

# Impact of the agent theory on private and public companies based on the analysis of Croatian health care system

## Analiza utjecaja teorije agenata u privatnim i javnim poduzećima na primjjeru hrvatskog zdravstvenog sustava

### Abstract

For years, the Republic of Croatia has been faced with the challenge of sustainability of its health care system due to the inefficiency of public health care institutions. It is generally believed that such development is the cause of health care system structure itself, which provides health care to all citizens. This paper seeks to explore whether public health care institutions can be more effective despite the system structure itself. The basic premise of the paper is that public health care institutions are ineffective because of the agent theory impact. In order to examine that premise, it is necessary to compare public and private health care institutions. The aim of this paper is to find out whether there is a greater impact of the agent theory in public health institutions in regard to different influence of private and public ownership on the management methods. The research methodology refers to the financial analysis of selected private and public health institutions. The examination of the professional qualification of managing directors of these institutions showed that there are no major differences in the share of experts in the field of economics in private and public institutions. Efficiency analysis based on the specific institutions shows that public health institutions are more ineffective than the private ones when it comes to cost management. Based on this, the conclusion is that the agent theory impact is more prevalent in public health care institutions.

**Keywords:** agent theory, public health care institutions, health care system, private ownership, public ownership

**JEL classification:** G34, I18

### Sažetak

Republika Hrvatska godinama se suočava s izazovom održivosti vlastitog zdravstvenog sustava zbog neučinkovitosti ustanova javne zdravstvene zaštite. Prevladava mišljenje kako uzrok tome leži u samoj strukturi zdravstvenog sustava, koji pruža zdravstvenu zaštitu svim građanima. Ovaj rad nastoji istražiti mogu li javne zdravstvene ustanove biti učinkovitije unatoč samoj strukturi sustava. Osnovna prepostavka rada je da su javne zdravstvene ustanove neučinkovite zbog utjecaja agencijске teorije. Da bismo ispitali tu prepostavku, potrebno je usporediti javne i privatne zdravstvene ustanove. Cilj ovog rada je utvrditi postoji li veći utjecaj agencijске teorije u ustanovama javnog zdravstva u odnosu na različiti utjecaj privatnog i javnog vlasništva na metode upravljanja. Metodologija istraživanja odnosi se na finansijsku analizu odabranih privatnih i javnih zdravstvenih ustanova. Ispitivanje stručne osposobljenosti ravnatelja u ustanovama pokazalo je da nema velikih razlika u udjelu stručnjaka iz područja ekonomije u privatnim i javnim institucijama. Analiza učinkovitosti temeljena na specifičnim ustanovama pokazala je da su javne zdravstvene ustanove neučinkovitije od privatnih s obzirom na upravljanje troškovima. Na temelju toga zaključak je da je utjecaj agencijске teorije dominantniji u javnim zdravstvenim ustanovama.

Asst. prof. **Martina Sopta**, PhD

Faculty of Economics and Business,  
University of Zagreb  
E-mail: msopta@efzg.hr

Asst. prof. **Mihaela Mikić**, PhD

Faculty of Economics and Business,  
University of Zagreb  
E-mail: mmikic@efzg.hr

**Matej Botički**

E-mail: matej.boticki@gmail.com

Doc. dr. sc. **Martina Sopta**

Ekonomski fakultet Sveučilišta u Zagrebu  
E-mail: msopta@efzg.hr

Doc. dr. sc. **Mihaela Mikić**

Ekonomski fakultet Sveučilišta u Zagrebu  
E-mail: mmikic@efzg.hr

**Matej Botički**

E-mail: matej.boticki@gmail.com

**Ključne riječi:** agencijska teorija, ustanove javne zdravstvene zaštite, zdravstveni sustav, privatno vlasništvo, javno vlasništvo

**JEL klasifikacija:** G34, I18

## 1. Impact of the agent theory in private and public companies

In the market economy system which is nowadays present in most countries of the world, the role of private companies as bearers of that system has been emphasized. There are less and less closed economies dominated by public companies and institutions where the property is mostly in hands of the state. However, business entities with majority of state ownership continue to exist in virtually all countries and even in those which have adopted the principles of open market economy. Moreover, in some industries, they are dominant in terms of market share. Comparison between these two extremes and the advantages and disadvantages of each one are often being highlighted. Differences between private and public companies are large. The key difference relates to the issue of ownership that ultimately affects the purpose of their business. This paper will analyze the influence of agent theory in private and public companies. Because their business goals differ, it is assumed that the influence of agent theory will be of varying intensity. Before investigating the impact on a specific example, it is necessary to determine the theoretical specifics of public and private companies and the impact of the principal-agent relationship on their business operations.

### 1.1. Impact of the agent theory on business operations of public companies

Operations of public companies and institutions differ greatly from operations of private companies. The main reason for this is the issue of ownership. In private companies, ownership is largely in the hands of private persons, while in public companies it belongs mostly to the state. As such, the interests of their business can be significantly different due to the influence of factors that are not relevant to business practice applied in companies. State-controlled companies often encounter inefficiencies stemming from the business practices that apply

to them. In addition, such companies sometimes ignore the very purpose of their existence and fulfill some partial goals. Because of these specifics, the role of the agent theory in companies and institutions controlled by the state will be analyzed. Prior to this, the term company which acts in the public interest will be defined as well as the purpose of its existence.

#### 1.1.1. Business objective of business entities in the public sector

The term "public" is frequently used to mark the concept of companies and institutions that are under the majority of state ownership. This is mainly due to the fact that, in addition to all the other goals that such a business entity has, they fulfill certain objectives that are of public interest, i.e. there is an interference of state in their operations. The term public company must not be confused with the concept of a public joint stock company, because these terms are completely different. The specificity of public companies and institutions is that their majority owner is the state or that they are under the control of the state which determines the purpose of their business. The concept of a public joint stock company has a different meaning. "*Such companies have the character of "public" joint stock companies because they are open to the general public on the capital market*" (Orsag, 2011). Thus, the term public in this case does not refer to the fact that such enterprises are majority state-owned. In order to better define the purpose of the business of public companies and institutions, it is important to define them. Since the research in this paper is to be carried out on the example of the Croatian health care system, it is necessary to determine business entities operating within it. "*According to the IMF manual, public companies are all state-owned and/or state controlled entities that sell industrial or commercial goods and services to the general public and are formed as corporations*" (Bejaković et al., 2011). Since public

hospitals that operate within the Croatian health care system offer certain services on the market, they could be categorized as public companies. But, they still fall under the general state, which means that they are financed by the state and are, however, to some extent different from public companies, and are referred to as public institutions (Bejaković et al., 2011). The similarity is that, as well as public companies, they operate within the public domain (Bejaković et al., 2011). For the purpose of this paper, the technical differences between public companies and other organizations' performance within the general state are not so important as the purpose of this paper is to investigate the specificities of the influence of agent theory on business entities in terms of ownership and the associated problems. Thus, the issue of public ownership is a key issue for public companies and institutions that deal with similar challenges in their performance. Regardless of public institutions or companies, the key objective of one and the other should be achieving a more efficient business performance. Public institutions are not established with the goal of obtaining profits, but that does not mean that their goal is only to achieve a level of business performance that will cover the costs. Public companies exist with the aim of gaining profits and they should in theory maximize their behavior. However, since the state is the majority owner of a public company, the goal of maximizing the owner's utility remains indefinite. The state actually represents the interests of citizens and thus, the management of public companies should move in the direction of maximizing their utility. The problem that arises is the question of how this is achieved? For example, in a public company dealing with electricity distribution, there may be some dilemma around the business goal. Will the stronger impact on increasing the utility of the state (and therefore of citizens) decrease the price of electricity or maximize the value of that company in the long-term? The answer to this question is difficult to provide. The specificity of public companies is reflected in the fact that interference of state interests in their business potentially limits the possibility of maximizing performance. When operating this way, it is very similar to that of public institutions because they primarily exist to fulfill a certain na-

tional interest in the form of cheaper health, education or social welfare. It can be said that they face the same challenges in governance, since national interests may have a priority in the interests of the companies themselves, and the autonomy of managers managing these businesses is diminished. Public companies and institutions operate in the public sector and their goals differ from those of the private sector businesses. This is especially true in the case of non-profit organizations. So, the following goals can be set by non-profit organizations: to maximize the amount and quality of output with respect to budget constraints, maximize the benefits of managers, maximize cash flows and maximize the benefits (satisfaction) of users and donors (Rupčić, 2016). These goals will potentially enable the efficient operation of non-profit organizations and their long-term survival. The great influence of state and political processes often burdens the performance of public business entities. So this impact can be reflected in the achievement of goals that determine the purpose of public sector companies. *"However, the goals are often determined by the political process, i.e. by negotiating between the interested parties"* (Rupčić, 2016). With more sides involved in the process of determining the goals, it will be harder to define the goal that will be most appropriate for a particular business entity. It is clear that this will affect the agents (managers) that will lead them and their task will be difficult because they will not be able to guide the principles that the management economics prescribes as an area in the economics that deals with enterprise management issues. In a research conducted on a number of profit and non-profit hospitals by Herzlinger and Krasker, one of the conclusions was that non-profit hospitals were less efficient than the profit ones (Arrington and Haddock, 1990). A similar problem is placed in front of public hospitals in the Croatian health care system. The aim of this part of the paper is to describe the difficulties and challenges faced by business entities operating in the public sector and those in charge of managing them. Differences with private sector companies primarily derive from the role of public property that may affect the efficiency of the business. The assumption is that the influence of agent theory will not be the

Sopta, M., Mikić, M., Botički, M.

Impact of the agent theory on private and public companies based on the analysis of Croatian health care system

same in the private and public sectors.

### 1.1.2. Specifics of principal-agent relationship in public companies

Earlier, it was emphasized that business processes within business entities owned by the state are under the burden of state influence. Thus, the relationship of principals and agents within them will be different. The state authorities representatives thus act as principals. They elect the agents who will manage these organizations and act accordingly with regard to the fulfillment of their interest as a principal. When set up in this way, this relationship does not really differ from the relationship between the principals and agents in private companies. But there are several reasons why it is different, and one is essential: to whom agents in the public sector actually answer? "In principle, all citizens have an interest in the making and administration of public policy." (Dixit, 2002). Citizens are, in fact, public sector stakeholders even though they are not financing it directly but indirectly through taxes. For this reason, public sector agents should act in the interest of citizens because they choose the government, and respond to them for their actions. After all, the state exists to meet citizens' interests. However, citizens are virtually unable to oversee the activities of agents in public companies and institutions. In order to do so, they should come to certain information whose acquisition can potentially be overwhelming. The logic conclusion is that there can be a great asymmetry of information among them. Even when they come to this information, their ability to implement change is reduced to the election of the state government through elections that are regularly held every four or more years. That is why agents in public institutions and companies respond to government representatives who have relative ability to monitor their performance. Another reason why the relationship between principals and public sector agents is specific is the issue of diminished market mechanism influence, which is often the result of public sector companies having a monopoly. In the private sector, these mechanisms influence the control and behavior of managers. For example, in the public sector, the risk of corporate takeover is limited, while in the free market it has an impact on reducing the negative impact of agents, which is applicable in the pri-

vate sector. The fact is that public sector monitoring will be hampered by this shortage, but it can still be effective to a certain extent. "Although public sector is missing some market forces that usually control managers in private sector, state agencies and companies can still be effectively monitored." (Pindyck and Rubinfeld, 2005). The problem of efficient monitoring of agents occurs both in the public and private sectors. "Procuring a perfect monitor can be difficult, especially within nonprofit organizations, where accurate output measurement is often hard to attain." (Caers et al., 2006). For example, in public hospitals, it is difficult to determine how to measure management efficiency due to the ambiguity of the purpose of their performance. Also, they can be severely affected by the costs because they depend on the number of patients who have health problems, and cannot charge fees that will cover the costs. This is so because of the organization of a health system in Croatia based on social solidarity. "Finally, many public services do not charge the direct users for the full cost, but are subsidized partly or wholly from tax revenue." (Dixit, 2002). In his paper, Avinash Dixit shows certain public sector specifics that affect the principal-agent relationship and the creation of an efficient incentive system. These are the following specifics (Dixit, 2002):

- Multiple Principals
- Multiple Tasks
- Lack of Competition
- Motivated Agents.

The problems of multiple principal existence, multiple tasks (the lack of a fundamental goal) and the lack of competition in the public sector have been mentioned earlier. It can be concluded that these characteristics diminish the efficiency of business entities within the public sector. They also limit the establishment of an efficient incentive system that will motivate agents. The last feature relates to the motivation of agents in the public sector that may be greater than the motivation of agents in the private sector. Why is that so? "In reality, agents may get utility from some aspects of the task itself." (Dixit, 2002). This may relate to the benefits he can obtain from the actions he takes in that business, which will happen in the public sector rather than in the private one (Dixit, 2002). It is important to

emphasize another fact that relates to nonprofit organizations within the agent theory. "Nonprofit institutions may dominate for-profit institutions in markets that exhibit a principal-agent problem between consumers and producers. Implicit in this claim is the assumption that nonprofits have a comparative advantage over for-profits in generating consumer, and donor, trust (Hansmann, 1980 and Weisbrod, 1988)." (Handy and Katz, 1998).

### 1.1.3. Consequences of conflict between principals and agents on operations of business entities in the public sector

The influence of agent theory in business entities that are majority state-owned, and therefore controlled by the state, is necessarily different from the influence in mostly privately-owned business entities. Characteristics of the public sector make the relationship between principals and agents even more complex. It is clear that, as in the case of a private one, this relationship will cause certain consequences to the business performance. But what connotations it will take, and in what volume, depends on the ability to create an effective incentive system within the company. In the public sector, there is a danger of state interference in the performance of business entities. Because government representatives take on the role of principals, they can influence normal operations. Efficiency in the public sector can therefore decline, because state interests may sometimes be presumed to the interests of business entities themselves, thereby reducing the autonomy of the manager. Also, a problem occurs when there are more parties that impose their interests (the problem of multiple principals). These interests may differ and parties will strive to reach a compromise that will ultimately have a negative impact on business operations. For example, within a particular public company or institution, some interest groups that appear in the role of

principals may have a significant impact. Let them be managers as representatives of the state and a specific labor union. It will be in the interest of managers to achieve the greatest efficiency in order to enable continuous operations, while unions will demand an increase in salaries. These two goals can be muddled with each other if the management decides that it cannot increase efficiency if the cost of labor increases. If no party can take advantage of the negotiations, a compromise will be reached. In this case, a concrete public company or institution loses the most. Finally, managers do not only respond to the interest group that puts them in this position, but other interest groups have an impact on them as well. In the private sector, such a situation can hardly arise because the owners represent the main interest group in the enterprise and as such choose the management, and managers directly answer to them for their actions.

### 1.2. A comparative analysis of the impact of the agent theory in private and public companies

This chapter addresses a more detailed description of the specifics of companies operating in the public and private sector and the influence of agent theory within them. A comparison of the influence of agent theory in the private and public sector will be made here. Prior to that, the key differences between the two sectors affecting management will be listed. In the private sector, due to the existence of strong competition, market mechanisms are stimulating to businesses. In the public sector, sometimes the competition is not strong enough to act encouragingly, and the impact of market mechanisms almost does not exist in public institutions.<sup>1</sup> Also, in the private sector, there is an increasing autonomy of managers due to the increasing trend of separation of ownership from the management, and this enables skilled

Sopta, M., Mikić, M., Botički, M.  
Impact of the agent theory on  
private and public companies  
based on the analysis of Croatian  
health care system

1 Again, the Croatian health care system can be taken as an example. Private health institutions will compete with one another over prices, advertising and other methods within the framework of competition. By doing so, they will encourage each other to constantly improve their own operations. In public health institutions, this is not the case, because most of the services they offer they do not charge but are already funded by the state. There is even a certain paradox. For example, if it is read that a certain health institution is better at work than the others, many patients will want to go to that hospital. Such a thing cannot be achieved because a hospital would then exceed its capacity. The paradox is that public health institutions are not motivated to improve their business because those efforts cannot be "confirmed on the market". The success of such institutions depends on the enthusiasm of individuals.

managers to realize their potential and improve the performance of a company.<sup>2</sup> In the public sector, the autonomy of managers is limited (especially in public organizations) because all important decisions they make must first be approved by the representatives of state authorities. The most important question relates to defining the stakeholder group to which managers answer. By comparing public and private sectors within the theoretical part of the work, some findings are provided that will now be presented. The key difference, with regard to the influence of agent theory in the private and public sectors, is the problem of the uncertainty of business objective. In business entities operating in the private sector, the business objective is most often precisely defined and provides a basis for measuring the performance of agents within their oversight. In business entities operating in the public sector, it is difficult to precisely define it because of the influence of state interests. It is therefore more difficult to monitor the activity of agents that can manipulate various goals to maximize their own utility, and it is difficult to create an effective incentive system. There are also differences with regard to the responsibilities of managers or agents. In the private sector, they respond directly to the owners who have chosen them. The public sector is faced with the possibility of emerging multiple principals and it becomes unclear to whom the agents are in fact responsible. If there are more principals, each will require some of their goals to be met and they will have to negotiate within each other in order to reach a compromise. This also affects the ambiguity of business goals and harms the business itself. The last distinction to be made here relates to the motivation of agents in private and public sector. It can be assumed that the public sector agents are more likely to be motivated by some higher goals that are not related to their personal utility function as opposed to the private sector agents. This completes the theoretical part of the work. The next chapter will be based on a concrete research of impact of the agent theory on the example of Croatian health care system. One emphasizes once again that there are certain technical differences between public/

private companies and public/private health care institutions that are not crucial for the purpose of this paper because the subject of this paper relates to the issue of ownership impact (whether private or public) on the agent problem in business entities.

## 2. Impact of the agent theory on the example of Croatian health care system

Previous part of the paper was primarily concerned with theoretical description of the problem that relates to the agent theory with reference to certain examples. What follows is a concrete research of impact of the agent theory in private and public companies or institutions, on the example of the Croatian health care system. The reason why the Croatian health care system has been taken as an example for the research is the dominance of public health institutions that have certain problems with management efficiency. By comparing them with private-sector institutions, the goal is to examine what the basic differences in management methods in these two sectors are and whether there is a significant impact of the agent theory in them. The research is carried out on the basis of analysis of specific private and public institutions. It will be investigated in which professions senior executives are at the highest managerial position in these institutions and whether the lack of economic experts is the cause of business difficulties. In the end, the final cognitions of impact of the agent theory in these institutions will be presented. Prior to that, a strategic analysis of Croatian health care system will be carried out with the aim of creating a basis for further analysis.

### 2.1. Strategic analysis of the Croatian health care system

Strategic analysis is included in the research to emphasize the facts and specifics associated with concrete area of provision of health care services. Institutions operating within this area are primarily affected by the health care system structure in the country where they operate. For example, in some

2 On the other hand, the growth of manager autonomy emphasizes the influence of agent theory in the company as managers increase their ability to act in the direction of their own interests. However, such a development could not be prevented due to the growth of business complexity.

**Table 1** Revenue and expenditure of Croatian Institute for Health Insurance for the period 2015-2016, HRK

Year	2015	2016
<b>1. Total revenue (a+b)</b>	<b>22.156.101.065</b>	<b>23.725.904.027</b>
a) Revenue from contribution	18.121.281.522	18.468.680.704
b) Other revenue	4.034.819.543	5.257.223.323
<b>2. Total expenditure (c+d)</b>	<b>22.746.178.850</b>	<b>23.029.196.616</b>
c) Total health care (expenditure)	20.101.295.820	20.260.904.343
d) Other expenditure (fees + other expenditures)	2.644.883.030	2.768.292.273
<b>3. Surplus/deficit (1-2.)</b>	<b>- 590.077.785</b>	<b>696.707.411</b>

**Source:** Croatian Institute for Health Insurance (2016).

countries, they differ in the way that there is a dominance of public or private institutions. *"From an economic point of view, it is difficult to sustain the argument that health services are to be provided to everyone and at any time, regardless of the costs."* (Šverer et al., 2012). Countries applying a system that presumes that everyone has to be provided with health care practically gave up market laws as regulators of economic activities within that area. The Croatian health system is based on the assumption that everyone should be provided with basic health care. This type of system is currently highlighted as the most appropriate due to the existing conditions in Croatia, primarily with regard to purchasing power of citizens.<sup>3</sup> Nonetheless, there are private health institutions that have found their place in the market and succeed in competing with the public ones in certain segments. The strategic analysis will first introduce general information on the Croatian health care system in terms of funding and some numerical data that will clarify current situation in the system itself. After that, an analysis of "Porter's five forces" will be made. The scope of the strategic analysis can be more extensive than the one that will be done in this paper, but it will be sufficient because the strategic analysis is not the subject of this paper and will serve as a basis for addressing the challenges faced by specific institutions operating within the health care system.

### 2.1.1. General information on the Croatian health care system

Each sovereign state needs to issue a specific document under which it prescribes the basic postulate of the implemented health care system. *"The 1993*

*Health Care Act displayed principles, organization and implementation of health care in Croatia"* (Šverer et al., 2012). It was the basis for the application of health care in the Republic of Croatia. The chief regulator of Croatian health care system is the Minister of Health, while financing is in the hands of the Minister of Finance (European Observatory on Health Systems and Policies, 2017). All institutions and companies operating within the system are regulated in the same way, regardless of whether they are profitable or non-profitable. (European Observatory on Health Systems and Policies, 2017).

The health financing system, where access to health services does not depend on financial capabilities, is called public funding (Kovač, 2013). Such funding is largely applied in Croatia, which will be shown later. *"The Croatian health system is based on the principles of social security. It covers public and private provision and financing of services."* (Kovač, 2013). Table 1 shows the total revenue and expenditure of the Croatian Institute for Health Insurance on the basis of which it will be possible to make a more conclusive finding on the method of financing.

Most of the Croatian Institute for Health Insurance income refers to income from contributions. *"All these revenues (except for voluntary health insurance) come from the state budget because, from 2002, the Croatian Institute for Health Insurance does not collect the contributions (which are 3/4 of the income) autonomously, but they are collected through the national budget and then transferred to the Croatian Institute for Health Insurance (or directly to health institutions)." (Kovač, 2013)*. Most of the expenditures refer to overall health care,

Šopća, M., Mikić, M., Botički, M.  
Impact of the agent theory on  
private and public companies  
based on the analysis of Croatian  
health care system

<sup>3</sup> American health care system can be taken as an example where health care is not provided to all citizens. This leads to the fact that many citizens do not even have the basic health insurance.

**Table 2** Information on the structure of Croatian health care system

Category	2015
Number of registered legal entities in health care system	4.693
Number of active legal entities in health care system	2.779
Number of non-profit legal entities in health care system	2.008
Number of profit legal entities	771
Total number of health care institutions	1.356
Number of employees in health care system	67.297

**Source:** State Bureau of Statistics (2016) and the Croatian Institute for Public Health (2015).

which includes compulsory, supplementary care and safety at work. This suggests that the public funding of the health system relies on a system of contributions by which health care system has been funded. Of the total health care expenditures, most are for compulsory care, only a minor part is for supplementary care that refers to voluntary contributions of citizens to Croatian Institute for Health Insurance (2016). Citizens can arrange supplementary insurance policies with other companies if the offer from Croatian Institute for Health Insurance does not satisfy their needs. It is clear that a certain proportion of citizens (depending on their income) will use private health care services because of the comparative advantages they can provide (shorter waiting lists, personalized service). Interestingly, in 2016, Croatian Institute for Health Insurance had an excess of revenue. However, this is primarily the result deriving from other revenues in the form of certain state budget payments. Compared with income from contributions and total health care expenditures, it is clear that expenditure on health care is higher. *“Funding for the health care system is largely based (about 80%) on the contributions paid by the insured, which includes Croatia among the countries belonging to the Bismarck model, i.e. the health insurance model.”* (Zrinščak, 2007). This claim is also proven by the data presented previously, according to which about 81% of the health system is funded through contributions. In Croatia, a significant part of government

spending is disbursed on health. According to the World Health Organization in 2014, health care allocations accounted for 14% of total government spending, which represents a decrease compared to 2011 when they amounted to 15.1% (World Health Organization, 2014). It makes a large part of government spending because of the way the health care system is set up. Also, total health insurance spending in Croatia for 2011 amounted to 6.8% of GDP (World Health Organization, 2014). This data shows the burden that the Croatian health care system poses for the state itself, or for its budget, because a significant portion of government spending is spent on financing the health care system. According to the budget execution plan, the Ministry of Health exceeded the plan and in 2016 paid more than planned (Ministarstvo zdravstva, 2016). Table 2 shows certain information about the structure of the Croatian health care system.

Presented data shows that the structure of active legal entities is dominated by non-profit legal entities, which points to the predominantly public character of the Croatian health care system. The number of employees alone indicates the size of the system, and according to the data, the average number of employees in active legal persons is 24 employees per legal entity. Below, the private part of the health care system will be examined.

According to data from the previous table, 27.74% of the total number of active legal entities are legal persons. Since the State Bureau of Statistics

**Table 3** Absolute number and share of private health care institutions in regard to realizing net profit/loss

Year	Total number of institutions	Number of institutions that realize net profit	Percentage share	Number of institutions that realize net loss	Percentage share
2007	696	558	80.17%	142	20.40%
2008	869	642	73.88%	227	26.12%
2009	920	672	73.04%	248	26.96%

**Source:** Šverer et al.(2012), p. 36.

does not state how many of these profitable legal entities are privately owned, one cannot specify the number of private health institutions. It can be assumed that most of the profit institutions in the health care system are privately owned. Table 3 contains information on the number of private institutions that have made a profit or a loss. It refers to the period between 2007 and 2009 since newer data were not available because private health care institutions are not required to publicly publish their financial statements.

It is evident that the number of institutions grows yearly, but the proportion of those who gain profit reduces. It can be concluded that this is because of the increase in competition. This table proves that there are some discrepancies in data. According to the State Bureau of Statistics, in 2015, there were 771 profit legal entities in Croatia, while Table 3 shows that there were already 920 private health institutions in 2009. For this reason, it is difficult to specify their total number. According to the World Health Organization's latest available data, in 2011, 17.5% of total health consumption was related to private consumption, an increase compared to 2000 when it was 13.9% (World Health Organization, 2014). According to the World Bank, private health consumption in Croatia represents 1.4% of GDP, while in the United States it represents 8.9% (World Bank, 2017). It is obvious that the private health sector is slowly developing and starting to compete with the public health sector. It is possible that private health institutions have certain comparative advantages over public institutions regarding the impact of market mechanisms.

### 2.1.2. Analysis of Porter's five forces in the private part of the health care system

Porter's model is used to show the competitive position of a particular company within a particular industry depending on the five forces, i.e. the competitive forces developed by Michael Porter (2008). *"Understanding the competitive forces, and their underlying causes, reveals the roots of an industry's current profitability while providing a framework for anticipating and influencing compe-*

*tition (and profitability) over time."* (Porter, 2008). These are the competing forces that determine the competitiveness of the industry: rivalry among existing competitors, threat of new entrants, bargaining power of suppliers, bargaining power of buyers and threat of substitute products or services (Porter, 2008). This paper will analyze their impact on health institutions from the private part of the health care system operating in the field of medical practice<sup>4</sup> because the analysis in the public part is not applicable due to the absence of competition (Bisnode, 2014). The aim is to identify which competing forces influence most on these institutions with regard to the specificity of the system itself.

#### 1. Rivalry among existing competitors:

- As part of its activities in 2013, 489 business entities were active, which indicates a large number of competitors (Bisnode, 2014).
- The CR8 concentration index for 2013 is 0.3433 (Bisnode, 2014) which indicates that this industry is fragmented. There is a domination of small and micro companies.
- The share of 10 largest enterprises in total revenues was 39.91% in 2013 (Bisnode, 2014).
- In the same year, the largest institution had a share of 11.47% versus total revenue with the share of 30.53% in top 10 companies (Bisnode, 2014).
- According to the previous data it can be concluded that there exists certain rivalry among the competitors. In addition, the industry is quite differentiated by the number of services it can provide.

- There are exit barriers in the form of contracts with the Ministry of Health and Croatian Institute for Public Health as a precondition for providing services within the health care system. High fixed costs in the form of specialized equipment.

- It is necessary to emphasize the competition of public health institutions to which most of the total health consumption in Croatia is spent.

#### 2. Threat of new entrants:

Sopta, M., Mikić, M., Botički, M.  
Impact of the agent theory on  
private and public companies  
based on the analysis of Croatian  
health care system

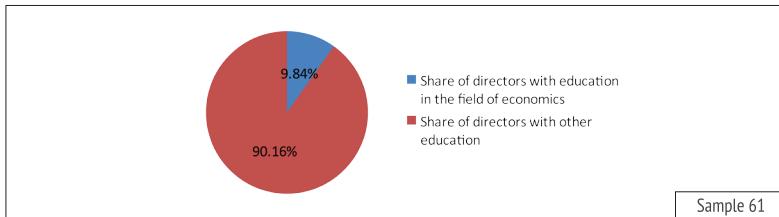
4 Classification according to National Classification of Activities: 8622- Djelatnosti specijalističke medicinske prakse, available on: [https://e-obrt.minfo.hr/dokumenti/nkd2007\\_s\\_objasnjenjima.pdf](https://e-obrt.minfo.hr/dokumenti/nkd2007_s_objasnjenjima.pdf) (17.08.2017)

- State restraints enable lower risk of entering new competitors. One needs a state licence to perform certain activities.
  - Specialized services are provided within the scope of activities for which specific knowledge is required.
  - The use of economy of scope for cost reduction. Institutions operating in the industry can provide more services within a joint bid (e.g. treatment and rehabilitation).
  - There are no companies with a very high market share that can leverage the effects of economy of scale. There is no control over key resources.
  - The market advantages of long-acting competitors in the market and the acquisition of a certain level of intellectual capital (know-how).
3. Threat of substitute product or services/ opportunities of complement products or services:
- There are no classic substitutes (e.g. honey and sugar) for services offered under specialist medical practice. Alternative medicine may possibly be listed, but it cannot be a classic substitute.
  - Development of health tourism within which institutions could offer certain health services combined with tourist offer. Opportunities for business entities operating in health care to take advantage of the effects of the economy of scope.
4. Bargaining power of buyers:
- Because a certain level of health care is guaranteed to all citizens, the negotiating power of the consumer in this respect is strong. It is necessary to offer consumers something they cannot get in the public sector.
  - It is weaker in case they need faster medical treatment due to long waiting lists in public health institutions.
  - Consumers usually perform individually and do not have enough power to negotiate the price.
  - The existence of a large number of competitors in the private part of the health care system affects their strength as they will be able to choose the facility that provides them with better and more favorable conditions.
- The consumers do not know the specific cost before they are diagnosed by a physician (Šverer et al., 2012), which can reduce their bargaining power.
5. Bargaining power of suppliers:
- There is no business entity in the private part of the health care system that is highly dominant in terms of market share. Entities cannot use their size as an argument in negotiating with suppliers, so suppliers have greater negotiating power.
  - Specific knowledge is needed for the production of most medical equipment, especially medicines. Finding another vendor in case of cessation of co-operation with the present may be long-lasting.
  - In the distribution of medicines and sanitary materials company Medika d.d. has 36% of market share in the hospital channel, which makes it the dominant supplier on the market. This allows it greater negotiating power in negotiating conditions of co-operation.
- "Five Force Analysis" for the area where private health care institutions are engaged in general medical practice has allowed insight into certain factors affecting the level of competitiveness among them. This concludes a strategic analysis of the Croatian health care system, while the following examples will be used to analyze the way and the success of management in private and public sector.

## 2.2. Management analysis in the public health care system

Management analysis seeks to identify possible differences in the influence of agent theory in private and public part of the health care system within the scope of this paper. First, professions of the leading people (directors) of private and public health institutions are explored, in order to examine whether there is a greater proportion of directors in private institutions who have completed a particular study of economics, and are thus, familiar with the basic principles of management economics. The research

**Figure 1** Examination of professional qualification of directors in Croatian public health institutions



**Source:** the authors, based on data from the Croatian Institute for Health Insurance.

will be based on publicly available information provided by the health care institution or other entities such as Financial Agency. After that, on the example of a certain number of institutions, the goal is to examine management methods by using certain indicators that point to the quality of management. This analysis should ultimately enable the recognition of differences considering impact of the agent theory.

#### 2.2.1. Examination of professional qualifications of directors in institutions from the public health care system

Public health institutions are often called out by the public because of their inefficiency, which is particularly reflected in state hospitals. In the last year, only three state hospitals realized a positive business result. This is influenced by numerous factors such as the organization of the health care system, state interests, citizens interests, economic trends and so on. It is rarely mentioned that the qualification of senior executives is a potential reason for their inefficient business result (the issue of agent theory and stewardship theory). For this reason, it will be examined which professions the principals are in, on a sample of 61 public health institutions, including clinical hospital centers, general hospitals, special hospitals and medical centers. The research was based on data obtained from the Croatian Institute for Health Insurance. Research results are presented in Figure 1.

Figure 1 shows that the directors who have completed a certain degree of education in economics are a minority. Directors who are experts in the field of medicine are dominant. For this reason, it can be concluded that the vast majority of managers are not well acquainted with the basic principles of the

management economics, which is a prerequisite for managing all business entities (both profitable and non-profitable), because they do not have a certain level of economic education. It is therefore possible that their interests and goals in these institutions will be different from those that the directors with education in the field of economics would have, who are guided by the principles of economics in their work. When considering only clinic hospital centers and general hospitals, that are dominant by the number of employees and total income and expenditures, the situation is even more unfavorable. In a sample of 33 business entities, in only one of them the director is educated in the field of economics (Croatian Institute for Health Insurance data). To manage entities with such resources, top managers must have a great deal of experience in managing and efficiently delegating resources. That is because they make major decisions regarding the operations of these business entities that can have a significant impact on their performance.

A link can be made to the agent theory. If it is assumed that the managers with education in the field of economics will be guided by the principle of maximizing performance as their profession stipulates. Their goal will be to achieve the greater efficiency of the business entity they manage. There is a greater risk that managers who are not professionals in the field of economics will meet certain interests that are inconsistent with maximizing performance. For example, when they should make certain decision, it cannot be safely stated that managers (in the role of agents) with education in the field of economics and those with other educational backgrounds will be led by the same principles and goals and make the same business decisions. It can be assumed that managers with education

Sopta, M., Mikić, M., Botički, M.

Impact of the agent theory on private and public companies based on the analysis of Croatian health care system

**Table 4** Total revenue and expenditure of selected public institutions in 2016, HRK

Institution	Total revenue (2016)	Total expenditure (2016)	Surplus/deficit (2016)	Surplus/deficit (2015)
KBC Rijeka	839.367.006	836.632.073	2.734.933	19.046.397
KBC Split	903.102.390	956.792.091	- 53.689.701	- 44.791.219
KBC Osijek	738.452.499	811.248.550	- 72.796.051	- 52.642.718

**Source:** KBC Rijeka (2016), KBC Split (2016), KBC Osijek (2016).

in economics will behave according to the rules of their profession (although there is a potential for divergent behavior). They will increase their reputation if the business entity they manage operates as efficiently as possible. Managers of some other profession may be more interested in getting as many patients as possible or improving their reputation by acquiring the most modern technology. This is one of the reasons why the influence of agent theory can be more pronounced in business entities run by managers of other professions. In certain hospitals there are deputy directors who are in charge of financial business. They practically represent the only experts from economics in the health care institution administration, and it is questionable whether this is sufficient for their proper orientation. It is to be understood that the economics is not only referred to a financial aspect of business but it includes knowledge about managing all aspects of a particular business entity. Obviously, public health institutions management is dominated by the view that directors who are experts in the field of medicine will manage these institutions better.

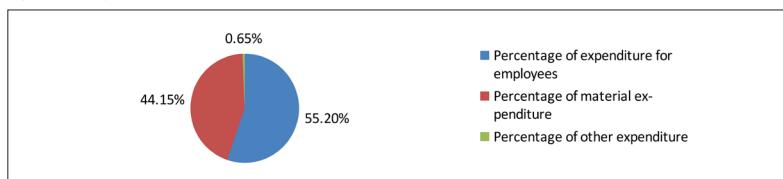
#### 2.2.2. Analysis of the operation of selected public health institutions

The analysis of the operation of public health institutions will be carried out on the basis of budget reports, budget and extra-budgetary users of three selected clinic health centers. These are KBC Rijeka, KBC Split and KBC Osijek. These three institutions

are selected due to their similarity in scope and type of business for easier comparison. Reports are taken from the official sites of the mentioned institutions and refer to 2016. Table 4 shows the total revenue and expenditure of the aforementioned institutions.

The first conclusion that can be made from the presented data is that these hospitals have a very large amount of funds. This is also supported by the fact that the average property of these three hospitals is about HRK 635 million. On average, they generated about HRK 827 million in revenue and about HRK 868 million in expenditure. KBC Rijeka is the only one that generated the surplus of business revenue, while KBC Split and KBC Osijek had very high revenue deficit that necessarily stems from inefficient business performance. It is a worrying fact that all hospitals have an unfavorable difference between revenue and expenditure compared to the previous year. This is especially noticeable at KBC Split and KBC Osijek. The revenue deficit in KBC Split in the period from 2014 to 2016 increased by 97%. In KBC Osijek, this growth was even higher and in the same period it was 450%. An even bigger problem is the fact that this growth was due to the growth in expenditures, while revenue did not change significantly. This indicates that great issues considering cost management exist in these institutions, which is mainly the responsibility of administration of the institution. Since most of the income that these hospitals are receiving comes from the state bud-

**Figure 2** Average structure of business expenditure for KBC Rijeka, KBC Split and KBC Osijek



**Source:** KBC Rijeka (2016), KBC Split (2016), KBC Osijek (2016).

get, it is necessary to analyze their business expenses more closely. As part of cost management, there is the largest opportunity for improving the efficiency of the business operations of the mentioned institutions. Therefore, it is necessary to study which expenditures are dominant in the structure of total expenditure. The following Figure 2 shows the average structure of business expenditures of the previously mentioned hospitals.

Operating expenses account for most of the total expenditures of these hospitals. On average, they account for about 90% of total expenditures. As it could be assumed, expenditures that are dominant in the structure of operating expenses of these institutions are expenditures for employees and material expenditures. This suggests that there is space for more efficient cost management, which would affect reduction of costs. Earlier, it was noted that expenditures in all these institutions grew year after year. It raises the question of exactly what expenditure has affected the growth of total expenditures. Thus, in all the institutions, this growth was mainly due to the growth in expenditures for employees and material expenditures, while in KBC Split there was a pronounced increase in expenditures for services. It can be assumed that cost management is not systematically accessed, which ultimately results in a constant increase in expenditures. The influence of various interest groups on the agents (managers) is also possible, which is characteristic for business entities operating in the public domain. For this reason, the influence of agent theory may be even more pronounced because agents face the problem of multiple principals and try to find a compromise in their actions (e.g. the influence of trade unions and the state). In the example of KBC Split and KBC Osijek, it is evident that business management is not efficient enough. Evidence for this is the achievement of a negative business outcome that ultimately burdens the entire health care system. Based on such information, it is possible to assume a certain influence of the agent theory, although it is difficult to confirm it. It is only possible to state that in the analyzed institutions expenditures are not managed in an adequate manner, which may point to some other interests of senior management in such business entities. It would be incorrect to assume the

agent theory as the only reason for such operations of public health institutions. Certain level of influence is caused by impact of the stewardship theory. Due to the management structure in which experts from the field of economics are in minority, one can assume that some of the inefficient business derives from insufficient knowledge in economics by the management. It is also worth noting the impact of the health care system structure itself, which provides everyone with health care regardless of the cost. However, the analysis of expenditures in specific institutions has shown that they are not managed adequately independently of the abovementioned fact. An additional problem is the inability to establish an efficient incentive system for agents in business entities with majority public ownership. In public health institutions, this is even more pronounced because it is difficult to pinpoint the basic business objective on which the incentive system can be created. This ultimately affects the decline in the value of the principal, in this case, the state and its citizens.

### 2.3. Management analysis in private health care institutions

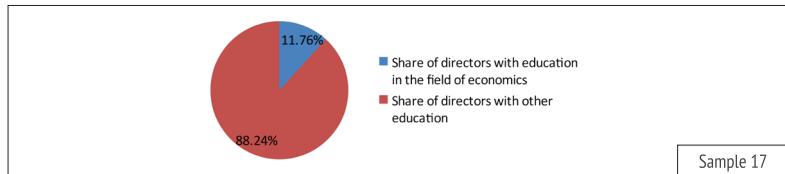
Once a management analysis has been carried out in the public part of the health care system, it is necessary to do the same for its private part. It will be interesting to see if there is a greater share of experts from the field of economics at managerial positions of private health care institutions than of the public ones. Also, business operations will be analyzed on a number of specific private institutions, after which it will be possible to compare the management methods with public institutions.

#### 2.3.1. Examination of professional qualifications of directors in institutions from the private health care system

Earlier analysis has shown that small and micro companies dominate in the private part of the health care system. Only two companies classify into the medium-sized enterprises by their total revenue (Bisnode, 2014). Based on this, it can be concluded that in most of them there is no separation of ownership from management. As a result, 17 major private health care institutions from the field of specialist medical practice will be includ-

Sopta, M., Mikić, M., Botički, M.  
Impact of the agent theory on  
private and public companies  
based on the analysis of Croatian  
health care system

**Figure 3** Examination of professional qualification of directors in Croatian private health institutions



**Source:** authors' research based on data collected from official websites of private institutions and publicly available information.

ed in research, as by involving other institutions research would not be relevant.<sup>5</sup> Research data on professional qualification of directors has been collected from official Internet sites of institutions and publicly available information about business entities.<sup>6</sup> Research results are presented in Figure 3. In a sample of 17 major private health care institutions, only two top managers have completed a certain degree of education from economics. In others, a management system similar to public institutions dominates where there is an assistant director in charge of financial affairs or the founder (owner) is also the general director. The research has pointed out that there are no major differences in the qualification of managers in private and public health care institutions. A particular problem with research in private institutions is a smaller sample (for the aforementioned reason), but it is possible to spot certain trends in the private sector. It can be said that in the private part of the health care system there is no overwhelming stance that economic experts should be in the position of general director. As a result, impact of the agent theory on those institutions where there is separation of ownership from management can be more pronounced.

Similar to public institutions with managers from other education fields, divergent behavior may be more pronounced because their interests differ from the interests of the managers from the field of economics. For example, achieving a better hospital image can be more important than achieving efficiency and maximizing the owner's profit, which is a classic example of influence of the agent theory, as by doing so, one potentially decreases the value for the owner. The conclusion is that the qualifications of the directors cannot be the reason for the possible differences in the performance of the private and public institutions and the related differences considering impact of the agent theory in the institutions themselves.<sup>7</sup>

### 2.3.2. Analysis of the selected private health institutions operations

After examining the professional qualifications, research focuses on business operations analysis based on the largest private polyclinics. Given the market mechanisms affecting these institutions, but also the increasing role of private health care institutions due to the independence of Croatia, their establishment on the market could be expected.

5 On the example of public health institutions, it was possible to analyze all the institutions listed in the Croatian Institute for Health Insurance address book as they correspond to the needs of research. If all private health institutions were involved in the research, the share of the director with education from economics would be much smaller, as most of these establishments are made up of smaller offices (e.g. private orthopedic clinics) where the founder of the surgery is also the owner. The founders of such small clinics are mostly individuals who are experts in the field of medicine (dentists, doctors, physicians, etc.). For this reason, a sample that would include all private health care institutions would not be representative.

6 The authors rely on the truthfulness of the data published until August 23rd, 2017. According to the analysis of 17 business entities, in 15 of them qualification of the director is a professor or doctor of medicine. In two subjects, director is a person with qualification MBA (Master of Business Administration).

7 This does not mean that institutions would not achieve better results if managers were the people of economic education or management experts.

**Table 5** Result of business operations of selected private polyclinics for 2015 and 2016, HRK

Category	Medikol		Sunce		Svetlost	
	2015	2016	2015	2016	2015	2016
Total revenue	85.821.765	107.816.914	74.764.709	78.620.495	39.194.623	45.377.641
Total expenditure	85.736.250	102.713.086	73.983.750	71.673.774	35.793.062	39.551.477
Profit/loss	85.515	5.103.828	780.959	6.946.721	2.713.372	4.641.608
EBIT	4.567.759	6.109.755	1.978.415	8.053.375	3.266.456	5.342.164

**Source:** Financial reports of selected polyclinics provided by Financial Agency.

This assumption will be examined on the example of the three largest private polyclinics in Croatia. Data is based on the financial statements of the institutions that are provided by the Financial Agency. Business operations data is presented in Table 5.

Data show that all polyclinics achieved a certain growth over the observed period. According to the business results, it can be concluded that they are successful in their performance. But if one looks more closely at the financial statements, one can notice that certain clinics have business problems. So, according to reports received by the Financial Agency, Polyclinic Medikol and Polyclinic Sunce, in the period before 2015, had some difficulties in business operations because they reported large losses from the previous period, and recorded a large reduction in the category of capital and reserves in the balance sheet. This category is negative in the case of the Polyclinic Sunce. It is obvious that certain turnaround in the performance of these two polyclinics has occurred since they are now succeeding in achieving a positive business result. The Polyclinic Svetlost has the most stable business performance as it manages from year-to-year to increase its profit and does not convey the losses from the previous period. According to this data, there is a problem with management in private part of the health care system, which is further emphasized because it occurs in the two largest

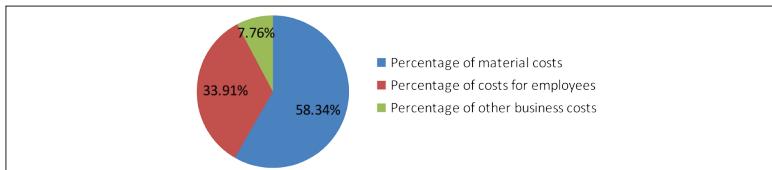
polyclinics in Croatia. Figure 4 shows the average structure of business expenditure of three polyclinics and special hospitals for comparison with public hospitals.

The structure of expenditures of the aforementioned private polyclinics differs from the structure of public hospitals that is shown in the earlier part of the paper. A different approach to cost management can be noticed. First of all, a delegation of work that is more efficient in private health care institutions. As a result, the costs for employees occupy a much smaller share in the overall cost structure. It is clear that some other items also have an impact on the fact that the costs for employees are higher in public institutions and it is more difficult to plan them. However, the difference in costs structure is quite large and the question arises whether they can be connected with the principal-agent relation. It is difficult to prove it with certainty, but it can be assumed that there is a certain impact due to the emergence of multiple principals, but also the absence of market mechanisms, which is why it is difficult to motivate agents to act in the right direction for the institution itself.

#### 2.4. Overview of business performance on the example of health care institutions from the private and public part of health care system

The previous analysis referred to the observation

**Figure 4** Average structure of business costs of Polyclinic Medikol, Polyclinic Sunce and Special Hospital Svetlost for 2016



**Source:** authors' calculation based on data from institutions financial statements provided by the Financial Agency.

Sopta, M., Mikić, M., Botički, M.  
Impact of the agent theory on  
private and public companies  
based on the analysis of Croatian  
health care system

of certain trends in the private and public part of the health care system on the example of several selected institutions. This section will make a comparison of business performance between two institutions, one in the private and the other in public ownership. Within this, it will be attempted to identify whether the influence of agent theory exists. Selected institutions are specialized in providing specific services in a specific area of medicine for easier comparison. From the private part of the system, business performance of Specijalna bolnica za oftamologiju Svetlost (University Eye Hospital Svetlost) will be analyzed, and from the public part Specijalna bolnica za ortopediju Biograd na Moru (Special hospital for orthopedics Biograd na Moru).

#### 2.4.1. Analysis of business performance on the example of the Specijalna bolnica za ortopediju Biograd na moru

Specijalna bolnica za ortopediju Biograd na Moru operates within the public sector and belongs to public health institutions. Specifically, it is owned and controlled by the Zadar County. Details of its business performance are taken from the official website of the specialist hospital. It operates within hospital activities and specializes in providing services related to orthopedic problems of patients. At the very beginning of the analysis, data on total revenue and expenditure are shown in Table 6.

In both observed years, the hospital generated a revenue shortage, although it was smaller in the second observed year. Deficit reduction is mainly

caused by the revenue growth of institution which mostly refers to payments from the state budget because the hospital is a budget user. A discouraging fact is that expenditure grew compared to the previous year. In order to evaluate the work of management, it is necessary to analyze more closely the structure of operating expenses. In an earlier analysis on the example of public health institutions, most of the expenditures were related to expenditure for employees and material expenditure, so such a structure is expected here too.

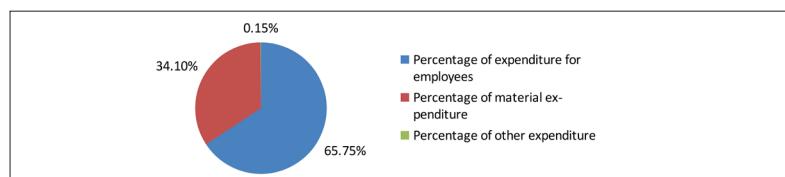
According to expectations, 99.85% of total expenditures are related to expenditures for employees and material expenditure. It can be assumed that most of these expenditures are relatively difficult to avoid due to the specific nature of public health institutions. But a certain part of these expenditures is potentially manageable. The question is what is the role of management, considering cost management quality? The assumption is that at least one member of the management structure must have been an expert in that area. Ideally, the top manager should understand the importance of comprehensive cost management, but also have some knowledge in that area. If this is not the case, there is a danger of impact of the agent theory, but also the stewardship theory at that institution. Looking from the aspect of agent theory, it can be concluded that management did not meet the minimum requirements of the local community (principals) related to achieving a positive business result. The question is how much this affects the as-

**Table 6** Total business revenue and expenditure of Specijalna bolnica za ortopediju Biograd na Moru, HRK

Category	2015	2016
1. Total revenue	38.458.803	41.237.581
2. Total expenditure	44.624.811	45.119.887
3. Surplus/deficit (1-2.)	-6.166.008	-3.882.306

**Source:** Specijalna bolnica za ortopediju Biograd na Moru (2017).

**Figure 5** Structure of operating expenditure of the Specijalna bolnica za ortopediju Biograd na moru for 2016



**Source:** Specijalna bolnica za ortopediju Biograd na Moru (2017).

**Table 7** Certain financial ratios of Specijalna bolnica za ortopediju Biograd na Moru for 2015 and 2016

Financial ratios	2015	2016
Total assets turnover ratio	0.2978	0.3274
Revenue/expenditure ratio of overall operations	0.8618	0.9140
Revenue/expenditure ratio of regular operations	0.9126	0.9659
Profitability of assets	- 4.78%	- 3.07%
Profitability of equity	- 5.24%	- 3.44%

**Source:** Specijalna bolnica za ortopediju Biograd na Moru (2017).

sumptions of agent theory and stewardship theory? If the influence of agent theory exists, it is assumed there is an unwanted action of agents in the form of meeting their own discretionary goals. From an economic point of view, the primary objective of health care institutions should be to achieve as efficient business with the minimum requirement of covering the expenditures. This is because such business operation is in the interest, in this case, of a local community that is the founder and owner of the institution. If the agents fail to realize this, it is possible that some other interests exist concerning the direction in which they operate and which diverges from the interest of the principal. It is also possible that their limited rationality, i.e. insufficient knowledge of laws of economics, affects the fulfillment of the principal objectives. The influence of stewardship theory to some extent always exists in business entities due to the limited cognitive ability of agents. Since the director of the hospital is educated in the field of economics, it cannot be assumed that the dominance of stewardship theory exists that would otherwise explain the negative performance of the institution by the fact that there is no specific knowledge in the field of management. The reasons for inefficient business performance need to be sought in the sphere of agent influence. Specifically, it is possible that this influence further emphasizes the emergence of a larger number of stakeholder groups in the role of principal, and this is the characteristic of the public sector. Thus, an agent in the business entity will not follow the interests of one stakeholder group but will seek a compromise to satisfy more than one party. This affects the possibility of designing an efficient incentive system in such companies, which will motivate agents to maximize their behavior. A factor that further complicates the motivation of agents is the absence of market mechanisms. Table

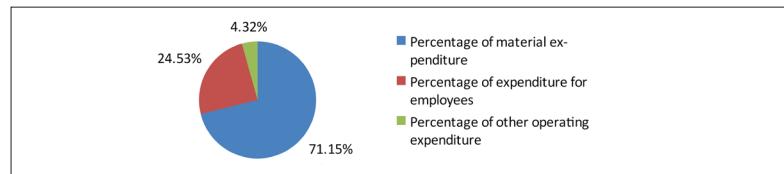
7 presents certain financial ratios of the hospital.

Based on these indicators, it is possible to evaluate the efficiency of management in institutions where the primary goal is not gaining profits or maximizing the value for the owner. It should be emphasized that the value of all indicators in 2016 has improved compared to the previous year. The main reason for this is an increase in the total revenue of the institution. One of the key indicators of management efficiency is the revenue/expenditure ratio of regular operations because it shows success of operations in an area of business that pertains to the purpose of the existence of a business entity. It is obvious that the value of this indicator in both years is more favorable than the revenue/expenditure ratio of the overall business. However, its value is unsatisfactory because it should be greater, or at least equal to 1. According to the above indicators, it can be concluded that management is not successful in meeting the principal's goal, because the revenue/expenditure ratio is less than 1, which affects the negative profitability of assets and equity and that there are certain problems related to cost management.

#### 2.4.2. Analysis of business performance on the example of Specijalna bolnica za oftamologiju Svetlost

Before presenting the research findings, it is necessary to explain why this hospital was selected for the analysis. The main reason is the possibility of comparison with the Specijalna bolnica za ortopediju Biograd na Moru from the public part of the health care system. The two are comparable primarily because they specialize in a particular area of medicine, and the additional reason is that they achieve similar levels of income and expenditure. The special hospital operates in the private part of the health care system and provides services that

Sopta, M., Mikić, M., Botički, M.  
Impact of the agent theory on  
private and public companies  
based on the analysis of Croatian  
health care system

**Figure 6** Structure of operating expenditure of Specijalna bolnica Svetlost 2016

**Source:** Specijalna bolnica za oftamologiju Svetlost (2017).

are related to the ophthalmological problems of the patients. It is a small business. In this business entity there was no separation of ownership from the management since the owner is also the director, but the financial part of the business is conducted by an expert in the field of economics (Specijalna bolnica za oftamologiju Svetlost, 2017). This can be important information when making final conclusions. Total revenue and expenditure and level of earnings in 2015 and 2016 are already shown in Table 5 so the analysis in this part will focus on the structure of operating expenditure. The structure is displayed in Figure 6.

When compared to the Specijalna bolnica Biograd na Moru, it can be noticed that the structure of expenditures of two institutions is significantly different. In the case of the hospital Svetlost, there is a domination of material costs, while in hospital Biograd na Moru the costs for employees are dominant. This points to a significantly different way of management methods between these two institutions, especially when considering that they have a similar level of income and operating expenditure. The average cost per employee at the hospital Svetlost is around 14 431 kuna per month. Because hospital is successful in gaining profits, it can be concluded that management is successful considering work delegation and that such average salary is justified. In Table 8 financial ratios of the Specijalna bolnica Svetlost

can be seen.

The hospital achieves remarkable results for all indicators. It can be said that management is successful in managing business operations because the company stays steadily at high profit levels. If a comparison is made with the Specijalna bolnica Biograd na Moru, there are significant differences in the success of the business operations in favor of the Specijalna bolnica Svetlost. Although the hospital director is a medical specialist (also owner), hospital business operations are financially stable with great prospects for further development. It seems that the director has consciously handed this segment of business to experts in the field, which can be considered a good business decision. When considering the success of the business operations, it is concluded that there are no significant conflicts between principals and agents in this particular institution. It differs from the public health care system, where based on the success of the business operations, it can be assumed that there is a certain influence of the agent theory (primarily because of problems with the motivation of agents in public hospitals).

## 2.5. Final findings about impact of the agent theory in the Croatian health care system

This subchapter concludes the research of impact of the agent theory on the example of the Croatian

**Table 8** Financial ratios of Specijalna bolnica Svetlost in 2015 and 2016

Financial ratio	2015	2016
Total assets turnover ratio	4.92	5.44
Revenue/expenditure ratio of overall operations	1.095	1.15
Revenue/expenditure ratio of regular operations	1.092	1.14
Profitability of assets	41.01%	64.09%
Profitability of equity	67.10%	81.86%

**Source:** Specijalna bolnica za oftamologiju Svetlost (2017).

health care system. Here, all the findings that arise from the concrete research will be summarized. The first part of the study referred to the strategic analysis of the Croatian health care system and the analysis of impact of the agent theory was not conducted within it. The finding that was to a certain extent essential for the continuation of the work was related to the lack of information concerning the number of business entities from the private part of the health care system, that is, it was almost impossible to determine the specific number of health institutions operating within it.

The second part referred to the examination of professional qualifications of senior managers in private and public health institutions. The aim was to confirm or deny the assumption that there is a larger share of experts in the field of economics that led the institutions from the private part of the system. The research has shown that there are no differences in the qualifications of managers between public and private institutions. In the overall share of both systems, managers who are not experts in the field of economics are dominant. The conclusion is that the qualifications of top managers cannot be the reason for the different impact of the agent theory in private and public health institutions. It was further concluded that due to the lack of experts from the field of economics in the position of a director, there is a significant impact of the stewardship theory (limited cognitive ability). The analysis of revenue and expenditure of selected public and private institutions has highlighted problems regarding covering expenditure with which public institutions are faced. The potential source of this problem was found in the analysis of the structure of expenditures. Based on the average structure of expenditures of selected private and public institutions it was found that their structures differ. The average cost of employees had a larger share in the structure of total operating expenditure in the case of three public institutions, while in the case of private larger share had material costs. Such a different structure indicates the possibility of existence of agent theory influence in public institutions due to the lack of market mechanisms that would force them to minimize costs. It has been noted that there are also problems with the management of private health care institutions regarding the high losses that two of the three observed institutions have

achieved in the periods before 2015. This indicates that there exists a certain influence of the agent theory, but also the stewardship theory (the question of professional qualification of the director).

In the last part of the research the analysis was based on the examination of business performance of individual institutions from the private and public part of the health care system. In this part, there was a final confirmation of the different impact of the agent theory in private and public institutions. Although in the analyzed public health institution the director was educated in the field of economics, he failed to meet the minimum requirement of the principal in terms of achieving positive business operations. In the private institution that has been analyzed, the director is not educated in the field of economics, but the business performance from the economic aspect is satisfactory. The final conclusion is that the impact of the agent theory is more pronounced in public health institutions due to the lack of market mechanisms that would encourage agents to behave in a maximizing way, but also the ambiguity of the business goal, which partly stems from the existence of a larger number of principals with significant impact on them.

### 3. Conclusion

The primary objective of this paper was to examine differences considering impact of the agent theory in private and public companies on the example of Croatian health care system. The first part of the paper referred to the theoretical description of the problem that relates to agent theory. Within this, the reasons for conflicts between principals and agents and ways of solving them are analyzed. Also, there are some basic differences between business entities in public and private ownership, as well as, the specificities of the influence of agent theory in public business entities. The key differences relate to the ability to motivate agents in public companies and institutions. The main reasons relate to the existence of a larger number of principals, the absence of market mechanisms and the greater number of tasks that agents have to fulfill. These reasons influence the fact that it is more difficult to create an effective incentive system in public business entities that will motivate agents to behave according to objectives of principals. In the second

Sopta, M., Mikić, M., Botički, M.

Impact of the agent theory on private and public companies based on the analysis of Croatian health care system

part of the paper, related to the specific research, there were some findings that could lead to answers to the previously asked questions. The main problem with the research was the lack of publicly available data on the activities of public and private institutions. This is because they are not required to publish their financial statements publicly, so the reports are collected directly from the Financial Agency. Due to data discrepancy, it is difficult to precisely quantify the number of companies operating in the private health care sector. The analysis pointed to the specifics of the private and public part of the health care system that arise from its own structure. Such a structure, to a certain extent, limits the efficiency of public institutions because they cannot directly charge the service from the user. By analyzing "Porter's five forces", the finding was that there is a large rivalry among the market participants in the private health care system because the market is relatively fragmented. Also, private consumption of health care in Croatia is still at a relatively low level, limiting the development of the private health sector. The research on the example of the concrete institutions gave answers to the most important issues in the paper and its goal was fulfilled within it. Response to the question of the professional qualification of the director was provided, i.e. the premise that the private sector has a higher share of the economics managers was not proven. A financial analysis based on a number of institutions has shown that private health care institutions are more efficient in terms of gaining profits. However, two out of the three analyzed

privately-owned companies have had major business problems and have generated great losses that continue to burden their business. The biggest differences in efficiency were observed in the structure of operating expenditures. The conclusion is that the structure of private-sector business expenditures is more favorable as costs of employees occupy a smaller share in the overall structure of expenditures, while in public institutions they represent most of the total expenditure. This finding has indicated the possibility of a greater impact of the agent theory in public institutions than in the private ones. Following analysis of concrete institutions has confirmed this. The final conclusion considering impact of the agent theory in private and public health institutions needs to be displayed in a way that takes into account all the above-mentioned findings. First and foremost, it is necessary to emphasize the particularity of the public health care system, which makes management of people more difficult. All problems that further emphasize the impact of the agent theory should be added to the above-mentioned particularity. The analysis made it clear that public institutions have problems with efficiency. The main reason for this is the specific nature of the public sector due to the absence of market mechanisms, but also the emergence of multiple principals to which the agents answer and the multiple tasks they have to fulfill. Because there is no major difference in the professional qualifications of directors in private and public institutions, it is assumed that the impact of the agent theory is more pronounced in public institutions.

## Literature

- Arrington, B., Haddock, C.C. (1990) Who really profits from not-for-profits? *HSR: Health Services Research*, 25 (2): 291-304.
- Bejaković, P., Vukšić, G., Bratić, V. (2011) Veličina javnog sektora u Hrvatskoj. *Hrvatska i komparativna javna uprava*, 1: 99-125.
- Boot, A. W. A., Gopalan, R., Thakor, A. V. (2006) The entrepreneur's choice between private and public ownership. *The Journal of Finance* 61 (2): 803-836.

Caers, R., Du Bois, C., Jegers, M., De Gieter, S., Schepers, C., Pepermans, R. (2006) Principal-agent relationships on the stewardship-agency axis. *Nonprofit management & leadership*, 17 (1): 25-47.

Croatian Institute for Health Insurance (2017) Izvješće o poslovanju Hrvatskog zavoda za zdravstveno osiguranje za 2016. godinu.

Croatian Institute for Public Health (2016) Hrvatski zdravstveno-statistički ljetopis za 2015. godinu.

Dixit, A. (2002) Incentives and Organizations in the Public Sector: An Interpretative Review. *The Journal of Human Resources*, 37 (4): 696-727.

European Observatory on Health Systems and Policies (2017). Available at <http://www.who.int/health-laws/countries/hrv-en.pdf> [14.9.2017].

Handy, F., Katz, E. (1998) The wage differential between nonprofit institutions and corporations: getting more by paying less? *Journal of Comparative Economics*, 26: 246-261.

Kellner, C. (2017) The principal-agent problem with smooth ambiguity. *Rev Econ Design*, 83-119.

Klinički bolnički centar Osijek (2016) Godišnje financijsko izvješće za 2015. godinu.

Klinički bolnički centar Osijek (2017) Godišnje financijsko izvješće za 2016. godinu.

Klinički bolnički centar Rijeka (2017) Godišnje financijsko izvješće za 2016. godinu.

Klinički bolnički centar Split (2016): Godišnje financijsko izvješće za 2015. godinu.

Klinički bolnički centar Split (2017) Godišnje financijsko izvješće za 2016. godinu.

Kovač, N. (2013) Financiranje zdravstva - situacija u Hrvatskoj. *Ekonomski vjesnik*, XXVI (2): 551-563.

Ministarstvo zdravstva (2016) Plan i izvršenje za 2016. godinu.

Orsag, S. (2011) *Vrijednosni papiri, investicije i instrumenti financiranja*. Sarajevo: Revicon.

Pindyck, R. S., Rubinfeld, D. L. (2005) *Mikroekonomija*. 5. izdanje, Zagreb: Mate

Poliklinika Sveti Rok (2014) Izvješće o poslovnom subjektu.

Porter, M. E. (2008) The five competitive forces that shape strategy. *Harvard business review*, 86: 25-40.

Rupčić, N. (2016) *Upravljačka ekonomika: Teorija i praksa*. Rijeka: Ekonomski fakultet Sveučilišta u Rijeci.

Specijalna bolница za ortopediju Biograd na Moru (2017) Izvještaj o finansijskom poslovanju za razdoblje 1.1.2016.-31.12.2016.

State Bureau of Statistics (2017) Statistički ljetopis Republike Hrvatske 2016.

Stiglitz, J. E. (1985) Credit Markets and the Control of Capital. *Journal of Money, Credit and Banking*, 17 (2): 133-152.

Šverer, F., Sabol, A., Fučkan, Đ. (2012) An introduction into strategic analysis of the private health care sector in Croatia. *Journal of International scientific researches*, 4 (3-4): 32-38.

World Bank. Available at: <http://data.worldbank.org/indicator/SH.XPD.PRIV.ZS>. [12.9.2017].

World Health Organization (2014) World Health Statistics 2014.

Zrinčić, S. (2007) Zdravstvena politika Hrvatske. U vrtlogu reformi i suvremenih društvenih izazova. Studijski centar socijalnog rada, Pravni fakultet u Zagrebu.

Sopta, M., Mikić, M., Botički, M.

Impact of the agent theory on private and public companies based on the analysis of Croatian health care system

