building Resilient Society (JESD-Building Resilient Society)**. This announcement is the first call for the authors to offer their papers on specific topics related to establishing a resilient society.

Editor
Marijan Cingula

Spatial Patterns of Affordable Housing Needs in Portugal

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Abstract

Ensuring the provision of affordable housing is an important and challenging role of planning practice, both at macro and micro level. The adequacy of housing supply to the population's (present and future) needs, preferences and income is particularly relevant and complex in territories where standard housing market mechanisms typically fail. In places, shaped by socio-economic vulnerabilities (such as high proportions of population with low income levels) and by severe demographic decline processes (associated with high levels of vacancy houses), the mismatch between the market drivers (e.g. demand and supply) and the efficient market conditions to produce affordable and good solutions for all population is a crucial issue in the context of public policy.

Thus, a spatial composite indicator of housing accessibility, considered in this article as a combination of need and affordability, is developed. More specifically, the former is assessed by the balance between housing stock (supply) and number of households (demand), while the latter is captured by the equilibrium between housing price (supply) and household's income conditions (demand).

Keywords: housing needs, housing affordability, spatial econometric analysis, demography, income

1. Introduction

The concepts of need and affordability applied in the context of housing are widely discussed in the literature (C. M. E. Whitehead, 1991, C. Whitehead & Yates, 2009, Fingleton, 2008), from which emerges a clear distinction between both. In general terms, housing need is the quantity and type of housing that a country, a region or a place requires to provide accommodation for a given standard pattern, within a society (price is not considered), while housing affordability is an indication of whether house prices / expenditure are affordable in relation to the incomes of the households or a certain group of people (e.g. first-time home buyer, young people, specific type of workers). The former, is therefore related with social demand, the latter considers only housing expenditure and income without any definition of housing standards.

A relative interdependence between the right to adequate housing (need) and the right to a minimum threshold of living conditions (affordability) can be assumed (United Nations, 2016). The inclusion of access to housing within the scope of human rights results from the fact that it is recognized that the dignity of human life stems from the satisfaction of basic needs such as having a house that provides privacy and security, peace and dignity (Leckie, 1989). The

concepts of right to housing and housing justice are at the basis of the design of instruments able to provide adequate housing to families whose socioeconomic conditions block their access to this essential condition for dignity. The right to housing, as a human right, binds States to the need to support citizens in their pursuit when they are unable to access this essential asset on which the dignity of their existence depends (Kothari & Chaudhry, 2001). The inability to pay for adequate housing is an unjust and humiliating unacceptable condition that requires corrective public policy intervention.

The widespread recognition of the importance of access to housing by national and international institutions (Kothari, Karmali, & Chaudhry, 2006; Commissioner for Human Rights, 2009; United Nations, 2016; Cuidades Y Gobiernos Locales Unidos, 2018), has not been sufficient for solving this violation of human rights.

This paper presents an exploratory approach to measure housing need and housing affordability across the 276 Portuguese municipalities (inland territory), using descriptive spatial econometrics methods to capture spatial patterns associated with these concepts. The section 2 provides a general overview about how these two concepts are discussed, measured and contextualized in the national and international public policy agenda. In section 3 the territorial patterns of need and affordability are presented and then discussed in line with the conceptual framework of housing vulnerabilities presented in the literature. Moreover, regional disparities in terms of demography and housing demand and supply are shown as a result of a multidimensional notion of housing accessibility. Finally, in section 4, general conclusions and further research directions are summarized.

2. Housing need and affordability

2.1 International Background

The right of access to housing combines seven dimensions: legal security of tenure, including legal protection against forced evictions; availability of services, materials, facilities, and infrastructure; affordability; habitability; accessibility for vulnerable groups; location and, cultural adequacy (Miloon Kothari & Chaudhry, 2001) (Tate, Meyer, & Yuan, 2016). Access to housing results from a combination of dimensions that are constantly being framed. Evidence on the aggregation of dimensions goes back to the early 1980s when housing need placed the focus on the inability to pay rents, loans or purchase values by low-income populations. International institutions such as the OECD are starting to pay attention to the process of replacing social housing provision policies (supported by the public sector) with market-oriented assistance solutions (Misztal, 2013).

Public concern with social groups and territories, where the inability to afford housing costs occurs, is growing as it is represents families' most significant expenditure. This situation makes them vulnerable to variations in the rental and acquisition market, changes in financing conditions and the tensions shaping housing provision. Low-income families and other social groups positioned on the edge of the housing market, due to this condition of vulnerability are always at risk of being homeless or being unable to access housing that fulfils the seven abovementioned dimensions (Quigley & Raphael, 2004). The weight of housing costs for

families in situations of poverty, for example in the USA, captures about half of the family income while the average of this cost for all families is about a quarter of the income.

In the most common approach, the ability to afford housing costs results in a ratio between household income and the amount corresponding to that weekly, monthly or annual expenditure. This ratio creates a dynamic geography of families, social groups and territories that enter and leave this border of exclusion. Consequently, when calculating the threshold that excludes social groups and territories from access to housing, the most and least efficient policies to reduce this vulnerability are considered (Stone, 2006).

Urbanization is a structural condition with a global expression that is associated with better working conditions, access to a range of amenities and better incomes causes a constant need for housing production and increases this cost for families. When market mechanisms are fully functioning, there is an increase in supply that works as a device that blocks price inflation. However, in many regions, the zoning rules, the control of the available land for this urban function and the financing of this type of asset keeps the price of housing at a level that causes difficulties for families with low and medium-income that. In many cases, it means the inability to purchase or rent a house. Public provision policies or other support instruments targeting specific families or agents in the housing market and urban planning strategies can minimize the problem of the inability to access adequate housing (Agyemang & Morrison, 2018).

Briefly, there are two approaches to determine the inability to pay for housing costs. The ratio could be turned into an effort rate that weighs the proportion of the cost of housing in the family's income. Housing is affordable if the share of household income is low or moderate. Hamidi, Ewing, & Renne (2016), using the price affordability ratio, the U.S. Department of Housing and Urban Development states that if the total housing cost is at or below 30% of gross annual income, then the house is affordable. According to the World Bank criterion, housing price to income ratio between 3 and 6 is considered acceptable (Lau & Li, 2006). However, as presented in the 13th Annual Demographia International Housing Affordability Survey by Cox, Pavletich, and Hartwich, median housing prices which are multiples of 3.0 and below of median income are considered affordable; 3.1 to 4.0 of median income are moderately unaffordable; 4.1 to 5.0 are seriously unaffordable, and 5.1 and over are severely unaffordable (Cox & Pavletich, 2016).

The residual income approach through which the impact of housing is weighed against the other monthly household expenses. That is, "this measure expresses the challenges that each household faces in balancing the cost of housing with non-housing expenditure, subject to a budget constraint" (Borrowman, Kazakevitch, & Frost, 2017, p. 871).

Families that are vulnerable at the risk of not being able to pay the cost of housing are in the situation that Borrowman et al., (2017) calls "housing affordability stress". The authors consider that a family suffers from housing affordability stress "if income after housing costs are met, is below a budget standard. Budget standards are a set of budget lines based on pricing a basket of goods and services that a household needs to achieve a specific standard of living, which will vary according to the differences in the quality, quantity, and scope of household consumption" (Borrowman et al., 2017, p. 871).

Focusing on the situation in Portugal, the indicators show that the rate of overhead on housing expenses, which corresponds to the proportion of people living in households, in which the ratio between annual housing expenses and disposable income (less social transfers related to housing) is over 40%, was 6.7% in 2017, 0.8 pp less than in 2016 (National Statistical Institute of Portugal, 2018).

2.2 The demand perspective of needs and affordability: demography and social conditions

The increase in life expectancy and the decrease of the number of births are unquestionable phenomena in developed countries, leading to a progressive aging of the population. Most of the European countries are currently facing two related demographic challenges: population ageing and population decline – resulting from a combination of low fertility and the life expectancy increase. Despite being a generalized phenomenon, this process is affecting central and peripheral regions differently and is shaping new spatial patterns of inequality. Portugal is a peripheral territory, in the European context, where these demographic decline and aging processes are much more intense. Within the country, a significant part of the Portuguese territory is in sharp population decrease. The data analysis in the last decades clearly shows that the current trend is leading to human desertification in the inland of Portugal (Castro et al, 2017). One of the main issues addressed by Portuguese demographic studies is the concentration of population in the coastal zone arising from a continuous process of urban and industrial agglomeration. Such process is centred on the growth of the metropolitan areas of Lisbon and Oporto and is spreading to the coastal area between and around both cities. To a lesser extent, urban sprawl also occurs in the coast of Algarve. The counterpart of such process is the persistent though territorially heterogeneous demographic and economic decline of the rest of the country. Current demographic indicators show that this trend persists and is combined with other demographic phenomena, such as the decrease of the average size of households and a strong aging tendency (Castro, 2016).

These regional economic and demographic disparities motivated several public programs in depressed areas which, so far, did not reverse the situation. In what concerns population policies, it is clear that any measure aiming to increase birth rates will no longer produce significant impacts in the inland, given the population age structure (Gomes et al, 2016). Young people must be attracted from other regions, and thus, any effective demographic policy must promote opportunities to enhance the quality of life for all that are living or will be live in those territories. The provision of good jobs, infrastructures and services and affordable houses are critical conditions to reverse the present demographic trends. In the absence of adequate policies there is a risk that a population decrease will create less demand, leading to a negative vicious circle. If employment fall greater than population decrease, negative population dynamics will be enhanced by out migration movements. Given the unbalance on the population age structure, there is a serious risk of generating a demographic downward spiral decrease, with direct impact in the housing needs. Thus, the demographic evolution, over time, and population distribution, across the territory, is having an effective impact in housing demand and supply; the former, because the total population is dramatically decreasing and the available housing is more than enough for the people that are leaving in those territories, the later, in the sense that the

economic dynamic and the job opportunities do not justify any private residential housing investment, both in new buildings or requalification existing buildings.

The successive changes in demographic structure and population distribution across the territory contribute significantly to the variation in housing markets over time. Understanding the nature of such temporal dynamic is important when effective public policies are required.

2.3 The supply perspective of needs and affordability: Housing and income

In the UN-Habitat Millennium Development Goals Report (Indicator 11.1.1), United Nations estimates that one in eight people in the world lives in slums or experiences slum-like conditions around their housing environments. Over the next 15 years, it is estimated that more than three billion people will need adequate housing. The estimative for 2025 concludes that just in Europe will be 41.8 million of people living in slums. That means that these households have a lack of access to the better-quality water source, sanitation facilities, enough living area, housing durability and, the security of tenure (UN-Habitat, 2018).

The Report of the Special Rapporteur on adequate housing (Mission to Portugal) concluded that in 2015, 33.5 percent of poor households lived in unaffordable situations and were at risk of falling into arrears or mortgage foreclosure, a 3 percent increase in just two years (United Nations, 2017). According to the National Statistical Institute of Portugal, 11 percent of people living in poverty live in severe housing deprivation, and almost 10.3 percent (21 percent of whom are poor) live in overcrowded households. Through a survey of Housing Replacement Needs, concluded in 2018, the Portuguese authorities identified 25,762 families as being in an unsatisfactory housing situation. In 2018 the share of the population in the bottom quintile of the income distribution spending more than 40% of disposable income to pay for a mortgage in Portugal was 26,8 percent and to pay for rent at market price on the private rental market was 33,5 percent (OECD 2.2 Social Policy Division, 2017).

Housing is considered an important single asset owned by most individuals and represented a very large proportion of household wealth. The share of income spent on housing represents a considerable percentage of total expenditure and a permanent source of direct expenses (rent, interest rate and amortisation, repair and renovation, etc.) and indirect costs (energy, water, telecommunications, furniture and other domestic goods, etc.). For this reason, for households, the cost and quality of their houses greatly influence their quality of life. The Portuguese National Bank estimates that average housing expenditure in Portugal currently represents 30% to 40% percent of monthly income. Beyond its impact at the household level, major and persistent expenditures on housing lead, at the macroeconomic level, to high levels of external indebtedness affecting countries as diverse as Portugal and the United States.

The rise in the importance of the housing sector is due to the abovementioned multiplier effect and corresponding policies essential for maintaining high levels of economic growth and employment supply. The flip side of the coin corresponds to the negative effects from oversupply of housing that is recorded for most developed countries (ESDP, 1999; ECB, 2002), and which in turn, is partially explained by the expansion of the number of second dwellings. In the case of Portugal, the number of houses increased from 2.6 million, in 1970, to more than 5.9 million in 2019 (but 12.5%, about 750 thousand, are empty - OECD, 2019), representing a

growth rate significantly higher than the number of households. A recent OECD Report (2019) reveals that Portugal is the developed country of the Organization for Economic Cooperation and Development (OECD) with more houses per thousand inhabitants. This study also shows that 11.3% of Portuguese with a rented house in the private market spend more than desirable, by spending more than 40% of their disposable income on housing. In many countries as Portugal, housing costs are especially demanding for the poorest families (OECD, 2019).

After a somewhat minimal evolution in the 1990s and early 2000s, housing prices in Portugal have been increasing in the recent past (see for instance Rodrigues, 2017, in which the authors analyse the determinants of housing prices in Portugal, with particular emphasis on the periods of crisis and post-crisis.). Leading the strong rising of housing prices is Lisbon, where buying a house costs 4,532 euros per square meter (INE, 2019). According to recent data of the Statistic Institute, in more than two and a half years, buying a house in Lisbon has increased 1,002 euros per m^2: from 1,875 euros per m^2 to 2,877 euros per m^2. The scenario is not different for Oporto (the second major urban area of Portugal), where the increase corresponded to 437 euros per m^2 - increased from 1,088 euros per m^2 to 1,525 euros per m^2. The increase of prices in urban areas with strong tourist pressure (which is the case of these two metropolitan areas of Portugal) has as direct consequence the accentuating of the gentrification process and an increase in housing demand in more peripheral areas. The disposable income of the majority of Portuguese households is not sufficient to buy a dwelling nearby the workplaces, and the interest rates to apply for a bank loan are not as attractive as they were in the past. The figure 1 shows how the housing price evolved in the last 10 years.

Fig. 1. Housing price index for Portugal (Base – 2015 year)

Source: INE / https://bit.ly/2RZDjyl
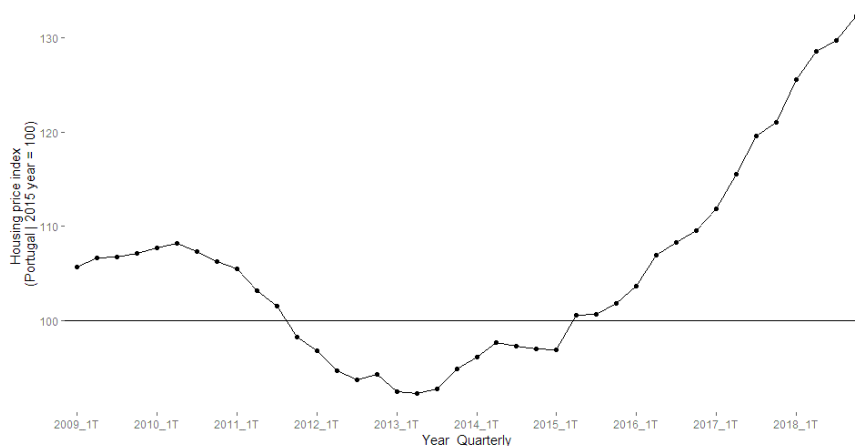
3. Data and Methodology

As mentioned in the introduction, this paper presents an exploratory analysis of the general accessibility to housing provision mechanisms in Portugal. This analysis was applied in the context of the 276 Portuguese municipalities for the period between 2011 and 2018 and uses a set of key indicators collected and compiled from the National Statistical Institute (INE) public database. The territorial disparities of housing need and housing affordability are analysed

through spatial analysis techniques – spatial descriptive statistics and spatial autocorrelation measures.

As shown in table 1 and figure 2, for this propose it was considered: i) the population growth between 2011 and 2018 (to assess the demand side of the need); ii) the number of available dwellings between 2011 and 2018 (to assess the supply side of the need); iii) the households' median income in 2018 (to assess affordability for demand side); and iv) the median of housing prices (to assess affordability for supply side).

The exploratory assessment of territorial patterns of housing accessibility is obtained through a spatial clustering processes, in which the spatial autocorrelation analysis allowed to capture where housing need and housing affordability are critical, that is, where the ratio between the population growth and the available number of dwellings between 2011 and 2018 is higher; and where the ratio between the (yearly) maximum disposable income of household in housing expenses (2017) and the market value of houses (2017), measured in yearly costs, is lower. Finally, a joint analysis of these two concepts are presented in order to identify major territorial patterns (clusters) of housing accessibility.

Table 1. Primary data and indicators derived for the exploratory spatial analysis (Stage 1)

	PRIMARY VARIABLE	SOURCE OF PRIMARY DATA	FINAL HOUSING INDICATOR	DESCRIPTION
DEMAND SIDE	Resident Population (No.) (census – 2011)	INE (https://tinyurl.com/vse436o)	Population growth	Demographic dynamic between 2011 and 2018 in the Portuguese municipalities. (Note that to analyse housing need in 2018 was considered the resident population estimates for 2018 – as the final indicator)
	Estimated resident population (annually population estimations - 2018)	INE (https://tinyurl.com/srgeewb)		
	Gross reported income (€) of taxable persons (2017)	INE (https://bit.ly/37YAaEv)	Maximum income available for housing expenses by households (€ - median - yearly)	Median spent on housing expenses; it is considered the value based on the maximum effort rate of 40% of disposable income
SUPPLY SIDE	Conventional dwellings (No.) by Occupancy status …crossed with… Buildings (No.) by Preservation state; (Census - 2011)	INE (https://bit.ly/39ajVEf and https://bit.ly/3b9EsuF)	Available houses (number)	The final indicator considers the (total) vacant conventional dwellings for sale and for rent which are integrated in buildings classified with the following preservation state: repair not needed, small need repair or medium need repair. In addition, it was considered the number of completed dwellings in new constructions for family housing between 2011 and 2017
	Completed dwellings (No.) in new constructions for family housing (2011 to 2017)	INE (https://bit.ly/2GUyzDO)		
	Median value (€) per m² of dwellings sales (2018)	INE (https://bit.ly/36Y64Qa)	Median housing value (€ - median - year equivalent)	The median market price is multiplied by the average housing size in the municipality. Average size of houses are obtained as a weighted average of the central value of each class of useful area, using the number of dwellings in each class. To define the yearly equivalent of housing value it is assumed a mortgage contract with a 2% (average) interest rate and a 30 years credit contract.
	Conventional dwellings of usual residence (No.) by Size class of useful area (m²)	INE (https://bit.ly/31qnHa7)		
JOINT ANALYSIS OF SUPPLY AND DEMAND FOR BOTH NEED AND AFFORDABILITY				

| [Ratio of] Number of available houses by number of individuals – measuring housing need |
| [Ratio of] Median housing market value by median household's income – measuring housing affordability |

Fig. 2. Methodology to assess spatial patterns of housing accessibility
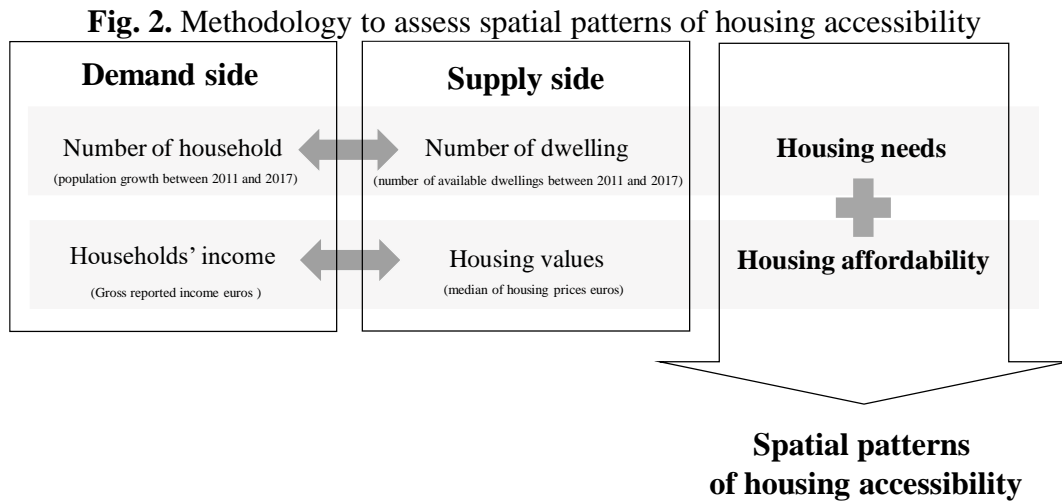
4. Results

4.1 Housing Needs

The results described below represent the spatial structure of housing need. It is possible to identify very different and clear territorial patterns regarding the demand for housing and its availability. As mentioned in the theoretical framework, the demographic evolution in Portugal is resulting in a strong and deep contrast between the inland and the coastal territory of the country, but the number of available houses does not follow this pattern, as demonstrated by the dispersion graph in figure 4, and corroborated by the coefficient correlation (0.3). Analysing the LISA indicator (local indicator for spatial autocorrelation), which measures the univariate spatial autocorrelation for the indicator used to measure the concept of housing need – the ratio between the number of available houses and the number of individuals shows significant differences. In the north-west, the housing need is critical, while in the south it is not a major issue. A more detailed analysis of the dispersion graph in figure 4, allowed to build 6 territorial clusters, taking into account the position of each municipality in relation to different housing need sub-dimensions, considering 3 thresholds: i) the municipalities with values above and below the regression line (distinguishing the municipalities that have the population growth value above or below to what would be expected for the percentage of available housing); ii) considering the null level of the population growth , and finally, iii) the average value of the percentage of available housing to the total housing stock, in Portugal municipalities'. The combination of these three conditions resulted on the territorial clusters represented on the map of the figure 3. Clusters 1, 2, 4 and 5 are those where the need for housing is greater, since the demand indicator suggests to be much higher than the supply response. In this group, it is also possible to highlight the territories of clusters 1 and 4 where population growth is positive, while clusters 2 and 5, despite being territories where housing need indicator point to a comparatively alarming situation despite these territories have negative population growth.

Fig. 3. Spatial patterns of housing need
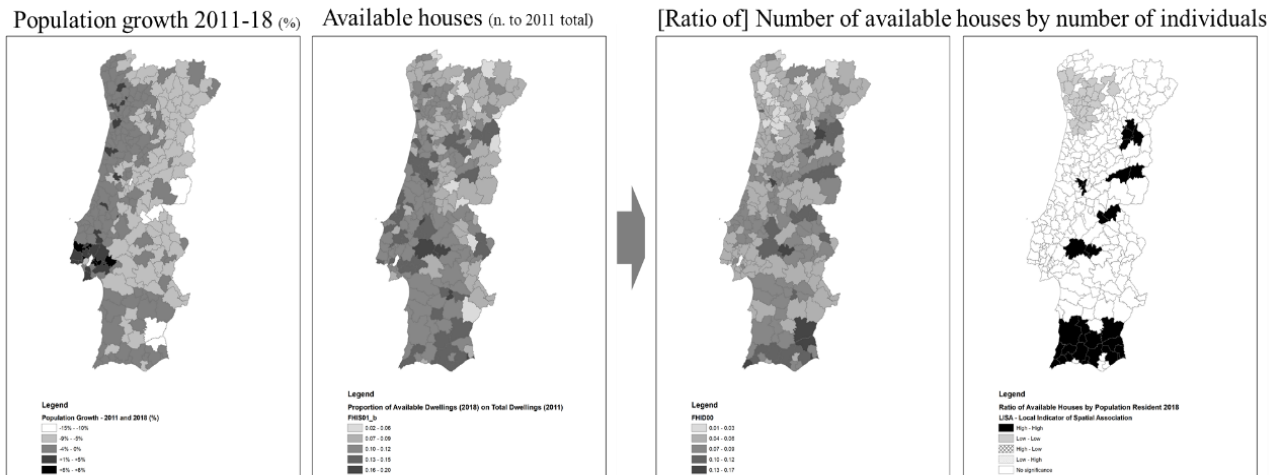
Fig. 4. Spatial patterns of the demand and supply of housing need
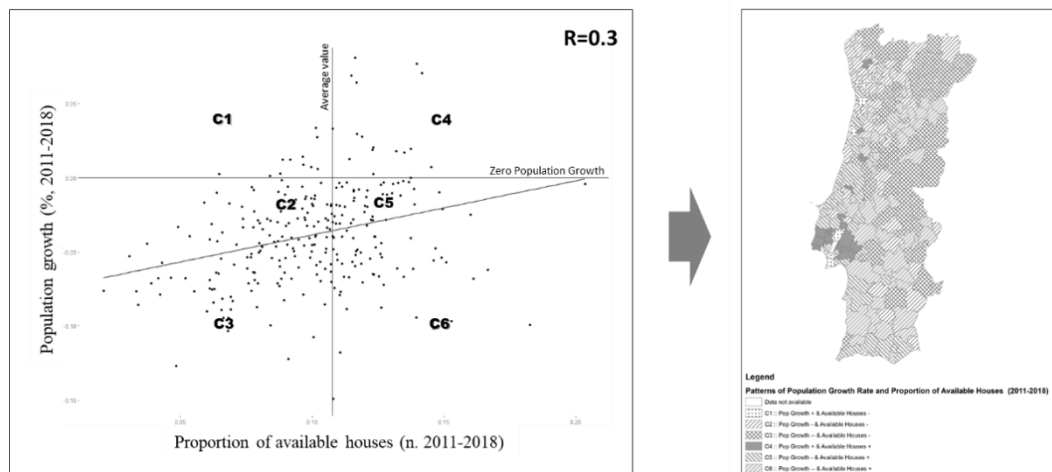
4.2 Housing Affordability

The information described below follows the same rational as that followed in the previous point. The results are presented for the concept of housing affordability measured by the relationship between the level of household's income and the value of housing (third and fourth maps in figure 5). In this case, as expected, it is possible to find a close association between the value of housing and the income of the population - as can be seen from the territorial patterns of income and housing prices (first and second map in figure 5) – and to validate by the measure of the correlation coefficient of the scatter plot, shown in figure 6. Using the same approach of the previous indicator (housing need), three axes were defined, allowing to stratify the territory into 6 different groups. The clusters 1, 2 4 and 5 are the critical ones, because it includes the municipalities that have the value of housing above to what would be expected given the income of the families who live there. Still, it is worth mentioning clusters 1 and 4, which have a value of house prices above the average.

Fig. 5. Spatial patterns of housing affordability
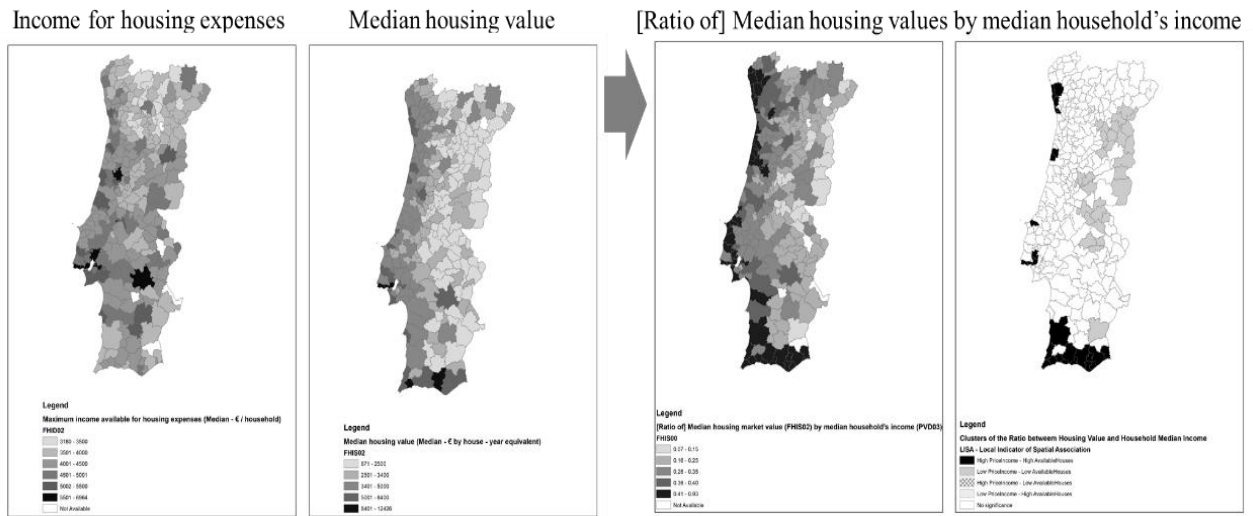
Fig. 6. Spatial patterns of the demand and supply of housing affordability
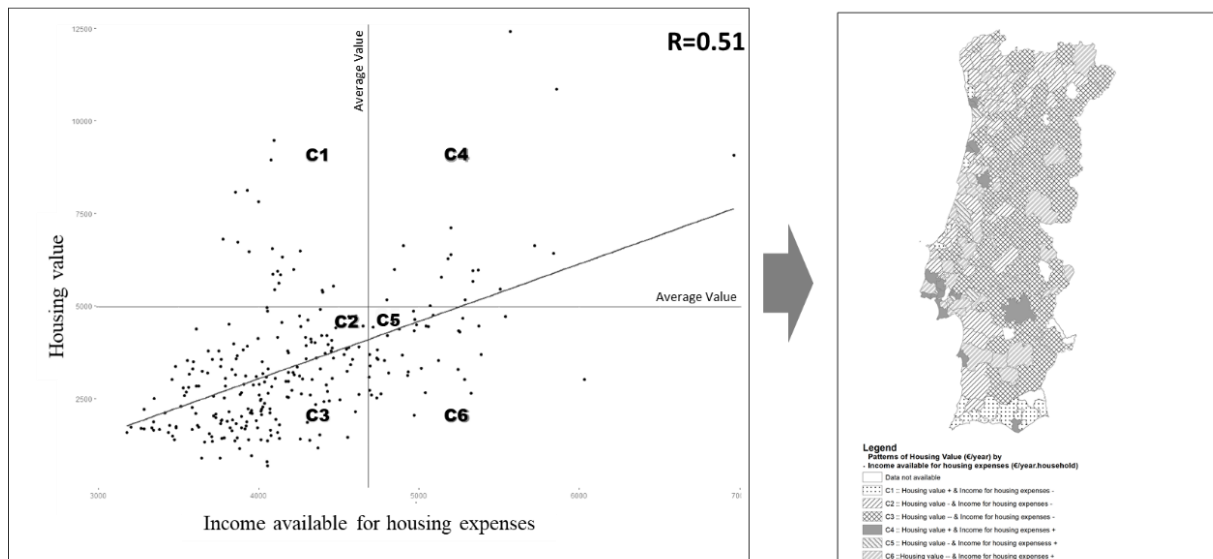
4.3 Territorial patterns of accessibility housing

This last point aims to present the territorial patterns of housing accessibility, assessed by the aggregation of the concept of housing need and housing affordability, presented in the previous two sections. From this aggregation, it was possible to establish 4 territorial clusters of housing accessibility, which result from a combination of high and low values of the two implicit dimensions of this composite indicator. Thus, there is a clear division of the country into 4 distinct quadrants: i) the northern coastal area (between the two metropolitan areas of Lisbon and Oporto) with bad housing accessibility (few and expensive houses); ii) the southern coastal area (corresponding to Algarve region and the coastal part of Alentejo region) in which the level of housing accessibility is not critical if the housing need is considered, but the level of affordability is critical, that is, there are many houses available but there are expensive compared to the income level of households that are living in those territories; iii) the northern

interior of Portugal aggregates the municipalities with bad performance of the housing need (the number of dwelling are greater than the number of households) but a good level of affordability, there are few houses but they are cheap); finally the iv) the southern interior of Portugal (which is suffering a trend of human desertification) considers the municipalities with the highest level of accessibility, there are many and cheap houses. Of course, that these results must be analysed carefully, since the questions of having good conditions of housing accessibility just means that those municipalities are not so effective to attract and fix population, explaining the oversupply of housing stock and as a consequence the lower prices of the housing market.

Fig. 7. Spatial patterns of the demand and supply of housing affordability
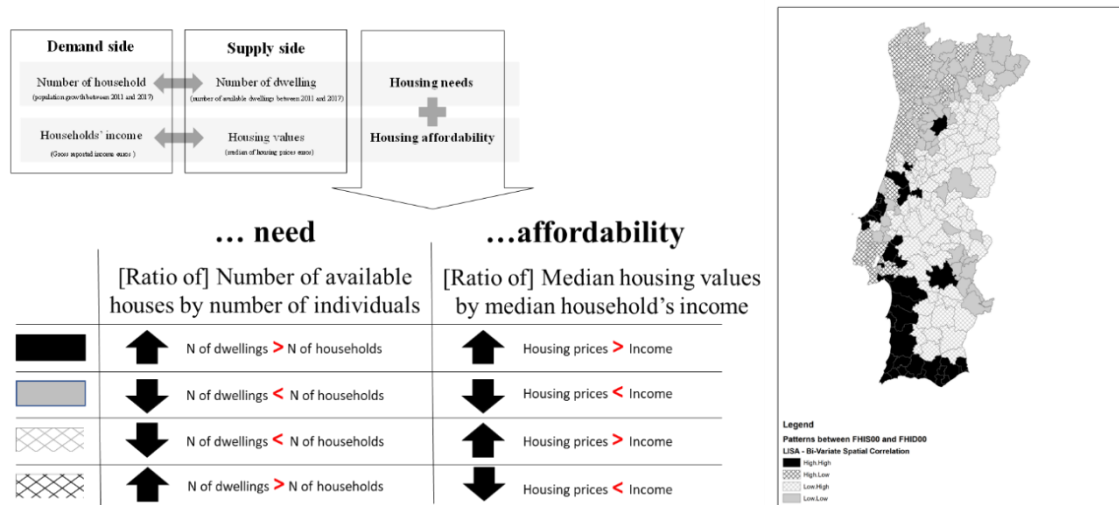
5. Conclusions

The purpose of this paper was to discuss and measure the concepts of housing need and housing affordability, and consequently, to present an exploratory approach to apply an innovative methodology to build a spatial composite indicator of housing accessibility. This work adds value to the indicators available on statistic authorities' datasets to produce reliable measures of each one of the two concepts referred above.

This study was applied in the context of Portugal, using data from 2011 and 2018. Since, the last census was in 2011, some estimations and assumption were adapted to assess the level of spatial pattens of housing accessibility. Spatial autocorrelation statistics were used to capture the main dimensions implicitly involved in this multidimensional indicator. The results show a substantial spatial heterogeneity across the municipalities in terms of housing need and housing affordability and strong evidences of spatial dependence, resulting in clear patterns of spatial housing accessibility. Four different clusters were defined with a clear and distinguish spatial structure: in one side, the coastal part of the country, in which the values of the houses are predominantly higher than the income of the households, and the inland part of the country, with an opposite situation; these major clusters are possible to be subdivided into two differentiate parts, if the sub-dimension of housing need is considered.

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Health Tourism Trends and Development Potential of Northwestern Croatia

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Abstract

Health tourism is one of the fastest-growing tourist branches in the world. Population aging, health awareness, globalization, sport and recreation are fundamental reasons for the positive trends of health tourism. Croatian health tourism is at the early stages of development and the implementation of specific business models, content, and strategies can become competitive if appropriately managed. The topic of this research paper is to determine and analyze the development potential of health tourism in Northwestern Croatia, current tourism trends, as well as the financial results of the health-tourism industry. The research aims to identify and analyze the offer and infrastructure of northwestern Croatia as well as the potential essential for the successful placement of the health tourism product on the market. The paper aims to identify the current situation of health tourism products in northwestern Croatia, the success of resource valorization and the status of development projects that should qualify Croatia as a competitive health-tourism destination. The methods used in this paper are historical, desk research, analysis, synthesis, and deduction. The contribution of the research paper is manifested through the methods used and the obtained results which can be beneficiary to practitioners and scientists dealing with the development of tourism. The findings can be a source of ideas and guidelines for further development, especially in the continental and northwestern Croatia.

Keywords: development potential, health tourism, medical tourism, northwestern Croatia, tourism, wellness

1. Introduction

Health tourism is one of the fastest-growing tourist branches in the world. Population aging, health awareness, globalization, and sport and recreation are fundamental reasons for the positive trends of health tourism (Peršić, Vlasic, 2016). Many countries have started to develop concrete infrastructure development strategies as well as the supply of primary and secondary content to valorize the available natural resources adequately. While looking at the European market, countries with a leading health and tourism offer are the UK, Germany, France, and Spain (Šitum, 2017). The reasons for leading positions are quality infrastructure, favorable prices, market-oriented business model, professionally educated personnel, and the right proportion of public and private health institutions that provide an apparent diversification of the offer.

The trend of health tourism growth is not an accompanying phenomenon, but a consequence of a sedentary way of life filled with stress, lack of free time, and a deficit of physical activity.

Croatia is not yet considered a competitive health destination. The reasons are the underdeveloped and diversified offer of content, insufficient financial investments in infrastructure and trends of the mass exodus of qualified medical personnel. On the other hand, Croatia possesses natural benefits such as favorable climate, geographical location, and natural sources of the healing factors. The major problems are found in the ownership structure as well as the business model of health facilities which is unsustainable in the long term. Furthermore, neighboring countries such as Slovenia and Hungary, owing to their offer, affordable prices and reliable infrastructure, represent fair competition for Croatia.

Croatia has the potential for growth and development as well as successful positioning in a competitive market. In regards to that the Health Tourism Development Action Plan, which should enable Croatia to monitor modern trends as well as the realization of existing natural and artificial potential, has been developed.

2. Literature review

Health tourism is a type of tourism where natural healing factors, physical medicine procedures, and programmed physical activities are used under the supervision of professional personnel, with the aim of preserving and improving health, raising the quality of life as well as raising motivation, satisfaction with oneself and achieving inner prosperity (Institute for Tourism, 2014). It is also one of the oldest specific forms of tourism. It is considered a complex tourist product that contains specialized primary and secondary facilities within its offer. The critical starting point of the definition of health tourism is the causality of health and tourism. According to Alfier, health is one of the oldest and strongest motifs of tourist trends. They mainly relate to preventive, rehabilitation, and re-convalescence, as well as curative (Hitrec, 1996). Health tourism is considered to be the border area of medicine and tourism, namely the common area of health and tourism in which the two economic branches achieve a certain symbiosis indicating dichotomy.

The resource base of health tourism is natural healing factors. They represent natural resources with medicinal characteristics that favorably affect the improvement and maintenance of health as well as the prevention and treatment of certain diseases. (Hall,2011) The type of treatment and selection of therapeutic factors depends on the needs and desires of the service user and forms a concrete offer of primary and secondary content based on them. Due to more natural diversification of supply, health tourism is divided into three sub-groups (Institute for Tourism, 2014): wellness-tourism, health tourism, and medical tourism.

Wellness-tourism is a subspecies of health tourism that focuses on achieving physical and spiritual balance. There are two types of *wellness*: medical and holistic. Medical *wellness* implements organized and planned programs of health-preventive and curative characteristics. On the other hand, holistic *wellness* implies programs of opposite characteristics. The holistic approach implies the examination of the psychological, moral, spiritual, and intellectual characteristics of a person while using unconventional methods (Popić, 2011).

Health tourism implies the planned and professional use of therapeutic factors as well as physical therapy with the fundamental aim of improving and preserving health. The focus is

placed on raising the living standards of the service user. Programs are formed individually for each person concerning their diagnosis, mental and physical abilities as well as the ultimate goals of therapy (Institute for Tourism, 2014).

Medical tourism, at its core, implies the realization of preventive health care. Programs consist of partial surgical, dental, cosmetic procedures, including secondary contents as well as accompanying contents of recovery and rehabilitation after surgery (Lehman, Kurečić 2015).

3. Current trends in health tourism

Health tourism is one of the fastest-growing tourist branches. The value of health tourism is estimated at $100,000,000,000, with the estimated growth tendency of 25% annually to 2025. Year. Furthermore, a total of 14 million tourists travel on an annual basis outside their domicile in the leading health destination due to the consumption of health tourism content (UNWTO, 2016). Key growth factors are found in the development of modern technology, globalization, political-social situation, demographic trends, and the growth of nominal income, which led to a rise in consumption. Tourist trips have evolved from a luxury to primary goods that consume all the broader circle of people. The primary constructive factors of receptive states are private and public investments in infrastructure as well as the health system, the existence of an international certificate of quality standards, quality of service, favorable prices, clearly defined marketing strategy and short standby time. A new tourist product that is adapted to the needs of tourists represents individualization and personalizing the experience. (Gržinić, Bevanda,2014) The factors mentioned above are the basis of building a fair offer that will attract a large number of tourists in the destination. Based on these, demand is formed, and tourism trends are shaped in the long term.

Citizens of developed countries opt for treatment in developing countries for more favorable prices for health treatments and services. Medical procedures in these countries are cheaper, from 30% to 85% (Tigu, 2017). The liberalization and development of low-risk airlines as well as medical certificates of quality have created a competitive market and enabled tourists a quality selection of packages. The factor with the most significant impact on the demand development of this market is generally a negative demographic trend. The human population is getting older. The primary target group of tourists is between 25 and 65 years of age, furthermore, up to 2025. The total number of inhabitants falling into the stated target group will stagnate, while after 2025th, the total share starts to decline. Consequently, this will lead to an increase in the proportion of residents who fall into the target group above 65 years of age. Tourists of older age travel to 50% less but consequently opt for more distant tourist destinations, spend more financial resources, and their vacations generally last longer (Tigu, 2017).

3.1 Growing trend indicators of health tourism in the Republic of Croatia

According to the National Bureau of Statistics, 2017, a total of 1.2 million tourists were directly or indirectly participants of health tourism, or used services in the form of primary and secondary content. When data is analyzed for the period of 2015th To 2017th, it is evident the tendency of growth of arrivals and nights of guests in individual health facilities.

Graph 1. Arrivals and overnights of users of health-tourist
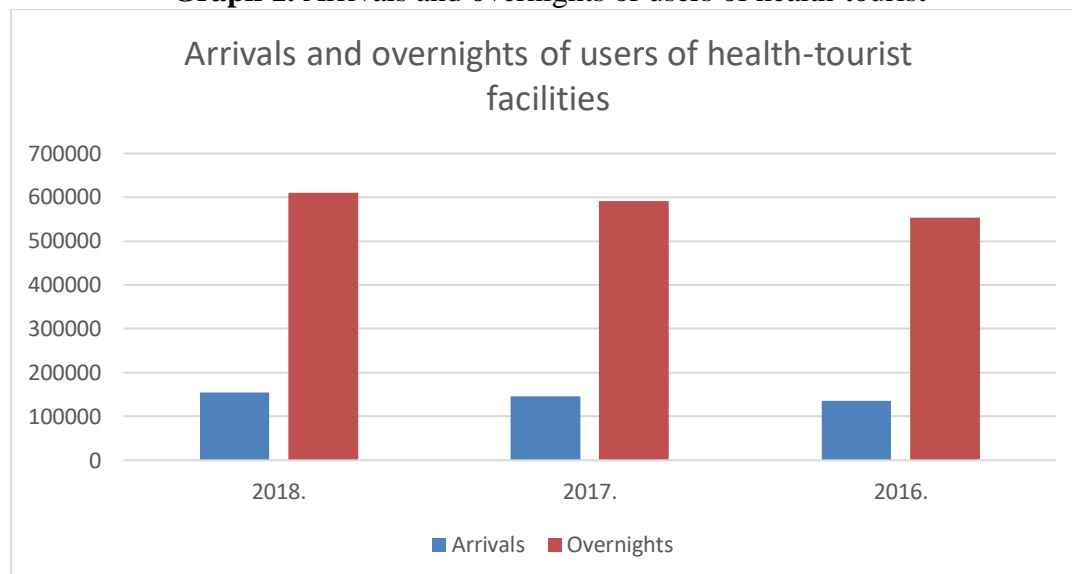
Source: Tourism in figures 2018. Ministry of Tourism of the Republic of Croatia. (https://htz.hr/sites/default/files/2019-06/HTZ%20TUB%20HR_%202018_0.pdf)

Croatia counts, in 2015th a total of 123,000 arrivals and 523,000 nights, while in 201th a total of 146,000 arrivals and 591,000 nights were achieved through positive growth trends. This trend continued in 2018 when 155,000 arrivals and 610,000 nights were achieved. It is necessary to emphasize that this is about users of the primary content of the health-tourism offer.

Although the trend of growth is slow, the fact is that health tourism contains the excellent potential for growth and development. The introduction of quality standards, the recovery of infrastructure, and the maximal valorization of available medicinal factors will achieve stable long-term growth. Seeing the total number of arrivals and overnight stays, it is evident that the majority share of health-tourism guests is foreign citizens. During 2017th, a total of 45,000 arrivals of domestic guests were recorded, while foreign tourists were in total of 101,000. On the other hand, a total of 178,000 nights of domestic guests were recorded, while foreign tourists achieved a total of 414,000 nights. The above trend contains both positive and negative qualities. The positive fact is that Croatia attracts a relatively large number of foreign tourists to its health facilities and thus gradually develops into an international tourist destination. A negative indicator is a low number of domestic guests versus foreign. Foreign tourists make up a total of 69% of health-tourist arrivals (DZS, 2018). The reasons for this ratio may be the low financial revenues of the indigenous population that condition the low standard or the Croats do not follow the modern trends of a healthy lifestyle.

3.2 Business structure

Most of the health-tourism facilities in Croatia are not market-oriented, but more than half of the resources are directed to the contents financed through the Croatian Health Insurance Fund (CHIF). Objects that mainly or entirely focus their business on content through CHIF, operate at a loss, while business-oriented and demand-driven facilities deal with profit.

Table 1. Financial indicators of health tourism in Thermal springs

Thermal springs	Varazdinske Toplice	Krapinske Toplice	Special hospital Naftalan	Stubicke Toplice	Terme Tuhelj
Overnights (2017)	206,834	154,750	122,164	68,941	119,643
Stationary guests (CHIF)	169,990	129,325	112,811	51,219	0
Comercial Guests	36,844	25,425	9,353	17,722	46,302
Revenue CHIF) (EUR)	86,898,932	97,076,012	23,984,961	18,487,077	0
Market revenue (KN)	21,872,229	23,515,305	9,680,184	6,530,951	59,502,876
Total Revenue (KN)	108,771,161	120,591,317	33,665,145	25,018,028	59,502,876
Market share revenue	20%	19%	29%	26%	100%

Source: Catalogue of health tourism projects, 2018.
(https://zdravlje.gov.hr/UserDocsImages/dokumenti/Planovi,%20izviješća%20i%20odluke/K atalog%20projekata%20zdravstvenog%20turizma.pdf)

The thermal springs and specialized hospitals have achieved 672,332 nights in total during 2017th, representing an increase of 4% in total compared to 2016. Of the total number of nights, the 208,987 belongs to the category of commercial nights of domestic and foreign guests, or 31% concerning the number of nights achieved by co-financing through CHIF, which amounts to 463,345 and 69% respectively. The most substantial total revenues were achieved by Thermal springs Krapinske Toplice, a total of 120,591,317.00 kunas. Of the revenues mentioned above, only 19% were achieved by market share, representing an increase of 1% in total compared to 2016th. On the other hand, the Thermal springs Terme Tuhelj, which are entirely commercially oriented, have achieved 59,502,876.00 kunas of revenues, i.e., 5,460,600.00 kunas NET profit.

Thermal springs Varazdinske Toplice achieved a total income of 108,771,161.00 kunas, i.e., 3,370,613.00 NET profit (Ministry of Health RH, 2018). Of all the analyzed special hospitals, Terme Tuhelj generally operates best, precisely because their services and facilities are market-oriented. The Tuhelj thermal spas have generally achieved fewer revenues from their competitors, but on the other hand, they have achieved the most considerable NET profit, which is essentially the most important business indicator. Contracts concluded with CHIF provide many facilities with major problems and difficulties in doing business. The CHIF funds do not

cover the actual costs of complete health care, including medicines, consumables medical supplies, groceries, staff, etc. (SB Varazdinske Toplice, 2017).

4. Development projects of health tourism in northwestern Croatia

While considering the issue of infrastructure, the formation of content and education and employment of personnel, in the planning and implementation phase, specific projects should raise the level of quality of health tourism in northwestern Croatia.

Table 2. Health Tourism Projects

Thermal springs/ Special hospitals	Project Name	The value of investment (kn)	Total investment value (kn)
Varazdinske Toplice	Construction of a rehabilitation center	82,917,089.00	**182,120,954.00**
	Energy restoration of Minerva	58,783,640.00	
	Energy Renovation of accommodation	33,783,316.00	
	Energy Renovation of Health resorts	6,636,909.00	
Krapinske Toplice	Reconstruction and equipping of the object	20,670,000.00	**168,070,000.00**
	Construction of a new hospital facility	130,000,000.00	
	Energy renovation of the hospital	17,400,000.00	
Special Hospital Naftalan	Naftalan 2	42,834,188.00	42,834,188.00
Stubicke Toplice	Construction of outdoor swimming pools and hotels	150,000,000.00	159.5 million
	Construction of a hospital restaurant	2,000,000.00	
	Construction of greenhouses	7,500,000.00	

Source: Catalogue of health tourism projects; 2018;
(https://zdravlje.gov.hr/UserDocsImages/dokumenti/Planovi,%20izviješća%20i%20odluke/K atalog%20projekata%20zdravstvenog%20turizma.pdf)

4.1 Special Hospital Varazdinske Toplice

The Special hospital Varazdinske Toplice has several projects in implementation that should build the basis for future infrastructure development and content offerings.

The construction of the rehabilitation center refers explicitly to the center for people with diseases and spinal defects. The project involves fully equipping the facility with modern medical and accompanying equipment. The construction of the rehabilitation center should allow Varazdinske Toplice to provide a more significant influx of patients and allow foreign and domestic guests rehabilitation in modern infrastructure.

The energy renovation of the accommodation and healing capacities of the long-term spa will allow for more considerable savings in financial resources that can be further invested in the development of new projects and health facilities (Ministry of Health RH, 2018).

4.2 Special Hospital Krapinske Toplice

The construction of the new hospital facility and the garage is the most substantial investment of Krapinskih Toplice. It is planned to build an object with additional accommodation capacities for medical rehabilitation, with a *wellness* center with hydrotherapy and a polyclinic, as well as a scientific-teaching center. The project will complement the existing offer, raise the quality of the service, and exploit the potentials of the offered content. Furthermore, the construction of the garage will further relieve the space of the current parking lot, which will be transformed into a park with accompanying facilities with subsequent projects.

4.3 Special Hospital Naftalan

The project of special Hospital Naftalan implies the construction of a completely new complex with indoor and outdoor pools, hospital kitchens, restaurants, kinesitherapy halls, and polyvalent halls. The process of realization of the project is underway and should be completed in mid 2019th. The negative side of the project is the fact that it is not currently in the plan to construct additional accommodation capacities that would possibly be needed taking into account the investment that will potentially attract a higher number of domestic and foreign guests (Ministry of Health, CROATIA, 2018).

4.4 Special Hospital Stubicke Toplice

The construction of outdoor pools and hotel accommodation is the largest project in Stubicke Toplice. The project includes the decoration of outdoor pools following modern technical solutions for swimming pools and all supporting facilities. Furthermore, as part of the project is the construction of a hotel facility with 40 beds. The purpose of the project is to raise the competitiveness of the hospital to attract new guests. The hotel facility meets the standards of 4 stars. The Antonina building is a protected cultural building where the laundry room and the hospital archives are located. The objective of the project is to rebuild and protect the object from decay. Also, the goal is to align the object with stringent construction standards. The thermal water coming out of the heating system and the pool discharges into the creek, through

the sewer. The aim of building a greenhouse is their construction on the land of hospitals for the production of fruits and vegetables for the needs of hospitals and other health institutions.

5. Potential investment projects

There are a total of 2 potential infrastructure projects for the development of the health-tourism offer. The Garden of Croatia – Hortus Croatie in Draškovec and multifunctional thermal parks or Aquapark in Sveti Ivan Zelina.

5.1 Garden of Croatia – Hortus Croatie

The project includes the construction of a holistic wellness center as well as a health resort. It focuses on producing green energy. The plan is the construction of a geothermal power plant with indoor and outdoor thermal health water parks with horticultural gardens, tropical gardens and the initiation of the process of greenhouse production of fruit and vegetables and fish farming. Furthermore, the construction of 240 accommodation units in villas and apartments, as well as a 9-hole golf course, the construction of SPA & MICE *Boutique* Hotel with 80 rooms categorization four stars with medical polyclinic as well as the construction of the bottling unit, Aqua Hortus Mineral Water, is financed. The total value of the project is 574,990,132.00 kuna, and the overall should be completed in 2023th. The project contains an enormous potential primarily due to the very scope of the geo-transport position.

Međimurska County is located close to the borders with Slovenia and Hungary, which increases the market for potential tourists. Excellent road infrastructure provides a fast and fluid flow of traffic that will allow a massive influx of guests to the facility. Due to the multiplier effect of tourism, small and medium-sized enterprises of different industries will benefit from the project. According to the Croatian Chamber of Commerce estimates, the project should generate 500 new jobs, which will further increase the employment rate of Međimurje county and raise the living standards of citizens in the long term.

5.2 Aquapark Sveti Ivan Zelina

The terrain area for the potential project is 60,773 m2 and is fully owned by the city of Sveti Ivan Zelina. The spring of thermal water contains a flow rate of 20 liters per second, while the water temperature is 24 °c. The project is designed as a multifunctional destination with a focus on attractions based on educational, recreational, and health facilities. In addition to the existing space, there is a sports and recreation center with football fields and field hockey fields. The project will consist of 5 swimming pools with 2000 m2 of water surface with water attractions, main buildings with accompanying pool facilities, commercial restaurants, and fitness centers. As for the swimming pool, there is a sizeable swimming-recreational swimming pool with an auditorium, an *aqua gym* swimming pool with a shallowed basins bar, two hot-*relax* Pools, a children's pool with a water castle and slides and a swimming pool with massive slides and an access tower.

Furthermore, the project includes a sunbathing area of 8500m2, a restaurant with 80 internal and 500 outdoor seating, a hall for weddings and conferences with a capacity of 350 seats and four spiral slides. The value of the project is estimated at 45,000,000.00 kunas. Through the

realization of the project, the city of Sveti Ivan Zelina should become a new health-tourist destination (Croatian Chamber of Commerce, 2019).

6. Discussion

According to the data collected and analyzed, it is evident that Croatian health tourism is still in the early stages of development. Northwest Croatia contains a respectable number of therapeutic factors that are inadequately valued. The primary reason lays in the business orientation of most thermal objects. Most health-tourism facilities are not market-oriented, focusing mostly on the content co-financed by the Croatian Health Insurance Fund (CHIF). The specified business model causes a snow globe effect. Namely, the services co-financed through the CHIF cause financial losses to service providers for reasons that the funds allocated by the Ministry of Health do not fully cover the real costs of the treatments, which is why the facilities are forced to rest costs to settle from their budget.

Furthermore, by focusing solely on this type of service, due to the limitation of receptive capacities of the facilities, there is an inability to spread the offer based on market demand, allowing the objects to remain scarce for a relatively high number of potential beneficiaries. Consequently, primary and secondary contents are not sufficiently differentiated because they are not programmed for specific target groups. Most of the facilities manage to find a balance with the combination of market-oriented content in combination with the content financed through the CHIF. By combining these two business models, establishments manage the financial resources derived from market-oriented content to settle the remaining costs of content co-financed through the CHIF, thereby reducing the general profitability. It is questionable whether such a business model is sustainable in the long term and whether generally, more cost-effective health-tourism facilities are fully competitive and market-oriented following the principles of supply and demand trends.

The Ministry of Tourism must follow all the positive models of competition and successfully implement it in Croatian health tourism through the process of benchmarking. Based on the research, it is evident that particular objects do not follow modern health and tourism trends, although, according to statistics, health tourism in Croatia tends to grow, and all indicators are positive. The question arises as to how to improve the business results, encourage the privatization of facilities, and to implement a market-oriented business. Also, it is a question of how long objects will be able to cover the cost of content financed through CHIF from their budget. There is an increased number of new investments in existing facilities as well as the construction of brand new ones. There is also a growing number of construction of private buildings which in theory should increase the competitive power of Croatia as a health-tourist destination.

The best short-term solution is the development of a quality dialogue between the Ministry of Health, the Ministry of Tourism, and the provider of health-tourism services to address specific problems of the existing business model. A long-term solution is the formation of a new health tourism development strategy whose focus will be on private entrepreneurship, the development of quality standards and the development of differentiated content.

7. Conclusion

Croatian health tourism is still in the early stages of development, although it generally records solid business results. Focusing on north-western Croatia, health tourism trends are positive. Favorable prices of services, good geographic position, a large number of therapeutic factors are the reason for positive trends. Regardless of the positive trends of health tourism, certain problems slow down its growth and prevent Croatia from being placed as a competitive health-tourist destination. One of the fundamental problems is found in the fact that the business model of most health-tourism facilities is not market-oriented.

Consequently, the contents are not differentiated and are not formed according to adequate target groups' needs, resulting in unspecified content and inadequate promotional campaigns. The majority offer of health tourism consists of content co-financed by the CHIF. The costs of health providers offer largely exceed the funds received from the CHIF. Therefore, service providers are forced to rely on their budgets. Most of the facilities have implemented a dual business model. General facilities that are mostly or wholly market-oriented have recorded better business results and have consequently been able to invest more often in new content and infrastructure. It is necessary to implement competitive business models and benchmark with successful destinations to position Croatian health tourism better and to increase competitiveness. These models primarily imply business models, privatization of facilities, and implementation of a unique program of quality standards. Investment in health tourism does not take place regularly, while certain development projects should further strengthen the health-tourism offer. Projects imply renewal and expansion of existing facilities as well as the construction of new ones as the most significant new investment projects include: The Garden of Croatia – Hortus Croatie and Aquapark Zelina. The total value of these projects is 650,000,000.00 kunas. It is a private investment project that will strengthen the competitive power of northwestern Croatia as a health-tourism destination. In general, northwestern Croatia contains potentials for the development of health tourism if adequate business models are implemented, and create a new quality and marketing strategy.

With the focus on private entrepreneurship and private investment, market-oriented business as well as the implementation of the quality standards system, there is the possibility of developing Croatia in a competitive health-tourism destination.

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The Correlation Between Financial Profitability And Stock Market Performance Of Companies Listed On The Bucharest Stock Exchange

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Abstract

This paper highlights the correlation between financial profitability and the performance of the stock market of the companies listed on the Bucharest Stock Exchange.

The sample consists of 30 Romanian companies from different fields of activity to compare the profitability with the financial structure to highlight the change in the market value of the shares.

For highlighting the profitability of the companies, we used the economic rate of return on assets, the rate of financial return and the rate of return on sales, and measuring the stock market performance the market capitalization and the price earning ratio. This subject is very important for all investors in the capital market, regardless of the area of activity of the companies, because the financial profitability and the performance of the stock market are relevant indicators for financial investments.

Keywords: performance, Romanian companies, Bucharest Stock Exchange, linear regression, net income, ROA, ROE, ROS, PER, market capitalization

1. Introduction

The presented article highlights the interdependence relationship between financial profitability and the stock market performance of the companies listed on the Bucharest Stock Exchange. The financial analysis was performed for the period between 2015-2018 and the indicators selected for the calculation of the linear regression for the 30 companies from different fields of activity are: the rate of return on assets (ROA), the rate of return on sales (ROS), the rate of return on equity (ROE), stock market capitalization (MC) and price earning ratio (PER).

Thus, using the econometric modeling, we will be able to answer the questions of the type: Is the stock exchange influenced by profitability? Which sector of activity is most strongly influenced by the evolution of the stock exchange rate?

This paper is composed of four parts, which contain definitions regarding the concepts and terms used to perform the correlation between the level of financial indicators and the evolution of the stock exchange rate, a review of the specialized literature, the research methodology used, the case study performed on the sample of companies selected and not least the findings obtained based on the econometric modeling of the presented correlation.

To establish the hypotheses we started from the premise that the evolution of the stock exchange rate is influenced both by profitability, viewed as a rational factor as well as by external factors specific to the environment in which the companies operate.

The hypotheses considered in the present case study for the 30 companies listed on the Bucharest Stock Exchange are the following:

- H_1: There is a direct and strong correlation between the profitability indicators and market capitalization.
- H_2: There is a direct and significant link between the profitability indicators and price earning ratio.
- In the realized study, all the hypotheses listed above will be analyzed and verified.

2. The current state of knowledge

To demonstrate the relationship of interdependence between the financial profitability of a company and the stock market performance at the end of the year, we must start by defining the concepts of financial profitability and performance.

[1] At the level of a company, the concept of financial performance is reflected in profitability. Thus, the management of the companies must consider reducing the potential negative effects on the financial results to increase the interest of the investors.

[2][3] This is directly related to the concepts of efficiency and effectiveness. Efficiency is the ratio between the effort of a company and the result of this effort or rather how the values of assets and equity are used, taking into account the fundamentals of the economy.

Another definition of efficiency is stated by the author [4]: "some authors consider that an activity is efficient when it achieves its desired goal with minimal effort".

[5] Accordingly, the word "performance" can be defined as a "suitcase word," according to Bourguignon, "in which each one makes available the concepts that correspond to it, allowing the context to take care of the definition." Thus, performance has an interdisciplinary character and many definitions depending on the context; ambiguities may appear instead of generating added value for the investors involved.

Another pertinent point of view is that rates of return influence several variables, as they are an essential criterion for survival, growth, market capitalization, and other variables.

[6] The economic rate of return on assets indicator (ROA) measures the efficiency of the company in the use of assets, so the higher the value of the ROA indicator, the better the company performs.

[7] Another representative indicator for evaluating the efficiency of a company in generating profit in a certain time frame is the rate of financial return (ROE).

Also, the profitability of a company is one of the reasons why investors are attracted to invest in a company [8]. Therefore, it is important to know how the ROE indicator affects stock price performance.

[9] Investors use the price earning ratio indicator (PER) to calculate how many times the value of the gain is found in the price of a share.

According to several authors, stock market prices are influenced by changes in profitability rates and dividends [10][11][12][13][14].

Regarding the market capitalization (MC), the degree of size and its growth rate has a major impact on the growth and development of the economy [15]. Thus, this is an important indicator of the value of the shares and implicitly of the company in general [16].

The theme of the correlation between financial profitability and stock market performance has been analyzed by other authors in various articles, such as:

In the article entitled **The Impact of Economic and Financial Performance on Stock Exchange Performance of Manufacturing Companies listed on The BVB**, [17] started from the premise that the economic and financial performance influences the market value. There were selected for analysis 15 important Romanian companies from the manufacturing industry for the period of time 2012-2016. For the analysis of the economic and financial performance were selected the turnover, the operating profit, the net profit, the economic rate of return of the assets, the rate of financial return and the rate of return on sales, while the stock market performance was measured by the number of shares issued on the capital market, the trading value of closing stock, the capitalized value, the value added by the market, the profit-to-earnings ratio (PER), the stock value index and the capitalization index. Thus, following the analysis, it was shown that there were significant correlations between capitalization and performance indicators, the level of the capitalized value of the company decreased with the economic and financial performance indicators.

Another study titled **Market Capitalization and Financial Variables: Evidence from Italian Listed Companies** [18] analyzed 307 companies listed on the Italian Stock Exchange over a period of 10 years (2008-2017). This study was conducted to evaluate the impact of financial indicators on stock market capitalization. Six indicators were analyzed: ROE, ROA, PER, Operating Income / Turnover per share, Earnings Yield and Working Capital per Share, these representing the independent variables, and the dependent variable was the market capitalization. The results of the research were: there was a positive relationship between stock market capitalization and PER, Operating income / Turnover per share and Working Capital per Share; a negative relationship between market capitalization and ROE, ROA, Earnings Yield was highlighted.

Another relevant article is **An Empirical Study on the Effect of Profitability Ratios & Market Value Ratios on Market Capitalization of Commercial Banks in Jordan** [19]. This paper investigated the impact of profitability rates and market value rates on stock market capitalization for commercial banks listed on the Jordan Stock Exchange for the period of time 2010-2016. The independent variables chosen to measure profitability were ROA, ROE, and the dependent variables were EPS, PER, Dividend Payout Ratio. It turned out that the ROE and dividend payment rate was influencing market capitalization.

In the article named **The Effect of Profitability Ratios on Market Capitalization in Jordanian Insurance Companies Listed in Amman Stock Exchange** [20] was analyzed the impact of the rates of return on the market capitalization for 25 insurance companies listed on the Amman Stock Exchange for the period of time 2010-2013. The results of the research are the following: there was an impact of the return on investment (ROI) on the market

capitalization for the companies operating in the insurance sector listed in the ESA; there was no relation of the ROE on the market capitalization for the companies operating in the insurance sector listed in the ESA; there was an impact of ROA on the market capitalization of the companies; there was an effect of the profitability measured by (ROA, ROI, ROE) combined in the market capitalization for the selected companies.

The study [21] was conducted to evaluate the impact of profitability rates and market value on stock market capitalization for 23 companies in India listed with the CNX infrastructure index. The results were as follows: there was a significant relationship between stock market capitalization and profitability rates; there was a direct relationship between ROCE, ROE, EPS, and stock market capitalization.

The article **The Impact of Financial Indicators towards Stock Returns of Finance Companies Listed on Bursa Malaysia** [22] analyzed the relationship between EPS growth, ROE, and DPS (Dividend per Share) and stock returns. The sample consists of 31 companies listed on the Malaysian Stock Exchange for the years 2011-2016. The result of the research was that: 5 companies showed a significant link between EPS growth and stock returns; another five companies showed a direct relationship between ROE growth and stock returns. The other six companies showed a significant relationship between DPS growth and stock returns.

In the article named **Effect of Financial Performance Indicators on Market Price of Shares in Commercial Banks of Kenya** [23], it was analyzed whether the financial performance indicators (total assets, net advances, total liabilities, deposits and profit before tax) exert an influence on the market price of shares in the case of listed banks in Kenya for the period 2004-2011. The study showed that a single financial indicator was not enough to affect the market price of the shares. Secondly, it was found that the key financial indicators had a significant influence on the market price of the shares.

The paper **Exploring the Relationship between Financial Ratios and Market Stock Returns** [24] analyzed the relationship between financial indicators and stock market profitability for 26 companies listed on the Qatar stock exchange for the period 2009-2015. Thus, it was found that earnings per share, earnings yield ratio, and dividend yield had a positive and significant relationship with stock market profitability, while market to book value ratio, return on assets, return on equity, price to earnings ratio, dividends earnings ratio and net profit margin did not influence stock market performance.

3. Methodology

In this paper, 30 companies listed on the Bucharest Stock Exchange with different fields of activity were selected in order to calculate the simple linear regression taking into account the following indicators:
- *Return on Assets (ROA) = Operating profit / Total Assets (1)*
- *Return on Equity (ROE) = Net Income / Shareholder Equity (2)*
- *Return on sales (ROS) = Operating profit / Turnover (3)*
- *Market Capitalization (MC) = Total Number of Oustanding Share x Current Market Price (4)*

- *Price Earning Ratio = Price per Share / Earnings per Share (5)*

The case study performed for the present research paper is based on both the retrospective analysis because the indicators were calculated over a well-defined time period, respectively, the interval between the years 2015-2018 and the quantitative type analysis due to the processing of the indicators.

Another method of comparison is benchmarking, which helps to make direct comparisons between companies that have different sectors of activity in order to identify the sources of competitive advantage. In this paper, one can identify the degree of comparison of performance by comparing one's own performance (financial and stock market performance) with that of direct competitors in the same field of activity.

The correlation between financial profitability and stock market performance applies to 30 companies that are part of eight important industries of the Romanian economy such as: aluminum metallurgy, oil extraction, aeronautical industry, oil industry, pharmaceutical industry, auto parts manufacturing industry, the energy industry, and food industry. At each company level, the following indicators were calculated: economic rate of return on assets (ROA), rate of return on equity (ROE), rate of return on sales (ROS) and the indicators of stock market capitalization and price earning ratio at the end of each year.

To calculate the indicators mentioned above, for the time period between 2015-2018, for all selected companies, the data were taken from the financial statements published on the website [25].

In order to analyze the correlation between financial profitability and the evolution of market capitalization, the SPSS program was used to calculate the Pearson correlation index based on which we performed a simple linear regression model.

The validation of the regression model was performed after the F-test and the ANOVA test generated by the output window of the SPSS program.

4. Case study

The objective of the present research paper is to track the degree of influence of the financial indicators on the performance of the stock market in the case of the companies selected for the analysis for the eight domains of activity during the years 2015-2018.

30 Romanian companies listed on the Bucharest Stock Exchange were taken into account for the present analysis, which is part of the following sectors of activity: aluminum metallurgy (TMK Artrom, Alro SA, Alum Tulcea, Alumil Rom Industry), oil extraction (Rompetrol Well Services, Dafora, Craiova Drilling Company, Videle Drilling Company), aeronautical industry (Romaero București, IAR SA Brașov, Aerostar SA, Turbomecanica), pharmaceutical industry (Zentiva SA, Biofarm SA, Sintofarm Buc, Antibiotice SA, Farmaceutica Remedia, Ropharma SA), auto parts manufacturing industry (Compa SA, Uamt SA, Altur SA, Autonova SA Satu Mare), oil industry (Rompetrol Refinery, Romgaz SA, Omv Petrom SA, Transgaz SA), energy industry (Transelectrica, Nuclearelectrica) and the food industry (Bucovina SA Scheia, Lactate Natura SA Targoviste).

First of all, the case study contains an analysis of the dynamics of the financial performance/stock market performance indicators, followed by the verification of the research hypotheses mentioned in the first part of the paper. Thus, after processing the data from the website www.bvb.ro, using the SPSS program, we analyzed the type of correlation between financial profitability and stock market performance by market capitalization and the corresponding coefficient.

In the first analyzed year (2015), the company in the aluminum metallurgy industry that had the highest net profit was Alum Tulcea. The smallest profit was registered in 2015 by Alro (-24.03 million lei). Regarding the year 2016, the Alro SA company had the highest net profit in the amount of 67.22 million lei, and in 2017 it registered a profit of 317.68 million lei, in this case noting a great evolution, while maintaining a considerable difference compared to other competitors due to the efficiency of using both financial resources and capital invested. In 2018, we could say that Alro SA consolidated its position, having for the third consecutive year the highest net profit in the related activity sector (225.95 million lei). Regarding the company Alum Tulcea, in 2016 the net profit decreased dramatically, from 6.37 million lei to -16.63 million lei, a fact also reflected in the rates of economic, financial and resources consumed, showing thus the inefficiency of the use of the invested capital and the increase of the debt in relation to the own financial resources. In the coming years, there was a noticeable increase in net profit. Thus, in 2017 the profit was 13.42 million lei, and in 2018 it was 54.13 million lei, observing the decrease of the degree of indebtedness and the good management of the company that applied correct policies at its level.

Another company in the field of aluminum metallurgy that registered a big increase in the net profit during the four years analyzed was TMK Artrom, which in 2018 reached a net profit of 56.56 million from 2.49 million lei in the year 2015, which means good management of assets and capital invested.

In this sector, in the last two years analyzed, the company Alumil Rom Industry recorded the lowest net profit. Thus, in 2017 it had a profit of 12.64 million lei, reaching in 2018 to 535 thousand lei, observing an enormous decrease due to the high degree of investments and implicitly the debt ratio. Regarding the stock exchange performance, we could state that the investors had expressed their interest in the Alro SA company.

In the oil extraction industry, in 2015, the Dafora firm recorded the highest loss (-100.65 million lei), in comparison to Craiova Drilling Company, which had the highest profit of 8.66 million, these data is found in the rates of return. In 2016, the biggest profit was registered by the company Videle Drilling company of 8.32 million lei, and in the last place was Dafora company with a loss of -107.21 million lei. The following year, the Dafora company registered a sudden increase of the profit in the amount of 253.95 million lei, due to the efficient use of the invested capital and the application of coherent policies at the management level. In 2018, it had a negative profit of -6.29 million lei, probably due to the massive investments, and the highest profit was registered by Rompetrol Well Services of 16.88 million lei. This company had an increasing evolution from a negative profit of -29.62 million lei in 2015 to a positive one in 2018, due to the decrease of the indebtedness degree for investments. The Craiova and Videle Drilling Companies had a profit in 2018 of around 9 million lei.

Dafora company had the lowest market value in this area during the analyzed period, and the best-listed companies were Rompetrol Well Services and Craiova Drilling Company.

Regarding the situation of financial indicators in the aeronautical industry, we could declare that the most profitable company in the period of time 2015-2018 was Aerostar, having in 2015 a profit of 52.26 million lei and reaching a profit of 79.92 million lei in 2018. In this case, one can observe the gradual increase in profit due to good management at the company level. On the other hand, Romaero company recorded the lowest profit in all the analyzed time period, having in 2018 a loss of -35.30 million lei due to bad management. A positive and increasing evolution of the net profit is also noted in the companies IAR SA Brasov (2018 - 31.18 million lei) and Turbomecanica (2018 - 24.84 million lei).

In conjunction with the financial indicators, the stock market indicators place the company Aerostar SA as the most valuable company in the related sector in all the years analyzed. The Turbomecanica company is less attractive to investors.

In the pharmaceutical industry, in 2015, the Zentiva firm had the highest profit amounting to 46.20 million lei. The following places were classified Biofarm firm (27. 22 million lei) and Antibiotice SA (27.17 million lei), noting a very small difference between the two companies in terms of profit. The smallest profit was recorded by the Sintofarm company in 2015. In the following years, the Zentiva company maintained its position of leader in the group and increased its profit until 2018 almost 6 times, being worth 262.62 million lei. This shows the efficient use of financial resources. Also, the Sintofarm firm had a downward evolution of the net profit, and in 2017 and 2018 presented losses in the value of -538 thousand lei in 2017, respectively -1.36 million lei, due to the investments made in the modernization of the technical equipment. In 2018, Biofarm company had a profit of 38.42 million lei and Antibiotice company registered a profit of 34.30 million lei. In the case of these two companies, the evolutionary trend recorded during the analyzed period is highlighted.

In the period of time 2015-2018, Zentiva company had been noted as the most attractive for investors, and in the last year, its market share reached 21.671. The worst market share was recorded by Sintofarm in four years.

Regarding the auto parts manufacturing industry, the company that was the most profitable in all the years analyzed was Compa SA. In 2015, it registered a net profit of 27.13 million lei, and in 2018 it was 35, 42 million lei. Other companies less profitable from the point of view of shareholders were Uamt SA, which had a profit of 1.97 million lei in 2018 and Auonova SA, with a registered profit of 1.58 million lei. Altur company had the biggest loss as follows: in 2015, it was -2.89 million lei, and in 2018 it was -830 thousand lei, which means good management of the resources in investments and gradually the indebtedness decrease of the company. Compa SA was the most attractive for investors, while Autonova SA Satu Mare had the lowest interest for them.

Another area of activity selected as relevant for our case study is the oil industry. In the period of time 2015-2016, the state company Romgaz SA was the most profitable, having in the first year analyzed a profit of 1.19 billion lei, and in the following year, it decreased slightly (1.02 billion lei). Unlike Romgaz, OMV Petrom has had a positive evolution in terms of net profit. Due to the investments made, in 2015 it registered a loss of -630 million lei, following

which it is possible to notice a big growth reaching in the years 2017-2018 the most profitable company for investors due to the coherent policies regarding the prices and the use of the capital employed by stakeholders, having a profit of 3.87 billion lei in 2018. The biggest loss in 2018 was registered by Rompetrol Refinery, which was -230 million lei. This company had a drastic involution between the years 2017-2018, the profit in 2017 is 418 million lei, fact justified either by major investments in equipment or by adopting incorrect policies at the management level. The Transgaz company has maintained a net profit of around 500 million lei in the four years.

In all the years analyzed, OMV Petrom had the highest market share. In this sector, we can notice market shares of over 21. Rompetrol Refinery had a lower share than the other companies (in 2018 – 21.469).

In the energy industry, the Transelectrica firm had the highest profit and also the highest market share in the period 2015-2016, while in the period 2017-2018, the Nuclearelectrica company became the most profitable for shareholders, as evidenced in increasing the market share over 21. In 2018 the profit was 410 million lei.

In the food industry, both companies recorded losses in the period 2015-2017. In 2018, the Bucovina SA Scheia company registered a profit of 102 thousand lei, which means the decrease of the degree of indebtedness and good management. The Lactate Natura SA Targoviste company also lost in 2018 (-1.26 million lei) due to not properly using the financial resources.

Between the years 2015-2017, the Lactate Natura SA Targoviste firm was more attractive for investors having a market share around 15, and in 2018 the higher market share was registered at Bucovina SA Scheia (15.029).

Of all the activity areas analyzed during the period 2015-2018, the most profitable and attractive sector in terms of investment and its recovery for the people who want to invest in the companies listed on the stock exchange is the oil one.

The level of correlation between financial performance and stock market performance indicators was calculated for the entire period analyzed and for each year.

Table 1. The correlation between the indicators for the period of time 2015-2018
Bayes Factor Inference on Pairwise Correlations[a]

		PER	ROA	ROE	ROS	Market capitalization
PER	Pearson Correlation	1	-,001	,031	,017	,070
	Bayes Factor		13,842	13,062	13,607	10,403
	N	120	120	120	120	120
ROA	Pearson Correlation	-,001	1	-,776	,943	,359
	Bayes Factor	13,842		,000	,000	,004
	N	120	120	120	120	120
ROE	Pearson Correlation	,031	-,776	1	-,708	,075
	Bayes Factor	13,062	,000		,000	9,934
	N	120	120	120	120	120
ROS	Pearson Correlation	,017	,943	-,708	1	,397
	Bayes Factor	13,607	,000	,000		,001
	N	120	120	120	120	120
Market capitalization	Pearson Correlation	,070	,359	,075	,397	1
	Bayes Factor	10,403	,004	9,934	,001	
	N	120	120	120	120	120

a.   Bayes factor: Null versus alternative hypothesis.
Source: Own authorship processing with SPSS

From the table presented above, the following can be noted: there is a rather strong negative correlation between the economic rate of return on assets and the rate of financial return (-0.776), a significant link between the rate of return on sales and the rate of economic return on assets (0.943). Also, a significantly negative correlation exists between the rate of return on sales and that of financial return (-0.708). On the positive side, we can observe a moderately significant relationship between the rate of return on sales and market capitalization (0.397). This is also demonstrated by the 0.001 value of the Bayes factor.

Table 2. The correlation between the indicators for the year 2015
Bayes Factor Inference on Pairwise Correlations[a]

		ROA	ROE	ROS	Market capitalization	PER
ROA	Pearson Correlation	1	,453	,818	,345	,116
	Bayes Factor		,309	,000	1,258	5,884
	N	30	30	30	30	30
ROE	Pearson Correlation	,453	1	,367	,050	,060
	Bayes Factor	,309		,983	6,846	6,745
	N	30	30	30	30	30
ROS	Pearson Correlation	,818	,367	1	,318	,130
	Bayes Factor	,000	,983		1,647	5,618
	N	30	30	30	30	30
Market capitalization	Pearson Correlation	,345	,050	,318	1	,031
	Bayes Factor	1,258	6,846	1,647		6,988
	N	30	30	30	30	30
PER	Pearson Correlation	,116	,060	,130	,031	1
	Bayes Factor	5,884	6,745	5,618	6,988	
	N	30	30	30	30	30

a. Bayes factor: Null versus alternative hypothesis.
Source: Own authorship processing with SPSS

In the year 2015, it can be observed that there are no concrete correlations between the selected indicators, namely the financial indicators (financial return, return on assets and return on sales) and those on the performance of the capital market (price earning ratio, market capitalization). But, it can be noticed a significant correlation between the financial performance indicators, the economic rate of return on assets, and the rate of return on sales (0.818).

Table 3. The correlation between the indicators for the year 2016
Bayes Factor Inference on Pairwise Correlations[a]

		ROA	ROE	ROS	Market capitalization	PER
ROA	Pearson Correlation	1	-,098	,910	,862	,052
	Bayes Factor		6,201	,000	,000	6,824
	N	30	30	30	30	30
ROE	Pearson Correlation	-,098	1	-,085	-,237	-,014
	Bayes Factor	6,201		6,410	3,224	7,062
	N	30	30	30	30	30
ROS	Pearson Correlation	,910	-,085	1	,804	,070
	Bayes Factor	,000	6,410		,000	6,624
	N	30	30	30	30	30
Market capitalization	Pearson Correlation	,862	-,237	,804	1	,109
	Bayes Factor	,000	3,224	,000		6,008

		ROA	ROE	ROS	MC	PER
	N	30	30	30	30	30
PER	Pearson Correlation	,052	-,014	,070	,109	1
	Bayes Factor	6,824	7,062	6,624	6,008	
	N	30	30	30	30	30

a. Bayes factor: Null versus alternative hypothesis.

Source: Own authorship processing with SPSS

In this case, we can state some significant interdependence relations between the following indicators, such as: the rate of return on assets (ROA) has an important influence on the stock market capitalization indicator, having a Pearson coefficient threshold of 0.862. Also, as in the previous year, there are relations of interdependence between the rate of economic return on assets and the rate of return on sales (0.910). An indicator of financial performance that influences stock market performance in a positive way, measured in this case by market capitalization, is the rate of return on sales. Thus, the Pearson coefficient has a value of 0.804. But between the other financial indicators and the PER indicator, there are no direct and significant relationships, the Pearson coefficient having the following values: 0.052 (ROA - PER), -0.014 (ROE - PER), 0.070 (ROS - PER).

Table 4. The correlation between the indicators for the year 2017
Bayes Factor Inference on Pairwise Correlations[a]

		ROA	ROE	ROS	Market capitalization	PER
ROA	Pearson Correlation	1	-,960	,977	-,060	-,126
	Bayes Factor		,000	,000	6,740	5,691
	N	30	30	30	30	30
ROE	Pearson Correlation	-,960	1	-,944	,208	,111
	Bayes Factor	,000		,000	3,867	5,982
	N	30	30	30	30	30
ROS	Pearson Correlation	,977	-,944	1	-,050	-,115
	Bayes Factor	,000	,000		6,844	5,910
	N	30	30	30	30	30
Market capitalization	Pearson Correlation	-,060	,208	-,050	1	,026
	Bayes Factor	6,740	3,867	6,844		7,016
	N	30	30	30	30	30
PER	Pearson Correlation	-,126	,111	-,115	,026	1
	Bayes Factor	5,691	5,982	5,910	7,016	
	N	30	30	30	30	30

a. Bayes factor: Null versus alternative hypothesis.

Source: Own authorship processing with SPSS

In this year, on the one hand, there are significant links between the financial performance indicators, ROA and ROS both positively, where the Pearson coefficient has the value 0.977, a value close to the significance threshold 1, and negatively for the ROS and ROE indicators (-0.944). On the other hand, we can distinguish the weakly significant correlations between financial performance and stock market indicators. Thus, between the financial return and the market capitalization, the Pearson coefficient is 0.208 and between ROE and PER, the Pearson coefficient is 0.111. Between the ROA and the stock market indicators, we can see weakly significant negative links: -0.060 (MC), -0.126 (PER).

In the case of the rate of return on sales, the Pearson coefficient for market capitalization is -0.050, and for PER it is -0.115. They denote the unsignificant links in a negative way.

Table 5. The correlation between the indicators for the year 2018
Bayes Factor Inference on Pairwise Correlations[a]

		ROA	ROE	ROS	Market capitalization	PER
ROA	Pearson Correlation	1	,848	,880	,500	,119
	Bayes Factor		,000	,000	,139	5,819
	N	30	30	30	30	30
ROE	Pearson Correlation	,848	1	,753	,376	,124
	Bayes Factor	,000		,000	,886	5,731
	N	30	30	30	30	30
ROS	Pearson Correlation	,880	,753	1	,575	,140
	Bayes Factor	,000	,000		,030	5,397
	N	30	30	30	30	30
Market capitalization	Pearson Correlation	,500	,376	,575	1	,027
	Bayes Factor	,139	,886	,030		7,008
	N	30	30	30	30	30
PER	Pearson Correlation	,119	,124	,140	,027	1
	Bayes Factor	5,819	5,731	5,397	7,008	
	N	30	30	30	30	30

a. Bayes factor: Null versus alternative hypothesis.

Source: Own authorship processing with SPSS

From the previous table, we can remark on the existence of strong correlations both between the financial indicator ROA with the financial profitability ROE (0.848) and with ROS (0.880). This assertion is also supported by the Bayes factor, which has a value of 0.000 for both cases. Also, the Pearson coefficient, which has a value of 0.753 and the Bayes factor of 0.000, shows a relatively strong relationship between ROE and ROS.

Regarding the influence of financial indicators on stock market performance, very weak correlations can be observed, which means that the evolution of the stock exchange rate is not influenced by the level of financial indicators. Thus, the values of the Pearson coefficient are the following: 0.119 for the tested correlation between PER and ROA, 0.124 for PER and ROE, and 0.140 for PER and ROS, with the high Bayes factor. Also, the values of the Pearson coefficient for the market capitalization are: 0.500 (ROA), 0.376 (ROE), 0.575 (ROS).

Also, from table no.6 presented below, it appears that the sig indicator is significant in the case of the relationships between ROA indicator and stock market capitalization (0.000), respectively, between ROS and stock market capitalization (0.003), having a value below the 0.05 threshold.

Table 6. The level of correlation between financial and stock market indicators

Paired Samples Test

| | | Paired Differences | | | | | | | |
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	ROA - Market capitalization	-12,8537849476	22,6945110771	2,0717159414	-16,9559894273	8,7515804680	-6,204	119	,000
Pair 2	ROE - Market capitalization	-24,7238706284	148,1239082005	13,5218009712	-51,4983870610	2,0506458041	-1,828	119	,070
Pair 3	ROS - Market capitalization	-11,2929354294	41,0865543219	3,7506721020	-18,7196407953	-3,8662300635	-3,011	119	,003
Pair 4	ROA - PER	-6,6040242	43,8437414	4,0023677	-14,5291120	1,3210635	-1,650	119	,102
Pair 5	ROE - PER	-18,4741099	151,7117458	13,8493242	-45,8971551	8,9489353	-1,334	119	,185
Pair 6	ROS - PER	-5,0431747	55,5644816	5,0723200	-15,0868749	5,0005255	-,994	119	,322

Source: Own authorship processing with SPSS

For the validation of the regression is the ANOVA test, a test of special importance, which has in its component the variable F. An ANOVA test was calculated for each financial indicator, as the dependent variable and the other independent variables for the whole period.

The ANOVA tests in the cases of the financial indicators ROS and ROA show that there is an interdependence relation between them and the stock market performance indicators by the sig coefficient level, which has a value less than 0.05 (0.000) and the values of the F indicator are quite high.

Table 7. The ANOVA test between ROS and PER

ANOVA[a,b]

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	33365,652	2	16682,826	10,976	,000
Residual	177824,519	117	1519,868		
Total	211190,170	119			

a. Dependent Variable: ROS
b. Model: (Intercept), Valoare bursiera, PER
Source: Own authorship processing with SPSS

Table 8. The ANOVA test between ROA and PER

ANOVA[a,b]

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	8542,841	2	4271,420	8,694	,000
Residual	57479,646	117	491,279		
Total	66022,486	119			

a. Dependent Variable: ROA
b. Model: (Intercept), Valoare bursiera, PER
Source: Own authorship processing with SPSS

Instead, the sig indicator in the case of financial return has an insignificant threshold (0.689), which denotes a weakly significant relationship between the analyzed indicators.

Table 9. The ANOVA test between ROE and PER

ANOVA[a,b]

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	16605,907	2	8302,954	,374	,689
Residual	2600884,011	117	22229,778		
Total	2617489,919	119			

a. Dependent Variable: ROE
b. Model: (Intercept), Valoare bursiera, PER
Source: Own authorship processing with SPSS

5. Conclusions

In the present research paper, 30 Romanian companies listed on the Bucharest Stock Exchange were analyzed, belonging to several sectors of activity based on the selected financial and stock market indicators, among which are: return on assets (ROA), return on sales (ROS), return on equity (ROE), price earning ratio (PER) and market capitalization (MC). Thus, using the Pearson index and the sig indicator, the existence of significant relationships between the indicators listed above was verified. The linear regression model was validated based on ANOVA tests.

The analysis emphasized a direct and strong link between the economic rate of return on assets (ROA) and the rate of return on sales (ROS) and also between return on assets and the rate of return on equity (ROE). Also, there is a fairly strong correlation between return on equity (ROE) and return on sales (ROS).

On the one hand, a significant relationship is noted between the market capitalization (MC) and the rate of resources consumed (ROS) and that of the return on assets (ROA), which means that the change in market value is influenced by financial indicators.

On the other hand, it was found that the PER indicator is not influenced by the values of the financial indicators. Also, the evolution of stock market performance on the capital market is not changed by the rate of financial return.

Therefore, the hypothesis H_1 was validated, thus demonstrating a significant relationship between ROA, ROS, and market capitalization.

In opposition to H_1, the hypothesis H_2 was not validated, since significant relationships between PER and financial indicators exist in none of the cases.

Therefore, the hypotheses stated at the beginning of the case study were partially validated, demonstrating direct relationships only between a single indicator of stock market performance, market capitalization, and the level of financial performance indicators.

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What Happened After Electricity Market Liberalisation - State Owned Electric Utilities in Bosnia and Herzegovina

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Abstract

One of the biggest questions battling government of Bosnia and Herzegovina is performance of Electric Utilities, as they are one of the biggest resources and largest State Owned Enterprises. This issue became more important as of January 1st 2015 electricity market has been liberalized and fully opened and all customers have the ability to freely choose their supplier of electricity. Before January 1st 2015 state owned Electric Utilities operated in monopoly market where competition was not possible. Therefore, due to market liberalisation existing companies will need to be more competitive than before in order to grow and survive new competition from neighboring countries and EU. Paper analyses performance of State Owned Electric Utilities listed on the Banja Luka and Sarajevo Stock Exchange in period after opening of electricity market. Measuring the success of the State Owned Electric Utilities is based on the analysis of financial statements for period from 2015 to 2019, using indicators of profitability and market indicators. The results reveal that State Owned Electric Utilities from Bosnia and Herzegovina have poor performance indicators. The broad conclusion that emerges from the results is that electricity market in Bosnia is still not liberalised and open and that state owned Electric Utilities still operated in monopoly market as they continue to survive with very poor performance indicators. In order to improve government has to conduct extensive reforms and reorganization of its Electric Utilities in order to survive when new competition enters market.

Keywords: Competition, Market Liberalisation, Performance, State Owned Electric Utilities

1. Introduction and literature review

Performance of State owned electric utilities are essential for the reform of the electricity sector in every country. One of the biggest questions battling government of Bosnia and Herzegovina is performance of Electric Utilities, as they are one of the biggest resources and largest State Owned Enterprises. This issue became more important as of January 1st 2015 electricity market has been liberalized and fully opened and all customers have the ability to freely choose their supplier of electricity. Before this state owned Electric Utilities operated in monopoly market where competition was not possible.

Based on Law on Transmission of Electric Power, Regulator and System Operator in BIH the State Electricity Regulatory Commission of Bosnia and Herzegovina has passed decision on scope, conditions and time schedule of the electricity market opening in Bosnia and Herzegovina. This decision, made in 2006, has proposed steps and flow of electric market opening in Bosnia and Herzegovina. The electricity market opening had proceeded gradually,

and the main aim of the opening is the creation, maintenance and development of competitive conditions among participants in the electricity market. Therefore, existing companies will need to be more competitive than before in order to grow and survive new competition from neighboring countries and EU.

Electricity market opening in Bosnia and Herzegovina was implemented in accordance with the time schedule according to which the eligible customer status may be acquired.

- as of January 1, 2007, all customers with annual consumption of electricity higher than 10 GWh,
- as of January 1, 2008, all customers with annual consumption higher than 1 GWh,
- as of January 1, 2009, all customers except households, and
- as of January 1, 2015, all electricity customers.

There are numerous reasons for establishing or retaining public enterprises, especially if we consider resources that are very important for country, society and from witch most of the government budget is financed. Jones and Mason (1982) categorized as follows: ideological predilection, acquisition or consolidation of political or economic power, historical heritage and inertia, and pragmatic response to economic problems. Friedmann and Garner (1970) also used four categories: promotion and acceleration of economic development, defensive reasons, controlling monopoly industries, and political ideology. Peterson (1985) argued that SOEs are established to pursue national goals, economic efficiency, weakness of the POEs, and political ideology.

SOEs have been driving force for development and growth of many countries. However, in the realm of public policy, one of the most unprecedented global features in the last quarter of the twentieth century has been privatization. During the period, governments all over the world introduced various forms of privatization irrespective of their economic context, political orientation and ideological position (Haque, 2000). There are different views of privatization and its effects on performance of companies as well as on benefits of privatization for country and its economic growth. One group of authors support privatization and argue that it has positive impacts on company performance and country's economics development (Magginson and Netter, 2001; Vickers and Yarrow, 1995; Dewenter and Malatesta, 2001; D'Souza and Megginson, 1999 and others). On the other hand, other group of authors does not support privatization of strategically important enterprises and argue that privatization has negative impacts country's economics development and growth (Campbell-White and Bhatia, 1998; Bayliss, 2002 and others).

While Bozec, R., Breton, G. and Côté, L. (2002) in its research of state–owned enterprises and private firms for the period 1976–1996 argue that state owned enterprises "when their main goal is to maximize profit, perform as well as the privately owned enterprises. Therefore, the alleged under–performance of the state–owned enterprises may only be the result of pursuing other goals."

Despite all these arguments most of the countries around the world have kept its Electric Utilities under the government ownership in full or partial control. Reason for this is that Electric Utilities are of great importance for economic prosperity of every country and they are often one of the biggest resources and largest State Owned Enterprises. Therefore, its

performance and competitiveness is very important especially when electricity market has been liberalized and fully opened for new competition.

2. Methodology and research hypothesis

Paper analyses performance of State Owned Electric Utilities listed on the Banja Luka and Sarajevo Stock Exchange in period after complete opening of electricity market to all electricity customers and providers.. Measuring the success of the State Owned Electric Utilities is based on the analysis of financial statements for period of five years, from 2015 when market we completely open to last financial year 2019, using indicators of profitability and market indicators. In order to measure performance of these companies we have defined Key Performance Indices (KPIs).

Key Performance Indices are as following:
- Return on Equity (ROE)
- Return on Assets (ROE)
- Operating Margin
- Net profit Margin
- Equity Ratio
- Sales/Total Asset Ratio (S/T)
- Net income per employee
- Tobin's Q

Performance data was collected for sample of 12 State Owned Electric Utilities from Bosnia and Herzegovina. This 12 Electric Utilities present 100% population of State Owned Electric Utilities in Bosnia and Herzegovina, therefore, research takes whole population into consideration. As all State Owned Electric Utilities are listed on Stock Exchange (Banja Luka or Sarajevo Stock Exchange) Tobin's Q will be calculated for all companies.

The research data was gathered from companies' annual reports, the database of the Banja Luka Stock Exchange and the Sarajevo Stock Exchange and companies' web pages.

To offer useful answers to the research problem and realize the study objectives, the following hypotheses were tested:

H1: State Owned Electric Utilities from Bosnia and Herzegovina have poor performance in period after opening of electricity market based on the Key Performance Indices.

H2: State Owned Electric Utilities from Bosnia and Herzegovina, based on results, are not competitive in market.

## 3. Results and discussion

Research data acquired for 12 Bosnian State Owned Electric Utilities were analyzed according to Key Performance Indices. Table 1. presents descriptive statistics of Key Performance Indices for Bosnian State Owned Electric Utilities in cumulative amount for 5 years.

Table 1. Descriptive statistics of KPIs for State Owned Electric Utilities

| Variable	Obs	Mean	Std. Dev.	Min	Max
ROE	59	-.0005576	.0136895	-.0462	.0456
ROA	58	-.0005914	.0114143	-.0375	.0347
Operating margin	57	-.0010579	.0988642	-.3139	.2597
Net profit nargin	57	-.0003754	.0877513	-.3526	.2114
Equaty ratio	60	.7896767	.1412496	.5307	1.0254
Net income per employee	59	110270	52407.13	35245.36	249032.8
S/T	60	.238	.126032	.02	.43
Tobin's Q	60	.6683333	.2065468	.3	.95

Figure 1. indicates that State Owned Electric Utilities from Bosnia and Herzegovina have very low Return on Equity. Moreover, State Owned Electric Utilities from Bosnia and Herzegovina have in several years negative ROE which only in one year goes over 0.80%. This shows that companies from Bosnia and Herzegovina are not efficient in using shareholders capital in generating profits.

Fig. 1. Return on Equity (ROE) for State Owned Electric Utilities
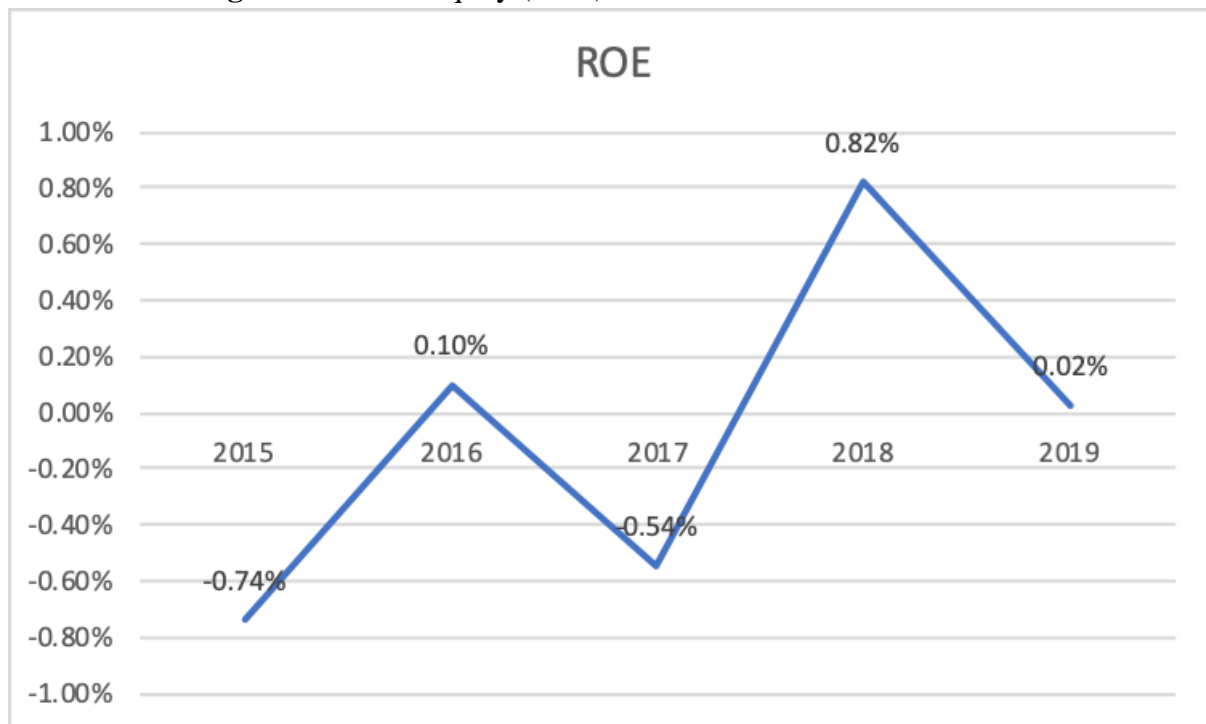
Similar situation is shown in Figure 2. where State Owned Electric Utilities from Bosnia and Herzegovina have very low Return on Asset which is negative or very low and never rises over 0.68%. This shows that companies from Bosnia and Herzegovina not efficient in utilization of its assets, which is one of the most important factors in Electric Utilities.

Fig. 2. Return on Asset (ROA) for State Owned Electric Utilities
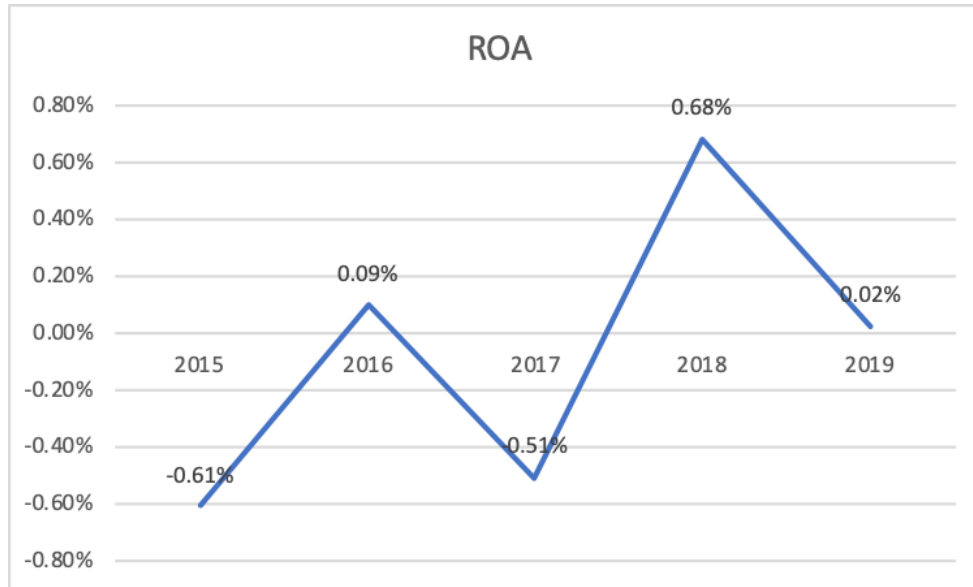
Data from Figure 3. and Table 1. shows that in analyzed period after market liberalization State Owned Electric Utilities from Bosnia and Herzegovina on average have negative Operating Margin of -0.19% while only in 2018 Operating margin is higher and 6.60% . This results indicates that State Owned Electric Utilities are not managed well and that they are not efficient in converting sales into profit.

Fig. 3. Operating Margin for State Owned Electric Utilities
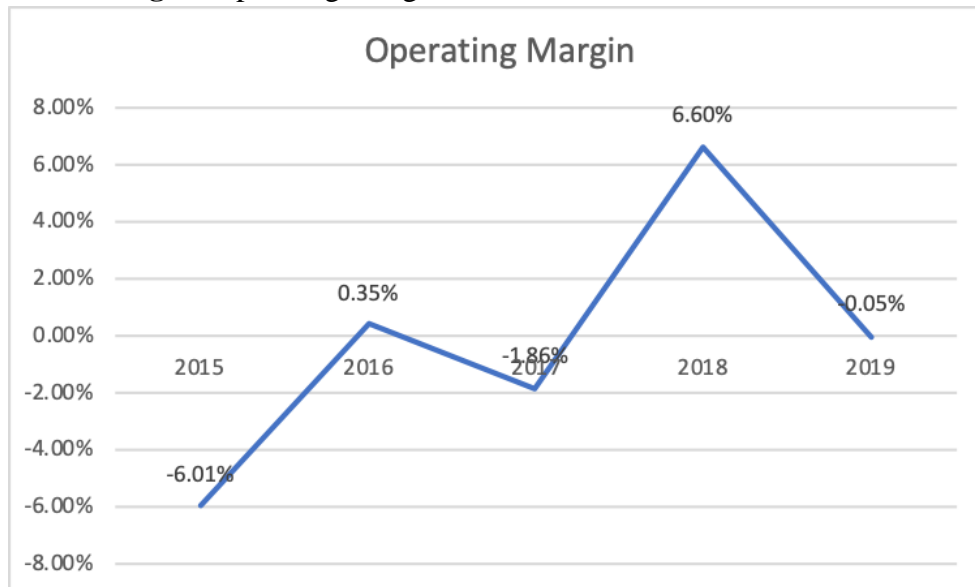
Similar situation is with Net Profit Margin of analyzed State Owned Electric Utilities. Data from Figure 4. and Table 1. shows that in analyzed period State Owned Electric Utilities from Bosnia and Herzegovina on average have negative Net Profit Margin of -0.05%. Lower Net Profit Margin of State Owned Electric Utilities indicates that they are less profitable and less efficient in converting revenue into actual profit. Moreover, it shows that they have poorer control over its costs.
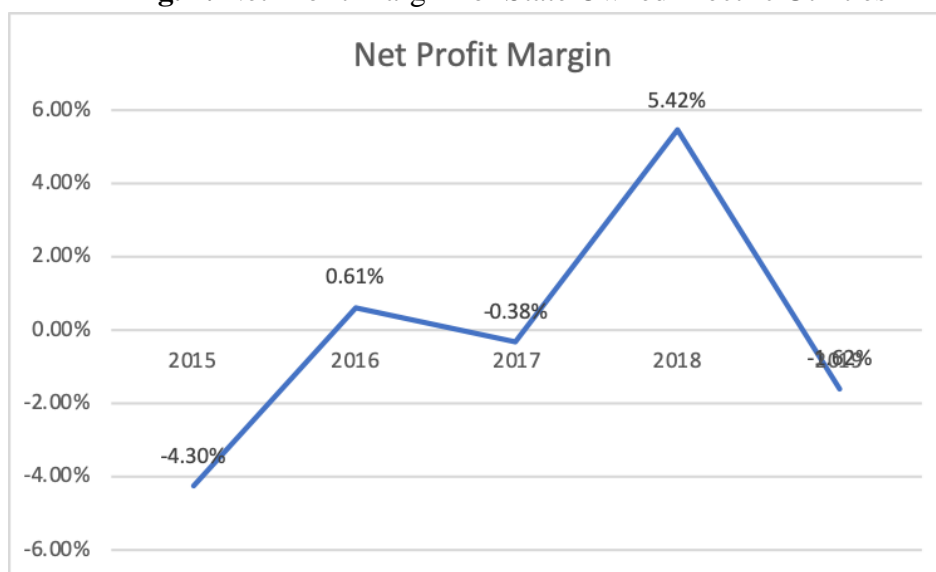
**Fig. 4.** Net Profit Margin for State Owned Electric Utilities

Figure 5. shows larger percentage of assets of State Owned Electric Utilities from Bosnia and Herzegovina are financed/owned by shareholders, which is not the case in State Owned Electric Utilities from many other countries in region where almost half of assets are financed by debt. Bosnian State Owned Electric Utilities have not had large investments in asset and therefore did not require large financing. This high Equity Ratio shows that State Owned Electric Utilities have been largely financing its assets by its equity and it means that they will be able to processed with future investment projects and they do not have large obligations to its creditors.

Fig. 5. Equity Ratio for State Owned Electric Utilities
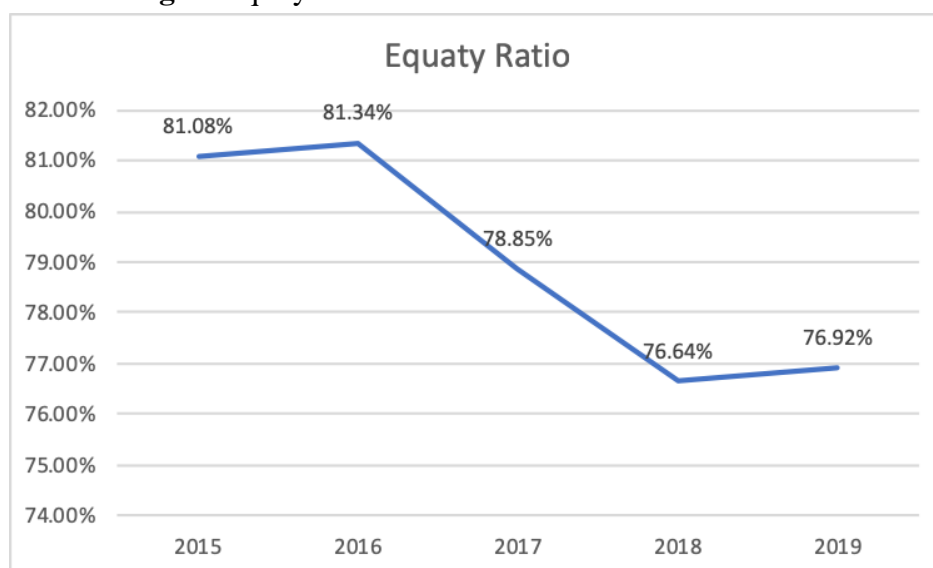
Analysis of indicate that in analyzed period State Owned Electric Utilities from Bosnia and Herzegovina have average Net Income per employee of 110,232.18 BAM. Electric Utilities have constant Net Income per employee of more than 100,000 BAM in analyzed period.

However, when comparing with State Owned Electric Utilities from region State Owned Electric Utilities from Bosnia and Herzegovina have 4 to 7 times lower Net Income per employee. This shows that managers of Bosnian State Owned Electric Utilities do not have ability to use their human resources efficiently to create profits for company. Furthermore, this indicates overemployment in State Owned Electric Utilities.

**Fig. 6.** Net Income per employee for State Owned Electric Utilities
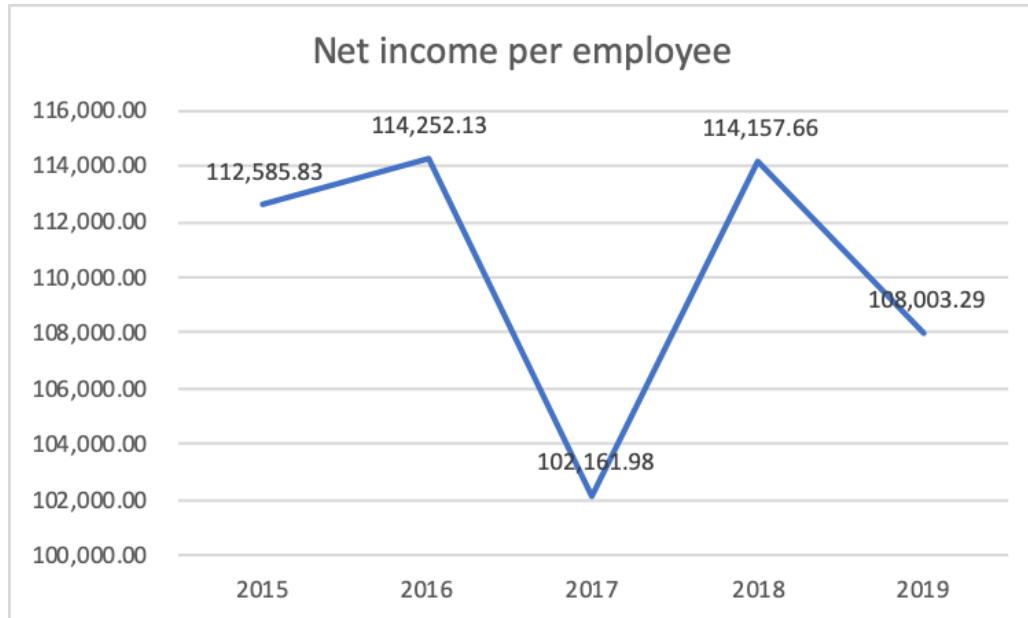
Data from Figure 7. shows that in analyzed period State Owned Electric Utilities from Bosnia and Herzegovina have constant decrease of S/T ratio. Therefore, State Owned Electric Utilities are not efficient in managing assets at its disposal to generate sales revenue.

Fig. 7. S/T Ratio for State Owned Electric Utilities
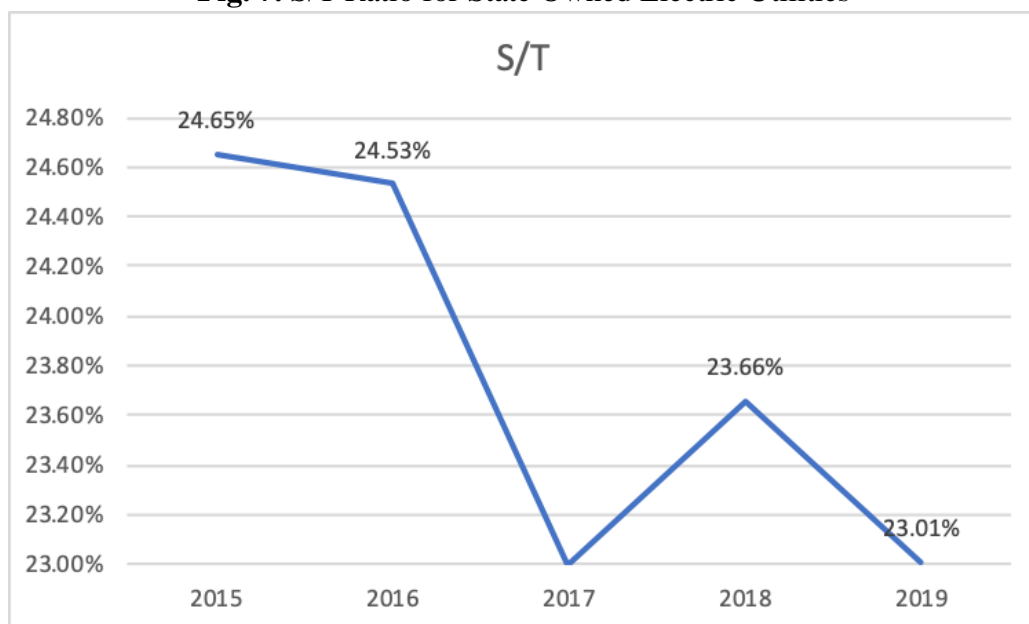
Tobin's Q ratio was calculated for all of the State Owned Electric Utilities as they are listed on the Stock Exchange. In analyzed period State Owned Electric Utilities on average have Tobin's Q value of 0.67, and value lower than 1 in every year, which indicates that they have poor financial strength and poor performance in a financial markets. As a result, it means that State Owned Electric Utilities do not create a value for its shareholders.

Fig. 8. Tobin's Q for State Owned Electric Utilities
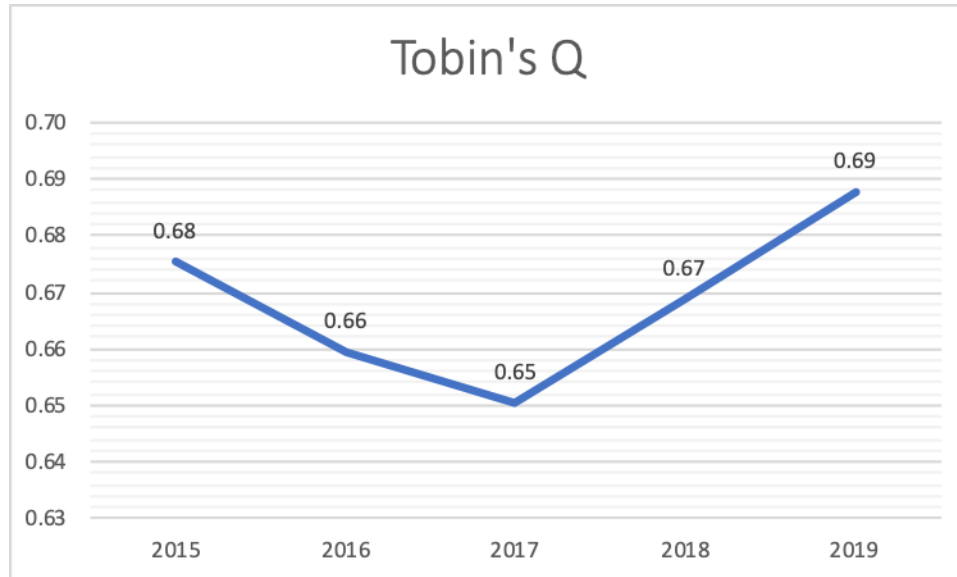
4. Conclusion

Issue of performance and competiveness of State Owned Electric Utilities from Bosnia and Herzegovina became of grate importance as of January 1st 2015, when electricity market has been liberalized and fully opened and as they no longer operated in monopoly market where competition was not possible.

As it can be seen from results of analysis of State Owned Electric Utilities from Bosnia and Herzegovina, government has to deal with the issue of performance and competiveness of these companies.

Research results and discussion confirm research hypotheses, which state that State Owned Electric Utilities from Bosnia and Herzegovina have poor performance in period after opening of electricity market based on the Key Performance Indices, and that State Owned Electric Utilities from Bosnia and Herzegovina, based on results, are not competitive in market.

Thought analysis of sample companies it can be concluded that Bosnian State Owned Electric Utilities are not well governed and that government is not doing much to change situation in these companies. Moreover, big problem presents overemployment, which is also result of poor governance of these companies and not including experts in boards and top management positions in companies. In period after the liberalization of electricity market in neighboring countries there has been a steer towards lower employment rates in order to achieve more efficient economic operations and optimize business processes. This also needs to be one

of primary goals of Bosnian government and government should learn lessons from its neighboring countries whom already went trough this process.

Research result also show that electricity market in Bosnia and Herzegovina is only open on paper but government did not allow real competition and that State Owned Electric Utilities still operate in monopoly market where competition was not possible.

As government is not willing to deal with the problems of poor performance and competiveness of its State Owned Electric Utilities even after the indicial opening of market only real opening and liberatisation of electricity market in Bosnia and Herzegovina will force government to conduct extensive reforms in governance of its Electric Utilities in order for them to survive new competition.

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Anex 1: Descriptive statistics of KPIs per year for State Owned Electric Utilities

-> year = 2015					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
ROE	11	-.0074	.0187111	-.0462	.0046
ROA	11	-.0061364	.0154726	-.0375	.0042
Operating margin	12	-.0601333	.0959324	-.2815	.0786
Net profit nargin	12	-.042975	.101857	-.2815	.0735
Equaty ratio	12	.8108417	.1441315	.5742	1.0254
Net income per employee	12	112585.8	49524	63182.86	205277.2
S/T	12	.2483333	.1243041	.05	.38
Tobin's Q	12	.6758333	.2083903	.32	.92
-> year = 2016					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
ROE	12	.0010083	.0038192	-.0096	.0067
ROA	12	.0009083	.0031123	-.0075	.0055
Operating margin	12	.0035417	.0472523	-.09	.0712
Net profit nargin	12	.0061	.01587	-.0367	.0221
Equaty ratio	12	.8134167	.1359214	.5605	1.0103
Net income per employee	12	114252.1	50468.49	65046.96	216223.2
S/T	12	.2458333	.1309725	.05	.4
Tobin's Q	12	.66	.2152799	.33	.93

-> year = 2017					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
ROE	12	-.0054333	.0108831	-.026	.0041
ROA	12	-.0051	.0098389	-.0248	.0032
Operating margin	9	-.0186333	.0575334	-.165	.0241
Net profit nargin	9	-.0037556	.0247197	-.0686	.0145
Equaty ratio	12	.788525	.147332	.554	.9811
Net income per employee	12	102162	61889.79	35245.36	249032.8
S/T	12	.23	.1398051	.02	.42
Tobin's Q	12	.65	.2265552	.32	.93
-> year = 2018					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
ROE	12	.008225	.0133553	-.008	.0456
ROA	12	.006775	.0103229	-.0053	.0347
Operating margin	12	.066	.090936	-.0525	.2397
Net profit nargin	12	.05415	.0762353	-.0225	.2114
Equaty ratio	12	.7664083	.1480793	.5307	.9383
Net income per employee	12	114157.7	51785.8	60203.44	240470.9
S/T	12	.2358333	.1263083	.06	.43
Tobin's Q	12	.6675	.2071945	.3	.92
-> year = 2019					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
ROE	12	.0002417	.0140775	-.0321	.0216
ROA	11	.0002	.0119229	-.0254	.017
Operating margin	12	-.0004583	.1365933	-.3139	.2597
Net profit nargin	12	-.0162417	.1294828	-.3526	.1999
Equaty ratio	12	.7691917	.1482438	.5373	.9437
Net income per employee	11	108003.3	56023.32	51122.74	239233.1
S/T	12	.23	.1294745	.04	.42
Tobin's Q	12	.6883333	.2094075	.32	.95

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