Assessing Earnings Quality of Greek Public Hospitals

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I hereby declare that the work submitted is mine and that where I have made use of another’s work, I have attributed the source(s) according to the Regulations set in the Student’s Handbook.

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January 2019
ABSTRACT

This dissertation was written as part of the MSc in International Accounting, Auditing and Financial Management at the International Hellenic University.

This study examines the factors that affect the Net Income of Greek public hospitals for the period 2012-2015. A representative sample of 107 public hospitals is chosen to construct a dataset that contains information about the number of hospitalized patients and other variables that are taken from the financial statements. The main objective is to explore whether there is evidence for accounting principles violation. To address this question, two more points need to be clarified: a) how these factors have been presented in the financial statements and b) what are the specific grants that these hospitals received from the state the latest years. Adopting the OLS method, the results suggest that a significant number of Greek public hospitals have violated accounting principles such as the accrual principle, the matching principle and the conservatism principle.

I would like to express my gratitude to my supervisor Prof. Andreas Koutoupis for his guidance which helped me to carry out my research. I would like also to express my deep gratitude to my family and my fiancée for their unconditional support and their help, for all these years.

Keywords: (Earnings quality, Accounting Principles, Income Statement, Public Hospitals in Greece, Violation of Accounting Principles)
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INTRODUCTION

In this dissertation, we investigate whether exist indications that Greek public hospitals violate main accounting principles at the preparation of their financial statements and at the accounting policies that they have adopted.

We decide to investigate this topic as there is not equal research in literature. Generally, the literature around this topic is poor because the data of the Greek public hospitals became free to public, mainly by creation of web platform “diavgeia”. Diavgeia, in Greek is written «Διαφγεια» and it is synonym with clarity.

Diavgeia, is an innovative web platform that created in 2010 according to Greek law 3861/2010 and there uploaded the decisions and other data from almost all public organizations. These decisions could refer to financial expenses or payments that they perform or changes to their operation.

Expect from diavgeia in 2011 created another web platform with called “Esynet”. Esynet is about only for the Greek public hospitals which import their financial and operation data in almost 20 tables of data, in monthly basis. Nowadays this platform named “Bi-Forms” and contain some changes in comparison to Esynet but maintain to the initial purpose and philosophy. All of these data would be very useful for researchers but unfortunately are published, a part of that.

In 2015 are operating 127 public hospitals in Greece which are under the supervision of YPE. YPE are health authorities which planning, supervising and controlling the operation of all health services providers (Hospitals, health centers, social care units). There are seven YPE in Greece which are operating according to the Greek law 3527/2007 and under the supervision of ministry of health. The separation of YPE has done mainly with geographical criteria. In Appendix are shown the seven YPE and the hospitals that belong under their supervision.

From 2003 with presidential decree 146/2003, Greek public hospitals obligated to apply accrual basis accounting and to prepare financial statements. Until 2003 they applied cash-based accounting. In particular, the Presidential Decree (P.D) 146/2003 are about only public health units and define the framework for accounting records,
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financial reporting and cost accounting. Despite the application of accrual accounting, the public hospitals, never stopped to apply cash accounting in parallel. They use cash accounting mainly in order to monitoring the annual budget per kind of expenses and earnings.

According to the Greek law 3599/2007 in article 27, the Greek public hospitals must prepare financial statements according to IFRS. Unfortunately, only few hospitals published financial statements according to IFRS and these is a limitation for researchers like us, who wants to compare the financial data with that of equal organizations which operate abroad or in private sector.

The Greek public hospitals are hiring mandatory external auditors in order to perform audit at their annual financial statements. The financial statements with the audit report are uploaded in diavgeia and sometimes in the website of hospital. But they use to publish the financial statements that they have prepared according to Greek legislation. Except from external auditor, according to law 4025/2011, article 25 the public hospitals from 2012 are obligated to hire independent internal auditor.

So, the fact that for the first time, there are available financial and operating data for a significant time period about Greek public hospitals, consist a great opportunity for investigation. The investigation is possible to reveal weaknesses and mistakes that could be corrected. And that it is important because the public institutions, managing public sources and must do it properly. Also, properly, they must inform the public.

We conduct our research on a sample of 107 public hospitals which represent almost the 85% of the total for the period from 2012 to 2015. We find that exist indications for violation of accounting principles by significant number of Greek public hospitals. In the next chapters provided the literature review which conclude important definitions and findings of other investigations, then follows the analysis of methodology research where shown the selected sample and the variables which have used in order to be created the models. In chapter four are provided data analysis and discussion and in the end, presented the conclusion and the recommendations of the research.
CHAPTER 1

CONCEPTUAL FRAMEWORK OF FINANCIAL STATEMENTS

Introduction
The recording of the all financial transactions that happen in a business or an organization is called accounting and presents the information in several reports and analyses that are related to the financial performance of the business. Moreover, accounting provides information about the activity results and for the decision-making. However, Accounting specializing in other areas which are the following:

- Administrative Accounting,
- Cost Accounting,
- International Accounting,
- Government Accounting,
- Auditing Accounting,
- Tax Accounting. (Ballas & Hevas, 2008)

Accounting principles
The following principles have been defined by the Canadian Institute of Chartered Accountants.

- *Going concern concept.* The financial statements are prepared in accordance with the principle that the company continues to operate and will continue in the future for an indefinite period of time (Siotis).
- *Principle of Accrual Concept.* Each income and expense should be recognized and considered in the period that it occurs.
- *Stability of monetary unit assumption.* Accounting gives information about the financial sizes that are permissible to be expressed in monetary units which has a constant market value.
- *Conservatism principle.* Costs or losses that are recognized at once, even if they have not been realized but there is a provision, while profits should be considered and calculated only when they have occurred.
• The historical cost concepts. According to this principle, the cost should be considered for the continuation, even if its value has changed.

• Principle of periodicity. Accounting measures periods of time that are smaller than the life of the business to determine its financial condition and also to calculate the profits or losses that may occur.

• Principle of accrual of the unit of account principle. The business is considered to be a separate independent entity due to its own assets and liabilities.

• Matching Principle. The revenue must be correlated with the corresponding costs to generate revenues and gain or loss is determined by the correlation of revenue with expenses.

• Revenue realization principle. Revenue is recognized when it is realized and not when it is expected to occur.

• Principle of objectivity and verifiability (Objectivity and Verifiability Concept). According to this principle, the various accounting measurements and the results obtained from them should be impartial and verifiable.

• Principle of consistency in the application of accounting methods. A fixed asset in a management use is valued at cost and in the next fiscal year is valued at current prices, the company’s assets will be impaired.

• Principle of Material Consideration. Accounting does not deal with the recording of information and numerical data that the cost is not offset by the benefit of that information, and secondly, the degree of detail and analytically of the accounting information is limited by the inability of users of the financial statements to understand and appreciate its importance.

• Adequate or full disclosure principle. According to this principle, complete and sufficient information on the activity of the entity should be provided. The information is quantitative and qualitative, but in any case, the exact and real situation of the company should be demonstrated.

• The principle of the fair value. In order to evaluate the certain assets IFRS used the principle of actual or current value or recovery.
The Purpose of Financial Statements

The financial statements give the whole image of the economic unit with its financial position and its performance on a short and long-term basis. The financial statements of the entity present data that is relevant for the structure of the company’s assets and as well as the financial situation of the company. Generally, we can say that the financial statements present the image of an entity.

The main purpose of the analysis of the financial statements is to facilitate decision-making on the efficient allocation of financial resources. These decisions directly affect their financial interests of groups that use a company's accounting records, such as shareholders, creditors, administrators, employees, the state, of customers, etc. Taking these decisions requires an appreciation of it long-term and short-term survival capacity as well as profitability of the business being analyzed. The analysis of the financial statements allows the assessment of both risk and profitability of an enterprise in order to get one decision on the allocation of financial resources (Niarchos, 2004).

The financial statements are showing the balance sheet and some other accounts of economic units, of major importance and also, aim in informing the shareholders, banks, creditors, etc. Apart from the above, the financial statements are equally interested in them within the company. The major purpose is to provide information about the financial position, return on cash flows and other changes about the financial position of the business for the decision making of the users. Useful information should be provided on the assets, the obligations, own funds, income and expense, and cash flows. This provide useful information to help the users to predict the future cash flows of the company and also the time and certainty of the creation of Cash Equivalents.

The financial statements that companies are required to compile the way as well they are controlled depends on their size as well as their legal form. The balance sheet includes the values of the assets, liabilities, and equity of the enterprise as they are at the end of each fiscal year (Touna-Germanou 2003). Income Statement or Profit / Loss Account is the statement the company's costs are listed as they arise at the end of the year. All its elements are recognized as income, expenses, gains, and losses in an
economic period will be included in the statement of comprehensive income. Revenue and Expenses are recognized within the period in which they accrued. (Ballas & Hevas 2011). The Statement of Changes in Equity is a basic financial asset situation that large and medium-sized entities will have to publish in accordance with the HAS and IAS. The change in equity shows the increase or decrease of its net assets for the year period and indicates its actual position at the end of the year. The current status shows the total revenue and expense of the year. (Alyfantis 2008). The Statement of Cash Flows reflects cash inflows (increases in a company's cash) and cash outflows (decreases in a company's cash) made during the fiscal year. This statement is intended to provide information to the parties concerned to analyze and assess the entity's ability to generate cash and cash equivalents and its needs to use them. The cash Status is divided into three parts, describing the changes in cash flows of the entity from operating, investing, and financing activities. The cash flows of operating activities are shown using either the direct or indirect method. IAS / IAS 7 encourages companies to use the straight-line method, while IASs provide an example of cash flow only by an indirect method. (Alyfantis 2008) Appendix shall include any explanatory material, additional tables, additional data, and information as well as other conditions that are an integral part of the financial statements. It may include disclosures about the risks and uncertainties affecting the enterprise as well as any resources and liabilities that are not reflected in the balance sheet. Information can also be provided on the geographical and business sectors and the effect of the price change in the business. (Papademas 2013)

Also, the appendix plays a significant role in the financial statements because it provides useful and explanatory information. This information makes it easier for the stakeholders to understand the content of the financial statements and to find out the true financial situation and the exact results. Moreover, the appendix includes:

- The methods applied for the valuation of elements of financial statements.
- Depreciation of fixed assets.
- Depreciation.
- Information on shares of the economic unit with other companies.
EARNINGS QUALITY

A key role in the influence of the stakeholders in the investment decisions plays the profits of the companies whose shares are traded on international and regulated markets. Indeed, as Chan et al noted in 2006, the reaction of the market to the accounting profits is so great that it seems to ignore other qualities related to corporate performance. Since the quality of accounting profits is so significant for the assessment of the quality of financial information, various empirical surveys have shown specific characteristics of accounting profits or otherwise gaining attributes which are measures of the quality of profits and of the quality of the financial information. According to Francis et al (2004) there are several quality measures to assess the gains as the quality, continuity (persistence), the predictability, the smoothness of earnings, the relevance of price (value relevance), timeliness of profits and conservatism. The first four are based on accounting data as opposed to other measures based on the market (market based). Conceptually, the above-mentioned earnings measurement data could be defined in more detail:

- Quality
- Continuity (Persistence)
- Ability Forecasting profits (Predictability)
- Smoothness
- Relativity of Value Relevance
- Timeliness and conservatism

The ultimate goal of the managers is as well as the emergence of larger profits while investors are sound and qualitative financial information to make the right investment decisions. But this contradicts the manager’s purpose with the use of various accounts practices seek to influence profits and exploiting gaps in legislation, but also the variety of choices that exist, show a different picture than the real one.

The administration is trying to mislead the stakeholders (stakeholders) through accounting choices and display a different corporate performance. The Davidson et al. (2005) defined profit manipulation as the process by which governments conduct
deliberate actions within generally accepted accounting principles to achieve the desired level of published revenue. The senior executives, as well as the management of each business, usually move on the basis of their personal interests and those of their company. Their personal interests are to increase their emoluments, which include bonuses, tangible goods, stocks, as well as hierarchy, etc. (Monks & Minow 2004).

This attempt to manipulate profits and, more generally, the attempt to alter the quality of financial information, leads to incorrect outsourcing of information, thus increasing the risk of asymmetric information between managers and investors whether they are existing or potential.

ACCRUALS CONCEPT
Accruals is the main element for measuring the quality of financial reporting of accrual accounting as it is considered the most important measure for estimating accounting profits and is the difference between the accounting profits of a company and its cash flows. As administrations increase their profits above their cash flows, the more accruals are accrued. Based on the accrual principle, the transactions are recognized at the time they occur and relate to the fiscal years to which they relate. The accrued principle excludes the cash flow statement that exists on a cash basis.

In fact, accounting accrual management enables both management and senior executives to address the issue of corporate performance and overcome cash flow weaknesses. Accruals improve the ability of profits to measure the company's performance in finite time, which the cash flow situation cannot do. Accruals include expenses that are accounted for but have no cash, income and expense for subsequent periods that are not recognized in the current accounting period but subsequently.

All the above information comes from the accrual principle that the accounting method is tracking the transactions of the company, and on the basis of which the income or expense is recognized at the time it takes place, without considering when it is received or when it is paid. (Ballas & Hevas, 2007). Accruals are divided into two
categories, the Discretionary and the Innate accruals. Discretionary accruals are subject to the discretion of managers and senior executives while Innate accruals arise from accounting and are dictated by international financial reporting standards. Obviously, it is believed, that the larger the Discretionary accruals are presented, the lower the quality of profits are, and vice versa.

CONSERVATISM CONCEPT
The principle of conservatism is one of the oldest and most discussed accounting principles. This accounting principle appeared and applied to American accounting principles in the 1960s. Since then, the principle of conservatism has remained one of the most important accounting principles that has a significant impact on accounting science and has been the subject of various views by persons who are engaged in the accounting profession. (Ntzanatos, 2008) The principle of conservatism forms the financial statements Balance Sheet and Income Statements in such a way that the image of the enterprise is very close to the real or understated. We can say that the principle of conservatism is defined as the underestimation of the enterprise's book value.

The accounting statements, as it is known, display the information not directly, we would say, but late. This is because many business-related information is not at once verified. (Nzanatos, 2008) The business value can be estimated through direct recognition of costs in relation to profits by leading to a temporary reduction of the final result. (Basu, 1997) Also it can be estimated by applying accounting principles that reflect asset acquisition, income and expense and incurring liabilities to third parties and shareholders. (Basu, 1997) Furthermore, there are two approaches that refer to the forms of practicing the principle of conservatism. The first one, is defined as the unrestrained conservatism and contributes to systematically underestimating the company's balance sheet and profits. This understatement is achieved through the understatement of income and assets and the overestimation of expenses and liabilities. (Quiang, 2007) This aims to increase the company's viability and reduce uncertainty and risk in the preparation of the financial statements. The form of unbounded conservatism is directly related to the historical cost principle. The
resulting under-estimation is due to and triggered by the subjective judgment of the administration. (Beaver & Ryan, 2005) The second one, is defined by the reserved conservatism and contributes to the immediate recognition and presentation of negative current information of the company's profits. By using this form, we are achieving the preparation of current financial statements and so the increase in the viability of the company. (Base, 1997) It appears that the company's profits and assets will be underestimated. Watts (2003) considers that conservatism is due to four factors that affect differently in its two forms.

Quiang (2007) argues that unconditional conservatism is caused in response to additional constraints imposed on the accounting process in the form of institutional framework and secondarily by the other two factors. In contrast, the reserved conservatism is due to the use of accounting data in contracts and less to the other factors. The high correlation of the accounting size makes it useful in valuation models, as independent variable. Therefore, the relevance of an accounting size affects investors in the decision-making process. The under-valuation of the company's assets and results, due to the application of the principle of conservatism, and the unbounded form, results in accounting figures that are less relevant to the value of the firm since they do not reflect the real image of the firm. However, the exercise of reserved prudence can lead to an increase in the relevance of accounting information through faster recognition of the company's potential risks. (Ball & Shivakumar, 2005)

Quality is the most crucial element in the preparation of the financial statements. In other words, the provision of accounting information that is useful to investors in making financial decisions. The relationship between relativity and reliability is inverse. Thus, the quality of the financial statements will be kept intact. Criterion for the significance of the two characteristics is whether it satisfies the needs of the users of the financial statements. (Gikas, 2008) The supporters of conservatism say that it contributes to the viability of the company as well as to securing the funds needed for the business to continue its productive activity. (Grigorakos, 2005) The principle of conservatism is intended to avoid the occurrence of non-existent profits or profits which are uncertain and not the reduction of the company's assets. Because if there
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were non-existent profits, it could lead to a reduction in the company's capital. (Grigorakos, 2005)

On the other side are the critics of the principle of conservatism claim that the application of the principle of conservatism leads to the preparation of financial statements that are deficient since the relevance of the financial statements decreases. (Balachandran & Mohanram, 2008) However, studies show that the inversely proportional relationship between conservatism and relevance of accounting figures is not confirmed. Instead, some supporters argue that the application of reserved prudence can lead to an increase in the relevance of accounting figures. (Ball & Shivakumar, 2005)

GREEK PUBLIC HOSPITALS

Introduction-Historical Review
In this chapter we will review the history of Greek hospitals. Hippocrates was the first one that had established the basic principle that the doctor ought to treat the sick person rather than the illness. This principle had a dual meaning. On the one hand, he was aiming at the complete treatment of the patient with proper treatment and on the other hand importance to the humanitarian direction of healing. The first hospitals in the Hippocratic period are Asklepios (6th century BC.), Which was integrated building complexes and therefore were used for housing and treatment of the patients and asking God to heal their illnesses and he appeared in their dreams and showed them the treatment they had to apply. During the Byzantine period, the first rudimentary hospital was founded by John II Komnenos in the Monastery of Pantocrator Sotiris Christos in Constantinople, who was also the founder of the monastery. Komninos defined the services that the hospital had to provide and included 50 beds, one for every ill, arranged in 5 wards and had different areas for different diseases hospitalized in this. Furthermore, Constantine IX erected a large hostel in the Mangana region which later became the hospital of Vyzantio.Monastery of John the Baptist in Petra until 1440 AD, maintained a public hospital while Christian hospitals were founded, which functioned until 1453. In the 11th century a hospital of 11,000 beds was founded by Alexios I. However, Justinian made a significant effort to reorganize health legislation, and the characteristic feature of that era was that most
hospitals were operating under the roof of the church, while few belonged to the State.

In 1821, after the liberation from the Turkish yoke, the State composition brought many problems of the Greek society. There existed no hospitals or other health centers, and the state's lack of health systems due to the poor economic situation of the country. The health sector was covered only by the church with the conversion of monasteries into hospitals and there were some wealthy Greeks, who created the private hospitals. The first appearance of the Greek Private Hospitals was in 1827 in Syros by wealthy Greeks donations, known as “Vardakeio Hospital”.

In 1836 was established the Municipal Hospital "Elpis" and in 1837 the University of Athens together with the Medical School. In addition, a private initiative was the Syros French Hospital in 1853 and the University Clinic in 1857. In 1870 Greece had 43 hospitals. The number of hospitals was significant due to the poor financial situation, because the state reduced the funds, with the result that hospital operations were rudimentary.

In 1928 Greece had numbered with 112 hospitals with 9782 beds and 10 years later due to various epidemics, the beds doubled in 16022 in 117 hospitals. The Law 965/73 provides for the establishment, organization, operation and administration of new state hospitals, according to which the State shall fully bear the costs of all state and non-state hospitals in order to allow the proper functioning of such institutions. This effort was halted due to the Second World War and in 1953 a second legislative effort was made with the Law 2592 / 1953. These legislative changes in the country's health charter, which is divided into 13 health districts while trying to improve hospital infrastructure, but without any particular effect due to unnecessary funds. In 1983 with the enactment of Law 1397/1983, the country first acquires Health Systems with public key elements. With this act every citizen has free access to first services in hospitals. However, about 10 years later, with a series of laws, basic sections of the National Health System are being made, such as the free establishment of treatment centers. So, the basic principles of the National Health System remain inactive. In 2001, with Law 2889/2001, the Decentralized Management System is applied
to health. The Regional Health Systems, which where renamed by Law 3106/2003 to PESY, are being developed.

Nowadays, Greek Hospitals are converted into decentralized units thus losing their legal personality while PESYP become a legal entity. The operation of the hospitals with their reorganization and their number increases to 151, of which 20 are all 131 public hospitals. So today the health sector in Greece is clearly improved compared to previous periods. But as a matter of a fact this does not correspond to what the people “want” and of course is also compared to the Care System of other developed European countries. All the above, derive from the economic crisis that plagues Greece and that’s the reason that there is a shortage in human resources, in medical equipment and due to crisis, lack of funds.

Public Hospitals Accounting
In the current economic environment, public health systems play a vital role. Hospitals manage millions of euros in order to provide people with the best possible health services. This is achieved, by the efficiency and the effectiveness of public health in hospital management, operationally and financially, especially in tough fiscal times. Apart from its social work, it is also a distinct economic and productive entity, and one of the largest in our country. To achieve their goal, they use materials (e.g. raw materials, stocks, fixed assets) and intangible assets (e.g. rights or claims from insurance funds). These instruments, in particular, come from state budget subsidies and insurance funds. It is therefore necessary to monitor the above means used by Public Hospitals when they are consumed, moved, or destroyed.

Single-entry Accounting System
Until recently, the financial management of the Public Health Units was carried out, monitored, and audited on the basis of the current legislation on Public Accounting. Structured on the principles of Legislative Decree 496 of 1974, with main monitoring, in the cash flows of Public Health Units. The financial figures were imprinted on the revenue and expense budget using the method. The Public hospitals to achieve their purpose, they deal with third parties (e.g. suppliers, staff, government,
insurance funds). It is therefore necessary to monitor these transactions with third parties. The purpose of accounting for these transactions with third parties, it is for the Administration to know at any given time what amounts it owes, to whom it owes. Transactions of expenses occur when they are paid, and revenue transactions are collected at their collection. The simple measurement of the overall difference between the two amounts of revenue and expenditure was important. So, the State had the role of balancing between the two cash flows, trying to balance them where they were recorded. More specifically, the economic function of the medical departments was not depicted, because it was not planned to monitor it. Therefore, they did not monitor the cost of the services provided and of the individual departments. What they measured was only the final exit. There was no obligation to monitor the fixed assets, their structure, and their value. There was no final result for the annual activity of Public Health Units and no obligation to prepare Financial Statements. Thus, with the Single-entry System an important source of wealth, it was not only untapped but also abusive. Significant expenditures (e.g. depreciation) were not disclosed because they are not foreseen to be monitored by the Treasury because of the non-obligation to monitor accounting events. Public Hospitals were unable to identify the origin and structure of the deficits that may have arisen, ignoring also the height and composition of their Capital. In short, the Public Accounting were unable to monitor the actual financial status of the Public Health Units and created the need for a reliable and trustworthy system. In order to solve the problems of the Single-entry system and to modernize the economic function of the public organizations, the need emerged for the formulation and implementation of the Sectoral Accounting Plans, as well as the implementation of the Double -entry Accounting System. This system includes all information to improve the performance of Public Hospitals, reducing costs, saving resources, and increasing the quality of service. Already since 1997, with the participation of several Hospitals, a pilot program for the application of standardization accounting has begun on the basis of the preparation of an accounting guide. However, the 1997 change did not produce the expected results since it did not
consider the specificities of people such as lack of trained staff and inadequate technical infrastructure of hospital systems. An important share of responsibility is also held by the central administration for the inappropriate accounting of events, which, with Presidential Decree 205/1998, did not give clear instructions on how to reorganize the accounting system in the public sector. The change of Health Ministers during this reorganization has led to a delay in the implementation of the change of the Accounting System. In particular, after the 2000 elections, the then Minister of Health had his first priority to reorganize the health sector. Proof of this was Law 2889/2001, which referred to a large number of changes in the accounting of health units. Indeed, a task force was commissioned to analyze the situation at that time to suggest ways to improve not only hospital accounting but also information systems. Still, proposals were made for ways to reduce costs. But in 2002 this minister resigned, and the successor did not have the reorganization on his agenda. Finally, with the PD. 146/2003 on Public Health Units "defining the content and starting time of the Public Health Sector Accounting Plan" describes precisely the terms on which sectoral accounting standardization is to be applied and establishes the Diplomatic Accounting System in public organizations, setting clear time horizons for its implementation. Specifically, for the Public Health Units, it is necessary to observe the general accounting as of 1/1/2004 and the analytical accounting since 1/1/2005. At the same time, it was in force until then the public hospitals with the PD205 / 1998 ceases to apply. The Introduction of the double-entry System (Presidential Decree 146/2003) to the Public Hospitals of the country, along with the maintenance of the Public Accounting System, which is supported by IT, is able to produce continuous flow of valuable information about the changes in the financial figures of a unit health (article 29 par. 3 of Law 2819/97). The date of its compulsory application by the State Hospitals is in accordance with article 3 of the PD. 205/98 (Government Gazette 163A / 98) in 01/01/2000. Article 36 of Law 2778/99 (Government Gazette 295 / A), the mandatory application of the Double-entrySystem was postponed to 01/01/2001.
Double-entry Accounting System

Nowadays, our era is characterized by information and the central authority after years of delay has legislated the introduction of the Diplomatic Accounting System of General and Analytical Accounting in the National Bank of Greece, and the Sectoral Accounting Plan of Public Health Units (PD 146/2003). Particularly for public health, it is necessary to observe the general accounting as of 1/1/2004 and the analytical accounting as of 1/1/2005. At this point, it is worth presenting the PD. 146/03. Public Hospitals, in addition to social work, are both economic and productive entities and even the largest of our country. In order to achieve their purpose, they use materials mainly assets, stocks such as pharmaceuticals and rights such as claims from insurance funds. Thus, these instruments are obtained from revenues, which mainly derive from the Insurance Funds and state budget subsidies. It is therefore necessary to monitor these means when they are received, consumed, moved, or destroyed. In addition, hospitals deal with third parties to achieve their purpose, such as suppliers, insurance funds, government, staff, etc. That is why continuous monitoring of all transactions with third parties is required. The purpose of this monitoring is to know Management at any time what amounts it owes, to whom it owes, when it owes it or what amounts it owes, who owes it and when it owes it. At this point it is necessary to mention that the system, which includes all the information for the improvement of the performance of the Public Hospitals, the cost allocation, the saving of the resources and the increase of the quality of the services provided is called Information System (Thomas C. Lazaris Health Accountant Consultant). The operation of this System is based on the valid tool introduced with the PD. 146/03 and is called Double-entry Accounting Method. This method achieves a uniform accounting treatment of accounting events by all Public Health Units and the same accounts are kept for the same events. The gathering of information is done in a systematic way that is governed by principles and distinct from institutionalized structure. In conclusion, effective administration and rational decision making at Hospital level is based on the information that comes from the accounting books and accounts held on it using a Double-Grid system. Generally speaking, the Double-entry Accounting System or Diffraction Method is that method which records the changes that accounting events bring to the assets of an organization (Public or Private), initiating at least two
accounts (Alifantis Georgios, Lazaris Thomas, Sotiropoulos Georgios, 2000). In particular, each accounting event is recorded with the simultaneous movement of those two accounts, one of which is charged and the other credited. This accounting system provides unlimited possibilities to provide financial information to the management of the organization.

Evaluation of the Double-entry System
The assessment of the implementation of Double-entry system in the public hospitals is considered to be modest, due to the inability to produce reliable financial statements, which arises from the following reasons: • The possible deficiencies of the applied computer programs. These may be mainly due to the failure of the natural analyst • The need of training the human resources of the hospital's financial services, which apply the Double-entry system. • The inappropriate accounting of invoices, either for reasons of workload, or organizational reasons, or "relaxation" of diligence in updating systems. • The inadequate certified pricing of hospitals by hospitals. The successful implementation of a complete double-entry system in a hospital, apart from eliminating or reducing the above problems, is not dependent solely on the costing of applying the general provisions of Presidential Decree 146/2003, but also by the adoption of specialized procedures, which are a prerequisite for the implementation of the general provisions of Presidential Decree 146/2003 (Ministry of Health and Social Solidarity, 20-5-2010).
CHAPTER 2

LITERATURE REVIEW ON ACCOUNTING POLICIES IN PUBLIC SECTOR

Introduction
To this point, we will briefly present some surveys that are related to the accounting policies used in public sector hospitals. These surveys will contribute in order to export some important conclusions.

The following paragraphs are referred to the principle researcher - scholar of each survey, are describing the subject matter, then it indicates the methodology that has been followed and finally entered the conclusions reached by each survey.

Literature Review
In addition, the survey of Nikolaos Eriotis, Filippos Stamatiadis and Dimitrios Vasiliou (2011) targets in the actual adoption and implementation of accrual financial and cost accounting practices in Greek public hospitals. Based on the results of an empirical analysis they prepared a questionnaire and sent it to the CFO’s of 132 public hospitals. Furthermore, they used a linear regression model analysis to examine the explanatory and implementation factors of the accounting reform adoption level. Of 132 questionnaires that they sent the 94 were returned, resulting in a total response rate of 71.21%. The results of their survey showed that, the level of accounting reform adoption in public hospitals is realized only to a limited extent specially on cost accounting aspects of the reform due to the fact that hospitals management focused more to some specific reform aspects than others due to different institutional pressures. Also, another result from the same survey shows that, the public hospitals have implementation difficulties which derive from lack of organizational, technological and human resources in complying with the regulatory requirements.

In the same way, P. Xenos, J. Yfantopoulos, M. Nektarios, N. Polyzos, P. Tinios and A. Constantopoulos in their survey examine the efficiency and productivity of Greek public hospitals during the period of Greek economic crisis in 2009–2012. They used non-parametric Malmquist analysis to calculate the efficiency and the productivity growth of Greek hospitals. The results show that between 2009 and 2012 the average
hospitals have shown productivity growth as is indicated by the variations in Malmquist Productivity Indicator. Although all of the productivity increase in the hospitals was due to technological changes and was not of efficiency ones. As for the efficiency growth is concerned, hospitals should reduce their capacity in order to achieve high efficiency rates.

Following the survey of G. Fragkiadakis, M. Doumpos, C. Zopounidis, C. Germain (2016) focusing on the assessment of public hospitals in Greece from the perspective of managerial efficiency, while they seek to assess the ability of the hospitals to utilize the available human, technical, and economic resources in order to produce services in the most efficient and effective way. Data development analysis was used in their survey because it enables the assessment of productivity and efficiency of organizational units. Also, they used a sample of 87 public general hospitals operating in the Greek health system during the period 2005 to 2009. The results of their analysis have shown that the Greek hospitals are characterized by economies of scale but not economies of scope.

Last but not least, Filippos G. Stamatiadis used a questionnaire that was sent by email and fax to 132 finance directors in Greek public hospitals. Eventually, from 132 questionnaires, 54 were returned. As a result, the response rate was 41% covering all the regions of Greek country. His survey focuses on the advantages and disadvantages of accrual accounting that derived from accrual accounting system implementation in Greek Public Sector. According to the results, a vital role in the adaption of the accrual-based accounting system plays the limitation of the financial resources and the lack of the personnel's education.
CHAPTER 3

RESEARCH METHODOLOGY APPROACH

METHODOLOGY RESEARCH
In this section the proposed empirical research methods for this study will be described including the sample selection and the explanation for such selection. Also in this part, will be discussed the specification model, variables details, and the model estimation method.

Sample
The sample of the study consists of Greek public hospitals during the period 2012-2015. We conclude to investigate that period because for these years, exist published data about the operating activity of hospitals. These data are available in the web site of Health Ministry.

From 127 Greek public hospitals which are operated in 2015, we retained 107 to our sample. We exclude the hospitals that have published financial statements according to IFRS because unfortunately consist the minority and their data are not comparable with financial statements of the other hospitals that have prepared according to Greek legislation. We excepted the hospitals which had not published financial statements for more than one year during the period 2012-2015 and we excepted also the Papageorgiou hospital and Onasseio hospital because operate under different legislation in comparison to other public hospitals. Another exception from our sample consist the hospital for special diseases in Thessaloniki which from 2013 stopped to provide medical services.

The financial statements of hospitals are uploaded in web platform “diavgeia“ and the access is free to everyone. For these 107 hospitals during the period 2012-2015 we found 341 balance sheets. Are existed 32 hospitals in the sample that prepared and published 15 consolidated financial statements. Furthermore, we did not find 19 balance sheets because hospitals did not publish these. In the same file with balance sheet, are included also the P&L Statement, the Profit Distribution Statement and the audit report from the external auditor. The content of this audit reports, it would be a
great place for further investigation, in order to detected possible weaknesses of hospitals about their operation and the reliability of financial statements data. Unfortunately, the notes of financial statements, usually are not published from the hospitals.

Division of Sample
We created the sample of 107 hospitals in order to investigate which aspects influence the Net Income of Greek public hospitals. Then, we divided the initial sample in order to examine how are influenced the Net Income of hospitals in comparison with the level of accounting conservatism that they apply.

In order to divide the sample, we take into consideration an accounting event. In particular, on 11 July 2016 is published in government newspaper (FEK issue B 2137/11.7.2016) a decision of Health Minister (number 47295) which said that the Greek public hospitals in 2016 must write off from their account receivables from National Insurance Institute, amount equal with the specific grants which have received from the state the period 2012-2014. This decision contained the exact amount which has grated each public hospital and it must write off from account receivables.

Then, we studied the balance sheets of fiscal year 2014 and we sum up the amounts that concluded in the contra accounts “Allowance for bad receivables”, “Special reserve account” and “Contribution of Shareholders”. If this figure was equal or higher than the amount which had granted the hospital during the period 2012-2014 from the state then, is involved in the first sample with more conservative hospitals. On the other hand, if this figure was lower than the amount which hospital had granted then, is involved in the second sample with less conservative hospitals. After the separation, the first sample, with more conservative hospitals consist of 51 hospitals and 182 observations and second sample with less conservative hospitals consist of 56 hospitals and 159 observations.

We should note that we conclude to sum up these three accounts because according to notes of balance sheet, many hospitals recorded there either part or all the amount of specific grants which have received from the state the period 2012-2014. Existed
many cases that there wasn’t published the notes of balance sheet and so we assume that these accounts are used for the same purpose. Special reserve accounts that are referred clearly to other purposes, were not considered. Also, we did not take into account the Special reserve accounts that had stable amount during the period of investigation because probably they had created for other purposes.

We observed that the amounts that recorded in specific reserve account or Contribution of Shareholders are not influence the annual earnings because did not included in Income Statement. Increase directly the equity and decreased with the writing off, in our case. As far as the account “Allowance for bad receivables” is concerned, is commonly used account which increased through the provisions that recorded in the P&L statement and decrease the net income of the year. So we observe that some hospitals are recorded specific grants which have received from the state the period 2012-2014 as revenues and at the same time recorded equal or less provision for bad receivables.

Dependent Variable
Our dependent variable is represented by Net Income of Greek public hospitals. This amount is resulting by P&L statement. In the picture 1 is depicted the template of P&L statement as defined by with presidential decree 146/2003. P&L statement are prepared annually by hospitals.
As we can see in Figure 1, Net Income is resulting by the operating profit (or loss) plus the extraordinary and non-operating profit (or loss). It is obvious that defers from the P&L Statement that prepared according to IFRS.

Independent Variables
In our model, exist 10 independent variables. Operation profit, Earnings of Previous Years, Expenses of Previous Years and Provisions, are independent variables that are concluded in P&L statement (Figure 1). Another independent variable is the number of
hospitalized patients per year. These figures are published in the web site of the Ministry of Health. The write-off is a dummy variable for our model and represents the year 2013 when all Greek public hospitals are obligated to write off significant amounts from their account “Receivables from National Insurance Organizations” according to decision that published in FEK 3390/B/2013. The last four independent variables are also dummy variables which represent the type of hospital (university hospital, specific hospital, cancer hospital, psychiatric hospital).

Model Specification
To examine which aspects influence the Net Income of Greek public hospitals, we used a regression model in order to perform analysis regarding the independent variables that we have set. We estimate the following regression model:

\[
\text{Net Income}_{i,t} = \alpha_i + \beta_1 \text{Operating Profit}_{i,t} + \beta_2 \text{Earnings of Previous Years}_{i,t} + \beta_3 \text{Expenses of Previous Years}_{i,t} + \beta_4 \text{Provision of year}_{i,t} + \beta_5 \text{Number of Hospitalized Patients}_{i,t} + \text{Write Off dummy} + \text{Type of Hospital dummy} + \epsilon_{i,t}
\]

The subscripts i and t denote hospitals and year respectively. \( \alpha \) is the constant term, \( \beta_1 \) to \( \beta_5 \) are slopes to be estimated and \( \epsilon \) is the error term of the model.

The method we will use for the panel analysis is the OLS method (Ordinary Least Squares). The method of OLS requires taking each vertical distance from the point to the line of regression, squaring it and then, minimizing the total sum of the areas of squares (least squares). The statistical software that have been used, was the Stata.
CHAPTER 4
DATA FINDINGS AND RESULTS

Findings – Data Analysis
In this chapter, we will present the results of linear regression analysis about our three samples. We named the first sample “All Data” as contains whole of the 107 hospitals which investigate. The second sample is named “More Conservatism Hospitals” and contains 51 hospitals which had recorded equal or higher amounts in contra accounts than the received grants during 2012-2014. The third sample is named “Less Conservatism Hospitals” and contains 56 hospitals which had recorded equal or higher amounts in contra accounts than the received grants during 2012-2014. For our analysis, we set the significance level at 5%.

All Data
First, we will analyze our results for the sample “All Data” which represent the data of 107 Greek public hospitals for the period 2012-2015. We have 341 observations and the results of linear regression analysis can be shown in the Table 1.

Table 1: Regression Results - All Hospitals

| Source | SS        | df | MS       |
|--------|-----------|----|----------|
| Model  | 1.7162e+16| 10 | 1.7162e+15|
| Residual| 1.0639e+16| 330| 3.2238e+13|
| Total  | 2.7801e+16| 340| 8.1767e+13|

| netincome | Coef. | Std. Err. | t   | P>|t| | [95% Conf. Interval] |
|-----------|-------|-----------|-----|-----|----------------------|
| operating | -0.3759 | 0.2690 | 13.97 | 0.000 | | 0.3229e+02 | 0.4288e+02 |
| earnings | 1.1777 | 0.8236 | 14.30 | 0.000 | | 0.1057 | 0.3397e+02 |
| expense | -0.6860 | 0.6423 | -10.68 | 0.000 | | -0.8123 | -0.5596e+03 |
| provision | -0.4190 | 0.0700 | -5.44 | 0.000 | | | |
| patients | -0.3467 | 0.2244 | -15.64 | 0.000 | | | |
| writeoff | -0.2162 | 0.7106 | -3.04 | 0.003 | | | |
| special | -0.8718 | 2.1847 | -0.40 | 0.690 | | | |
| cancer | 1.1787 | 1.6386 | 0.72 | 0.472 | | | |
| university | 0.2714 | 0.1476 | 1.84 | 0.067 | | | |
| psychiatric | -0.3021 | 0.2046 | -1.48 | 0.141 | | | |
| _cons | 14.8249 | 5.1999 | 2.85 | 0.005 | | | |

Number of gaps in sample: 18

Durbin-watson d-statistic( 11, 341) = 1.438826
Firstly, we should note about the p-value of model. P-value indicates the reliability of explanatory variables to predict the dependent variable. As we have set 95% confidence interval, we need a p-value lower than 0.05 (5%). In our case the p value (Prob>F) = 0.0000 so, there is a statistically significant relationship between dependent and independent variables.

The adjusted R-squared is 0.06057. That means, the 60.57% of the variance of dependent variable, is explained by independent variables or in other words that the model explains 60.57% of the variance in Net Income. We should note that the adjusted R-squared shows the same as R-squared but adjusted by the number of cases and number of variables. For this reason it is more preferable.

The Durbin Watson statistic which test for autocorrelation in the residuals from a regression analysis, is 1.438 for this model. The Durbin Watson statistic is always between 0 and 4 and the desirable number that indicates no autocorrelation is about 2. Numbers from 0 to 2 indicate positive autocorrelation and numbers between 2 and 4 indicate negative autocorrelation. Results between 1.5 and 2.5 are considered relatively normal. The figure for our model is very close to the normal range.

Then we calculate the Variance Inflation Factor (VIF) and the results are shown at Table 2. The VIF measures the extent of multicollinearity within the model. Multicollinearity reduces the predictive power of the model. Indication for significant multicollinearity issue exists when VIF be high which means over 5. In our model the numbers of VIF are around 2, so there is no indication for significant multicollinearity.

Table 2: VIF - All Hospitals

| Variable      | VIF   | 1/VIF |
|---------------|-------|-------|
| patients      | 1.98  | 0.504475 |
| university    | 1.62  | 0.616073 |
| earningspr-r  | 1.51  | 0.662057 |
| operatingp-c  | 1.47  | 0.680671 |
| expensespr-r  | 1.45  | 0.691564 |
| provisionsp1  | 1.38  | 0.723767 |
| cancer        | 1.27  | 0.787312 |
| writeoff      | 1.04  | 0.958410 |
| special       | 1.02  | 0.985109 |
| psyxiatric    | 1.01  | 0.985626 |
| Mean VIF      | 1.38  |       |
According to the p-value approach and with the significance level at 5%, the statistical significant variables for our model are operating profit, earnings of previous years, expenses of previous years, provision of the year and the dummy variable write off. The variable, number of hospitalized patients, and the dummy variables about the type of hospital are not considered statistical significant.

It looks strange the fact that the number of hospitalized patients are not significant variable for the model and on the other hand, are significant the variables earnings and expenses of previous years. If the amounts in these accounts are high, then maybe have violated the accrual principle.

In the following table are shown the correlation coefficients between the variables. The correlation is according to Spearman’s correlation coefficient.

From the data of Table 3, are remarkable the high coefficient between Net Income and earnings of previous years. In addition the difference in coefficients between earnings of previous years and expenses of previous years maybe indicate violation of matching principle.

| Table 3: Correlation Coefficients Between the Variables - All Hospitals |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| netincome &lt; b | operat&lt; -t | earnin&lt; -r | expens&lt; -r | provis&lt; -l | patients | writeoff | special | cancer | university | psyxiatic |
| netincome | 1.0000 |
| operating &lt; -t | 0.4890 | 1.0000 |
| earnings &lt; -t | 0.5018 | 0.1784 | 1.0000 |
| expenses &lt; -r | 0.0058 | 0.3011 | 0.4758 | 1.0000 |
| provisions &lt; -l | -0.0354 | 0.2997 | -0.0048 | -0.0061 | 1.0000 |
| patients | 0.3523 | 0.4337 | 0.4000 | 0.2491 | 0.2196 | 1.0000 |
| writeoff | -0.0427 | 0.1487 | 0.0525 | 0.1459 | -0.0416 | 0.0141 | 1.0000 |
| special | -0.0637 | -0.0533 | -0.0609 | -0.0263 | -0.0273 | -0.1103 | 0.0062 |
| cancer | -0.0402 | 0.0874 | -0.0502 | -0.0251 | 0.4218 | 0.1708 | -0.0085 |
| university | 0.3757 | 0.2989 | 0.2921 | 0.0795 | -0.0137 | 0.5684 | 0.0265 |
| psyxiatic | -0.1289 | -0.0954 | -0.0547 | -0.0124 | -0.0253 | -0.0684 | -0.059 |

Accruals & Matching Principle
The fact that the earnings and the expenses of previous years are statistically significant, leads to a deeper research. We found that for 78 observations that represent almost 23% of the total sample, the amount in account earnings of previous
years is higher than 10% of account sales. Regarding the expenses of previous years, only 15 observations agree to the fact that contain amounts which are higher than 10% of Cost of sales. These findings are considered as an indication for accrual principle violation. Furthermore, because the earnings of previous years and expenses of previous years are not equal either as amounts or as percentages of the accounts (sales and Cost of sales), this is an indication of matching principle violation. In Appendices B and C are represented the data.

More Conservatism Hospitals Sample
In this section are represented the results for the sample “More Conservatism Hospitals” which represent the data of 51 Greek public hospitals for the period 2012-2015. We have 182 observations and the results of linear regression are shown in the Table 4.

Table 4: Regression Results - More Conservatism Hospitals

| Source   | SS       | df  | MS      | Number of obs = 182 |
|----------|----------|-----|---------|---------------------|
| Model    | 1.9710e+15 | 10  | 1.9710e+14 | F(10, 171) = 622.67 |
| Residual | 5.4129e+13 | 171 | 3.1634e+11 | Prob > F = 0.0000 |
| Total    | 2.0252e+15 | 181 | 1.1189e+13 | R-squared = 0.9733 |
|          |          |     |         | Adj R-squared = 0.9717 |
|          |          |     |         | Root MSE = 5.66e+05 |

| netincomebt | Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|-------------|-------|-----------|-------|-------|----------------------|
| operating-r | 0.9750126 | 0.0153888 | 63.36 | 0.000 | 0.9446362 | 1.003389 |
| earningspr-r | 0.9928959 | 0.03486 | 28.48 | 0.000 | 0.9240845 | 1.061707 |
| expensespr-r | -0.978227 | 0.0864951 | -11.30 | 0.000 | -1.148558 | -0.808072 |
| provisionspl | -0.939711 | 0.0355233 | -26.29 | 0.000 | -1.004092 | -0.8638505 |
| patients     | 7.160747 | 3.388655 | 2.11 | 0.036 | 4.717646 | 13.84973 |
| writeoff     | 167153.8 | 96544.62 | 1.73 | 0.085 | -23418.95 | 357726.4 |
| special      | 157399.9 | 288424.4 | 0.55 | 0.586 | -411930.8 | 726730.6 |
| cancer       | 292370.4 | 292371.7 | 1.00 | 0.318 | -284289 | 869029.8 |
| university   | -293785.7 | 342859.4 | -0.86 | 0.393 | -970567.5 | 382996 |
| psyxiatrict  | 1076499 | 311175.4 | 3.46 | 0.001 | 482239.2 | 1690739 |
| cons         | 43636.79 | 68571.09 | 0.64 | 0.525 | -91718 | 178991.6 |

Number of gaps in sample: 6
Durbin-watson d-statistic(11, 182) = 1.811089

As we have set 95% confidence interval, we need a p-value lower than 0.05 (5%). In our case the p value (Prob>F) = 0.0000 so, there is a statistically significant relationship between dependent and independent variables.
The adjusted R-squared is 0.9717. That means, the 97.17% of the variance of dependent variable, is explained by independent variables or in other words that the model explains 97.17% of the variance in Net Income. The number of R-squared in this model is much more higher than this of the model with All Data. Maybe the applied accounting policies (included the conservatism), leads these hospitals to more stable and predictable profits.

The Durbin Watson statistic which test for autocorrelation in the residuals from a regression analysis, is 1.811 for this model. This figure is near to the desirable number and indicates no autocorrelation.

Then we calculate the Variance Inflation Factor (VIF) and the results are shown at Table 5.. In this model the numbers of VIF are between 1 and 2, so there is no indication for significant multicollinearity.

| Variable         | VIF | 1/VIF |
|------------------|-----|-------|
| patients         | 1.68| 0.594209 |
| university       | 1.45| 0.688322 |
| operatingp-t     | 1.43| 0.701435 |
| earningspr-r     | 1.39| 0.718480 |
| expensespr-r     | 1.31| 0.765493 |
| psyxiatric       | 1.20| 0.835629 |
| provisionspl     | 1.08| 0.928339 |
| cancer           | 1.05| 0.948092 |
| special          | 1.03| 0.972658 |
| writeoff         | 1.03| 0.974128 |
| **Mean VIF**     | **1.26** | 

According to the p-value approach and with the significance level at 5%, the statistical significant variables for our model are operating profit, earnings of previous years, expenses of previous years, provision of the year, the number of hospitalized patients and the dummy variable which represent psyxiatric hospitals. The dummies variables, write off, university hospital, specific hospital, cancer hospital, are not considered statistical significant.

The results seems to reinforce our assumption that hospitals of this sample applying more conservative accounting , as their Net Income did not influenced from the
writing off receivables that happened in 2013. In addition the high R-squared as we have referred maybe is an indication of more stable amount of profits during the years 2012-2015.

In the following table are shown the correlation coefficients between the variables. The correlation is according to Spearman’s correlation coefficient.

From the data of Table 6, are remarkable the high coefficient between Net Income and operating income because it is much higher that the number of the sample All Data. It is reasonable these amounts to be highly correlated, as the public hospitals have not other activity except from the provision of health services.

|                      | netinc-t | operat-t | earnin-r | expens-r | provis-1 | patients | writeoff |
|----------------------|----------|----------|----------|----------|----------|----------|----------|
| netinc               | 1.0000   |          |          |          |          |          |          |
| operating            | 0.8568   | 1.0000   |          |          |          |          |          |
| earnings             | 0.1984   | -0.1392  | 1.0000   |          |          |          |          |
| expenses             | -0.1945  | -0.1371  | 0.2492   | 1.0000   |          |          |          |
| provis               | -0.1898  | 0.0931   | 0.1684   | 0.0723   | 1.0000   |          |          |
| patients             | 0.0249   | -0.0606  | 0.1416   | 0.4606   | 0.1750   | 1.0000   |          |
| writeoff             | -0.0730  | -0.0219  | -0.0904  | 0.1483   | 0.1173   | 0.1435   | -0.0028  |
| special              | 0.2896   | 0.2366   | 0.3373   | 0.2040   | 0.1261   | 0.4264   | -0.0028  |
| cancer               | -0.3244  | -0.3581  | -0.0615  | 0.0536   | -0.0043  | 0.0080   | -0.0028  |
| university           | special  | 0.0000   |          |          |          |          |          |
| special              | -0.0225  | 1.0000   |          |          |          |          |          |
| university           | -0.0225  | 0.0225   | 1.0000   |          |          |          |          |
| psychatric           | -0.0225  | -0.0225  | -0.0225  | 1.0000   |          |          |          |

Less Conservatism Hospitals Sample
In this section are represented the results for the sample “Less Conservatism Hospitals” which represent the data of 56 Greek public hospitals for the period 2012-2015. We have 159 observations and the results of linear regression are shown in the Table 7.
As we have set 95% confidence interval, we need a p-value lower than 0.05 (5%). In our case the p value (Prob>F) = 0.0000 so, there is a statistically significant relationship between dependent and independent variables.

The adjusted R-squared is 0.5574. That means, the 55.74% of the variance of dependent variable, is explained by independent variables or in other words that the model explains 55.74% of the variance in Net Income. The number of R-squared in this model is significantly lower than this of the model with More Conservatism Hospitals. Maybe the applied accounting policies (included the conservatism), leads these hospitals to have more volatility in their profits.

The Durbin Watson statistic which test for autocorrelation in the residuals from a regression analysis, is 1.341 for this model. This figure indicates positive autocorrelation.

Then we calculate the Variance Inflation Factor (VIF) and the results are shown at Table 5. In this model the numbers of VIF are between 1 and 2.65, so there is no indication for significant multicollinearity.
Assessing Earnings Quality of Greek Public Hospitals

Table 8: VIF - Less Conservatism Hospitals

| Variable            | VIF  | 1/VIF  |
|---------------------|------|--------|
| patients            | 2.65 | 0.377132 |
| university          | 1.83 | 0.544971 |
| operating expenses  | 1.61 | 0.619415 |
| earnings            | 1.53 | 0.652154 |
| provisions          | 1.47 | 0.678307 |
| expenses            | 1.47 | 0.682224 |
| cancer              | 1.40 | 0.715932 |
| write off           | 1.09 | 0.916253 |
| psychiatric         | 1.03 | 0.974968 |
| special             | 1.02 | 0.978501 |
| Mean VIF            | 1.51 |        |

According to the p-value approach and with the significance level at 5%, the statistical significant variables for our model are operating profit, earnings of previous years, expenses of previous years, provision of the year, and the dummy variable write off. The dummies variables about the type of hospital are not considered statistical significant variables. No statistical significant variable are also the number of hospitalized patients.

The results seems to reinforce our assumption that hospitals of this sample applying less conservative accounting than the hospitals of the sample more Conservatism Hospitals, as their Net Income influenced from the writing off receivables that happened in 2013.

In the following table are shown the correlation coefficients between the variables. The correlation is according to Spearman’s correlation coefficient.

From the data of Table 9, are remarkable the significantly lower coefficient between Net Income and operating income than these of sample “More Conservatism Hospitals”. It is reasonable these amounts to be highly correlated, as the public hospitals have not other activity except from the provision of health services.
### Table 9: Correlation Coefficients Between the Variables - More Conservatism Hospitals

|                   | netinc | operat | earnin | expens | provi | patie | write | spes | cance | univer | psyxi |
|-------------------|--------|--------|--------|--------|-------|-------|-------|------|-------|--------|-------|
| netinc            | 1.000  |        |        |        |       |       |       |      |       |        |       |
| operat            | 0.3930 | 1.000  |        |        |       |       |       |      |       |        |       |
| earnin            | 0.4555 | 0.0928 | 1.000  |        |       |       |       |      |       |        |       |
| expens            | -0.0516| 0.2780 | 0.4684 | 1.000  |       |       |       |      |       |        |       |
| provi             | -0.0862| 0.2811 | -0.0577| -0.0267| 1.0000|       |       |      |       |        |       |
| patie             | 0.3812 | 0.5112 | 0.3774 | 0.2805 | 0.2786| 1.0000|       |      |       |        |       |
| write             | -0.1276| 0.1982 | 0.0821 | 0.2108 | -0.0555| 0.0515| 1.0000|      |       |        |       |
| spes              | -0.0770| -0.0653| -0.0767| -0.0326| -0.0314| -0.1273| 0.0175|      |       |        |       |
| cance             | -0.1024| 0.0648 | -0.1264| -0.0577| 0.4750| 0.1480| -0.0171|      |       |        |       |
| univer            | 0.3324 | 0.2540 | 0.2360 | 0.0481 | -0.0595| 0.6119| 0.0371|      |       |        |       |
| psyxi             | -0.1134| -0.0852| -0.0738| -0.0238| -0.0379| -0.1402| -0.0096|      |       |        |       |
| special           |        |        |        |        |       |       |       | 1.000| 1.000  | 1.000  |       |
| cancer            |        |        |        |        |       |       |       | -0.0396| 1.000  |        |       |
| university        |        |        |        |        |       |       |       | 0.0556| -0.1145| 1.000  |       |
| psychiatric       |        |        |        |        |       |       |       | -0.0223| -0.0459| 0.0644 | 1.0000 |
CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

Conclusions

This study examines the factors that affect the Net Income of Greek Public Hospitals in the period 2012 - 2015. Published financial statements are used to extract the financial data, while data for the number of hospitalized patients are taken from the published statistical data of Ministry of health. As a result, a panel dataset, consisting of 341 observations is created. The sample consists of 107 hospitals and represents almost the 85% of the total number of hospitals in Greece. Note in passing that 32 out of 107 hospitals prepared and published 15 consolidated financial statements.

The findings show that the hospital type (university hospital, specific hospital, cancer hospital, psychiatric hospital) do not influence the Net Income. Similarly, the number of hospitalized patients is not statistically significant variable for the linear regression model even if the significance level is increased up to 50%. On the other hand, the operating profit, the provisions, the writing off account receivables (that was held by all Greek public hospitals in 2013), the earnings and expenses of previous years are statistically significant variables for the model and influence the Net income.

The fact that the earnings and the expenses of previous years are statistically significant, leads to a deeper research. We found that for 78 observations that represent almost 23% of the total sample, the amount in account earnings of previous years is higher than 10% of account sales. Regarding the expenses of previous years, only 15 observations agree to the fact that contain amounts which are higher than 10% of Cost of sales. These findings are considered as an indication for accrual principle violation. Furthermore, because the earnings of previous years and expenses of previous years are not equal either as amounts or as percentages of the accounts (sales and Cost of sales), this is an indication of matching principle violation.
According to the decision taken by the Greek Health Minister in July 2016, (which was published in the Greek governmental newspaper), all Greek Public Hospitals must write off from their accounts, called “receivables from National Insurance Organization (EOPYY)” an amount equal to the specific grants that they received from the state during the years 2012-2014. The financial statements reveal that these amounts were of great importance, since they correspond to 73% of their total sales, on average, for the period 2012-2014. Taking into consideration this decision and the balance sheets for the fiscal year 2014, we examine which hospitals recorded in contra accounts an amount equal or greater than the specific grants that they received during the period 2012-2014. However, since most of the hospitals do not publish notes regarding the balance sheets neither give details regarding the criteria used to calculate the amounts in contra account, there is a limitation is our research. We find that 51 out of 107 hospitals recorded in contra accounts an amount equal or greater than the specific grants they received in 31-12-2014, while the rest 56 hospitals recorded an amount smaller compared to what they received. Assuming that all of these hospitals were informed about the decision, we conclude that 56 hospitals violate the conservatism principle.

To examine how a more/less conservative accounting affects the Net Income, we divide the initial sample into two subsamples. The first sample includes 51 hospitals that seems to apply more conservative accounting and the second sample includes 56 hospitals that seems to apply less conservative accounting. Running two linear regression models, we obtain results that verify our hypothesis. The first sample of hospitals is not influenced by writing off receivables happened in 2013. Probably, these hospitals either recorded the appropriate amounts as provision for bad receivables or created a kind of contra account which reduced the amount of that year that happened the writing off. Further, the Net Income of these hospitals is influenced by the number of hospitalized patients, a result that verifies our expectations.

In contrast, hospitals that belong to the second sample are significantly influenced by the writing off receivables in 2013. The coefficient of the dummy variable “write off” takes the value of “-5.373.243,00”, it is statistically significant and strongly supports this argument. Additionally, the Net Income of these hospitals is not influenced by the
number of hospitalized patients. One possible explanation might be that because the amounts of specific grants are recorded as revenues and the writing off receivables are recorded as losses, there is a cancelation between these two and thus the correlation between Net income and operating activity disappears.

Further, using these two samples, we investigate the amounts that were recorded in the account called “other operating revenue”. We find that for the first sample the average percentage of \[\frac{\text{other operating revenues} - \text{received grants for salaries from the state}}{\text{sales}}\] is almost 12% and for the second sample the figure is almost 60%. These indicators reinforce the assumption that the hospitals belonging to the second sample, record grants as revenues. Because the public hospitals have specific operations, a comparison between the amount in the account called “other operating profits” with the amount in the account “sales”, gives a difference which is irrationally high.

In fact, these specific grants operated like a cash payment from the state to Public Hospitals for the receivables of National Insurance Organization of Greece. For that receivables obviously had recorded respectively the revenue in the fiscal year that occurred. So, the recording of specific grants as revenue, means that these amounts recorded twice as revenue.

Taking into consideration all the above and the fact that different accounting policies have been applied, we conclude that possibly the financial data such as the Net Income and the Operating Profit of Greek public hospitals, are not comparable between each other.

Recommendations for Future Research
Through our investigation about the earnings of Greek public hospitals we find some points that should be corrected or improved. Firstly, for special cases like that we studied about grants and the writing off account receivables, the ministry of health or the responsible authority, should give instructions in order to apply all the hospitals the same accounting policies.

In financial statements that prepare the public hospitals in Greece, except from balance sheet and P&L statement, included the Appendix which is relevant to Notes of
IFRS. Unfortunately, only few hospitals published the Appendix which conclude useful notes about the financial statements. We consider that should be published because the balance sheet itself is incomplete source of information.

The Greek law 3599/2007 in article 27 define that Greek public hospitals, must prepare their financial statements according to IFRS. From our investigation we find a few published financial statements according to IFRS. The overwhelming majority publish their financial statements according to Greek legislation. We do not know if hospitals prepare financial statements according IFRS and do not publish them or they don’t prepare. In any case the financial statements according to IFRS we believe that should be published because are comparable with the financial statements of other hospitals (public or private) or institutes either domestic or abroad. Any comparison maybe will reveal fields that could be improved. In addition, the financial statements according to IFRS, contain data that are not provided according to Greek Law, for example cash flow statement.

In 2011 created a web platform that was called “Esynet” and all the public hospitals of Greece imported there monthly, their financial and operating data. The latest years this platform has changed name and called “BI-Forms” but maintain to the initial purpose and philosophy. The “Bi-Forms” contain almost 20 tables where the hospitals import their data. Unfortunately, are published a part of these data. We consider that all the data should be free to public as they referred to public organizations. In addition, all of these data will be very useful for researchers who could study and combine all these operating and financial data of “Bi-Forms”, with data of IFRS financial statements, and to conduct integrate evaluation of Greek public hospitals. Because until now the majority of researches are based mainly to financial data but it would be more interesting and valid, if are used in parallel data like mortality rates, readmission rate, employees/patient rate. Maybe such investigations indicate fields that could be improved or hospitals that they have special needs or problems.
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## APPENDIX A

### Hospitals in Greece

| YPE   | Hospital Name                                                                                     |
|-------|--------------------------------------------------------------------------------------------------|
| 1st YPE | Ophthalmology Clinic of Athens                                                                   |
| 1st YPE | General Hospital of Athens "Evaggelismos"                                                         |
| 1st YPE | General Hospital of Athens "Polukliniki"                                                          |
| 1st YPE | General Hospital of Attica "KAT"                                                                  |
| 1st YPE | General Hospital of Attica "Sismanoglio"                                                          |
| 1st YPE | General Hospital of Melissia "Amalia Fleming"                                                      |
| 1st YPE | Athens General Hospital of Thoracic Diseases "Sotiria"                                              |
| 1st YPE | General Hospital of Athens "G. Gennimatas"                                                        |
| 1st YPE | General Hospital of Athens "Laiko"                                                                |
| 1st YPE | General Hospital of Athens "Korgialeneio - Benakeio" HRC                                         |
| 1st YPE | General Hospital of Athens "Ippokrateio"                                                          |
| 1st YPE | Hospital of Cutaneous & Venereal Diseases of Athens "Andreas Sygkros"                             |
| 1st YPE | General Hospital Against Cancer "Ag. Savvas"                                                      |
| 1st YPE | General Hospital of Athens "Elpis"                                                                |
| 1st YPE | General & Maternity District Hospital of Athens "Helena Venizelou"                                |
| 1st YPE | General Hospital of Athens "Alexandra"                                                           |
| 1st YPE | Children's General Hospital "Agia Sofia"                                                          |
| 1st YPE | Children's General Hospital "Pan. & Agl. Kyriakoy"                                                |
| 1st YPE | "Konstantopouleio" General Hospital of Nealonias                                                  |
| 1st YPE | General Oncological Hospital of Kifissia "AgioiAnargyroi"                                         |
| 1st YPE | Children's General Hospital of Penteli                                                             |
| 1st YPE | General Hospital of Athens "Pammakaristos"                                                       |
| 1st YPE | Pathology Hospital of Athens Spiliopouleio "Agia Eleni"                                           |
| 1st YPE | National Rehabilitation Center                                                                   |
| 2nd YPE | University General Hospital "Attikon"                                                             |
| 2nd YPE | General Hospital of Elefsina "Thriasio"                                                           |
| 2nd YPE | General Hospital of West Attica                                                                   |
| 2nd YPE | General Hospital of Nikaia Piraeus "AgiosPanteleimon"                                             |
| 2nd YPE | General HospitalAsklepieioVoulas                                                                  |
| 2nd YPE | General Hospital of Piraeus "Tzaneio"                                                             |
| 2nd YPE | General Cancer Hospital of Piraeus "Metaxa"                                                       |
| YPE   | Hospital Name                                      |
|-------|---------------------------------------------------|
| 2nd YPE | General Hospital of Syros "Vardakeio&Proio"       |
| 2nd YPE | G.H.-Medical Center of Naxos                      |
| 2nd YPE | G.H. - Medical Center of Kythera "Trifulleio"      |
| 2nd YPE | General Hospital of Mytilene "Bostaneio"          |
| 2nd YPE | General Hospital of Chios "Skulitseio"            |
| 2nd YPE | G.H. - Medical Center of Limnos                   |
| 2nd YPE | General Hospital of Samos "AgiosPanteleimonas"    |
| 2nd YPE | G.H. - Medical Center of Ikaria                   |
| 2nd YPE | G.H. - Medical Center of Leros                    |
| 2nd YPE | General Hospital of Rhodes "A. Papandreou"        |
| 2nd YPE | G.H. - Medical Center of Kalymnos "Boybaleio"     |
| 2nd YPE | G.H. - Medical Center of Kos                      |
| 2nd YPE | Psychiatric Hospital of Athens "Dromokaitieio"     |
| 2nd YPE | Psychiatric Hospital of Attica                    |
| 2nd YPE | OnassisCardiacSurgery Center                      |
| 3rd YPE | General Hospital of Thessaloniki "George Papanikolaou" |
| 3rd YPE | Psychiatric Hospital of Thessaloniki              |
| 3rd YPE | General Hospital of Thessaloniki "St. Demetrios"  |
| 3rd YPE | General Hospital of Thessaloniki "G. Gennimatas"  |
| 3rd YPE | General Hospital of Veria                         |
| 3rd YPE | General Hospital of Naoussa                        |
| 3rd YPE | General Hospital of Giannitsa                     |
| 3rd YPE | General Hospital of Edessa                        |
| 3rd YPE | General Hospital of Katerini                      |
| 3rd YPE | General Hospital of Kozani "Mamatseio"            |
| 3rd YPE | General Hospital of Ptolemaid " Mpodaseio"        |
| 3rd YPE | General Hospital of Grevena                       |
| 3rd YPE | General Hospital of Kastoria                      |
| 3rd YPE | General Hospital of Florina «Eleni Th. Dimitriou»  |
| 3rd YPE | General Hospital "Papageorgiou"                   |
| 4th YPE | General Hospital of Thessaloniki "Ippokrateio"     |
| 4th YPE | Hospital of Skin and Venereal Diseases             |
| 4th YPE | University General Hospital of Thessaloniki "Ahepa"|
| 4th YPE | Hospital Against Cancer of Thessaloniki "Theageneio" |
| YPE  | Hospital Name                                                      |
|------|------------------------------------------------------------------|
| 4th  | General Hospital of Thessaloniki "AgiosPavlos"                   |
| 4th  | General Hospital of Serres                                       |
| 4th  | General Hospital of Kilkis                                       |
| 4th  | G.H. - Medical Center of Goumenissa                              |
| 4th  | General Hospital of Halkidiki                                    |
| 4th  | General Hospital of Didymoteicho                                 |
| 4th  | University General Hospital of Alexandroupolis                   |
| 4th  | General Hospital of Komotini "Sismanogleio"                       |
| 4th  | General Hospital of Xanthi                                       |
| 4th  | General Hospital of Drama                                        |
| 4th  | General Hospital of Kavala                                       |
| 4th  | Hospital for PestilentialDiseases                                |
| 5th  | General Hospital of Larissa "Koutlimbaneio&Triantafyleio"        |
| 5th  | University General Hospital of Larissa                            |
| 5th  | General Hospital of Volos "Axillopouleio"                        |
| 5th  | General Hospital of Karditsas                                    |
| 5th  | General Hospital of Trikala                                      |
| 5th  | General Hospital of Lamias                                       |
| 5th  | General Hospital of Amfissas                                     |
| 5th  | General Hospital of Karpenissi                                   |
| 5th  | General Hospital of Thivas                                       |
| 5th  | General Hospital of Livadeias                                    |
| 5th  | General Hospital of Halkidas                                     |
| 5th  | G.H. - Medical Center of Karystos                                |
| 5th  | G.H. - Medical Center of Kymis                                   |
| 6th  | University General Hospital of Patras                             |
| 6th  | University General Hospital of Ioannina                           |
| 6th  | General Hospital of Ioannina G. Hatzikosta                       |
| 6th  | General Hospital of Preveza                                      |
| 6th  | General Hospital of Arta                                         |
| 6th  | G.H. - Medical Center of Filiates                                |
| 6th  | General Hospital of Agrinio                                      |
| 6th  | General Hospital of Mesologgi "Xatzikosta"                       |
| 6th  | General Hospital of Corfus                                       |
| YPE  | Hospital Name                                                                 |
|------|-----------------------------------------------------------------------------|
| 6th  | General Hospital of Lefkada                                               |
| 6th  | General Hospital of Kefalonia                                              |
| 6th  | General Hospital of Lixouri "Mantzabinateio"                               |
| 6th  | General Hospital of Zante "AgiosDionusios"                                |
| 6th  | General Hospital of Patras "AgiosAntreas"                                 |
| 6th  | Hospital of Thoracic Diseases West of Greece                               |
| 6th  | Children's General Hospital of Patras "Karamandaneio"                      |
| 6th  | General Hospital of Amaliada                                              |
| 6th  | General Hospital of Pyrgos "A. Papandreou"                                |
| 6th  | G.H. - Medical Center of Krestenon                                        |
| 6th  | General Hospital of Aegean                                                |
| 6th  | G.H. - Medical Center of Kalavrita                                         |
| 6th  | General Hospital of Korithos                                              |
| 6th  | General Hospital of Argos                                                 |
| 6th  | General Hospital of Nafplio                                               |
| 6th  | General Panarkadiko Hospital of Tripoli "Evangelistria"                    |
| 6th  | General Hospital of Sparta "Ioan. &Aikat. Grigoriou"                       |
| 6th  | G.H. - Medical Center of Molaon                                           |
| 6th  | General Hospital of Kalamata                                              |
| 6th  | G.H. - Medical Center of Kyparissia                                        |
| 7th  | General Hospital of Irakleion "Venizeleio - Pananeio"                     |
| 7th  | University General Hospital of Irakleion                                    |
| 7th  | General Hospital of Chania "Ag. Georgios"                                  |
| 7th  | General Hospital of Rethymno                                              |
| 7th  | General Hospital of Agios Nikolaos                                        |
| 7th  | G.H. - Medical Center of Ierapetra                                         |
| 7th  | G.H. - Medical Center of Sitia                                            |
| 7th  | G.H. - Medical Center of Neapolis "Dialinakeio"                           |
### APPENDIX B

**Significant Amounts in Account “Earnings Of Previous Years”**

| Hospital_Id | Year | Earnings Of Previous Years | Sales | Earnings Of Previous Years / sales |
|-------------|------|----------------------------|-------|-----------------------------------|
| 127         | 2012 | 49.196,20                  | 466.267,71 | 10,55%                            |
| 116         | 2015 | 6.503.619,59               | 61.189.950,71 | 10,63%                            |
| 28          | 2012 | 610.353,15                 | 5.566.918,71 | 10,96%                            |
| 24          | 2012 | 1.650.964,46               | 13.889.851,55 | 11,89%                            |
| 29          | 2015 | 482.639,56                 | 3.883.771,69 | 12,43%                            |
| 217         | 2014 | 3.460.421,60               | 27.563.185,37 | 12,55%                            |
| 49          | 2013 | 1.797.300,09               | 14.148.982,43 | 12,70%                            |
| 612         | 2015 | 6.503.619,59               | 61.189.950,71 | 10,63%                            |
| 214         | 2014 | 496.110,75                 | 3.670.492,48 | 13,52%                            |
| 635         | 2013 | 3.340.263,13               | 23.930.248,24 | 13,96%                            |
| 611         | 2014 | 787.647,76                 | 5.482.043,48 | 14,37%                            |
| 121         | 2012 | 8.938.003,09               | 60.613.399,00 | 14,75%                            |
| 73          | 2014 | 1.791.796,07               | 12.078.023,53 | 14,84%                            |
| 632         | 2012 | 1.577.434,21               | 10.320.104,08 | 15,29%                            |
| 319         | 2013 | 3.161.781,67               | 20.352.172,22 | 15,54%                            |
| 219         | 2015 | 7.942.478,42               | 48.408.061,38 | 16,41%                            |
| 415         | 2015 | 6.029.847,93               | 35.965.370,81 | 16,77%                            |
| 628         | 2015 | 7.933.109,75               | 47.281.069,81 | 16,87%                            |
| 410         | 2014 | 3.257.923,32               | 19.176.980,06 | 16,99%                            |
| 417         | 2015 | 2.015.257,54               | 11.677.071,39 | 17,26%                            |
| 59          | 2012 | 2.463.961,33               | 13.961.848,28 | 17,65%                            |
| 210         | 2012 | 1.339.087,83               | 7.282.810,66 | 18,39%                            |
| 629         | 2014 | 10.336.095,63              | 55.498.772,62 | 18,62%                            |
| 68          | 2012 | 3.158.751,35               | 16.795.192,22 | 18,81%                            |
| 65          | 2015 | 903.930,83                 | 4.634.713,34 | 19,50%                            |
| 23          | 2013 | 5.198.509,04               | 26.202.085,92 | 19,84%                            |
| 314         | 2015 | 786.291,07                 | 3.924.529,97 | 20,04%                            |
| 318         | 2014 | 3.658.263,13               | 18.059.989,61 | 20,26%                            |
| 512         | 2014 | 268.035,95                 | 1.301.989,83 | 20,59%                            |
| 223         | 2013 | 6.187.642,96               | 29.352.864,30 | 21,08%                            |
| 68          | 2013 | 4.372.149,89               | 20.415.360,11 | 21,42%                            |
| 710         | 2015 | 2.283.078,71               | 10.458.055,71 | 21,83%                            |
| 625         | 2015 | 587.261,78                 | 2.668.019,38 | 22,01%                            |
| 213         | 2012 | 80.339,65                  | 362.793,23 | 22,14%                            |
| 78          | 2014 | 11.368.549,64              | 50.677.018,77 | 22,43%                            |
| 411         | 2014 | 1.715.106,29               | 7.354.893,85 | 23,32%                            |
| 69          | 2012 | 3.124.312,93               | 13.283.278,97 | 23,52%                            |
| 628         | 2014 | 11.336.531,52              | 47.306.001,16 | 23,96%                            |
| 73          | 2012 | 2.299.174,38               | 9.578.873,67 | 24,00%                            |
| 420         | 2014 | 11.507.537,75              | 47.869.002,81 | 24,04%                            |
| 629         | 2013 | 14.563.612,00              | 60.054.611,93 | 24,25%                            |
| 614         | 2014 | 180.785,41                 | 730.948,22 | 24,73%                            |
| 636         | 2015 | 2.595.219,34               | 10.388.798,81 | 24,98%                            |
| Hospital_Id | Year | Earnings Of Previous Years | Sales | Earnings Of Previous Years / Sales |
|-------------|------|----------------------------|-------|----------------------------------|
| 321         | 2014 | 4,897,612,32               | 19,550,313,28 | 25,05%  |
| 317         | 2014 | 4,164,399,44               | 15,801,764,68 | 26,35%  |
| 314         | 2014 | 1,095,596,16               | 4,045,149,59  | 27,08%  |
| 419         | 2013 | 2,674,996,31               | 9,770,959,92  | 27,38%  |
| 319         | 2014 | 5,332,029,81               | 18,743,010,71 | 28,45%  |
| 219         | 2012 | 19,189,957,13              | 65,429,593,00 | 29,33%  |
| 72          | 2015 | 10,167,163,95              | 34,408,080,98 | 29,55%  |
| 215         | 2012 | 1,149,560,39               | 3,602,961,93  | 31,91%  |
| 69          | 2013 | 4,673,559,74               | 14,055,865,54 | 33,25%  |
| 210         | 2014 | 2,293,749,25               | 6,892,732,16  | 33,28%  |
| 131         | 2015 | 6,608,533,38               | 19,633,105,98 | 33,66%  |
| 322         | 2013 | 20,988,922,15              | 60,765,505,47 | 34,54%  |
| 322         | 2014 | 20,009,432,07              | 56,664,039,26 | 35,31%  |
| 415         | 2012 | 11,072,546,27              | 30,728,203,18 | 36,03%  |
| 76          | 2012 | 175,911,81                 | 482,760,16    | 36,44%  |
| 514         | 2014 | 22,280,494,48              | 59,652,585,70 | 37,35%  |
| 511         | 2015 | 376,176,55                 | 981,446,85    | 38,33%  |
| 68          | 2015 | 5,828,437,20               | 14,500,473,82 | 40,19%  |
| 21          | 2013 | 8,498,200,83               | 19,371,583,28 | 43,87%  |
| 28          | 2014 | 2,109,119,36               | 4,514,251,50  | 46,72%  |
| 415         | 2013 | 14,956,168,19              | 31,263,585,60 | 47,84%  |
| 220         | 2012 | 2,396,564,17               | 4,949,425,95  | 48,42%  |
| 415         | 2014 | 16,519,502,72              | 33,360,446,31 | 49,52%  |
| 632         | 2015 | 5,223,087,19               | 10,402,378,94 | 50,21%  |
| 28          | 2015 | 2,100,431,04               | 3,857,852,39  | 54,45%  |
| 411         | 2013 | 4,405,114,06               | 6,786,738,28  | 64,91%  |
| 633         | 2012 | 6,482,898,77               | 7,328,627,69  | 88,43%  |
| 633         | 2015 | 7,691,556,65               | 8,397,235,00  | 91,60%  |
| 212         | 2015 | 1,163,475,28               | 1,263,621,91  | 92,07%  |
| 710         | 2014 | 11,076,434,89              | 10,649,895,33 | 104,01% |
| 69          | 2015 | 9,138,493,00               | 7,612,145,61  | 120,05% |
| 633         | 2014 | 15,029,683,36              | 6,897,063,80  | 217,91% |
| 624         | 2015 | 1,440,250,50               | 631,276,62    | 228,15% |
| 710         | 2013 | 15,850,746,31              | 4,343,180,16  | 364,96% |
| 633         | 2013 | 7,638,065,84               | 1,318,422,18  | 579,33% |
### APPENDIX C

#### Significant Amounts in Account “Expenses Of Previous Years”

| Hospital_Id | Year | Expenses Of Previous Years | GOGS       | Expenses Of Previous Years / GOGS |
|-------------|------|----------------------------|------------|----------------------------------|
| 121         | 2012 | 10.500.508,23             | 103.696.426,47 | 10,13%                           |
| 219         | 2014 | 9.545.259,80              | 84.241.599,74 | 11,33%                           |
| 212         | 2012 | 726.088,70                | 5.689.319,13  | 12,76%                           |
| 219         | 2013 | 13.089.432,94             | 98.651.964,69 | 13,27%                           |
| 67          | 2014 | 1.339.516,01              | 10.064.368,72 | 13,31%                           |
| 121         | 2015 | 11.231.250,50             | 78.732.983,66 | 14,26%                           |
| 633         | 2014 | 1.151.178,71              | 7.597.961,51  | 15,15%                           |
| 633         | 2015 | 1.085.929,62              | 6.799.652,87  | 15,97%                           |
| 220         | 2012 | 2.599.745,68              | 14.721.689,20 | 17,66%                           |
| 219         | 2012 | 19.104.038,29             | 106.548.779,39 | 17,93%                          |
| 28          | 2015 | 1.839.523,50              | 7.688.087,27  | 23,93%                           |
| 67          | 2013 | 3.605.338,10              | 10.957.468,02 | 32,90%                           |
| 34          | 2013 | 3.541.651,16              | 8.402.345,33  | 42,15%                           |
| 322         | 2013 | 91.001.257,57             | 108.897.697,04 | 83,57%                           |
| 633         | 2013 | 17.984.362,69             | 8.130.165,96   | 221,21%                          |