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# Health Care Finance, the Performance of Public Hospitals and Financial Statement Analysis

Panayiotis Curtis* Theodore A. Roupas**

***Abstract***

*Regional form of Organization of the health care that are called today DyPE, have as a main goal to promote more rational resource allocation through decentralization in the decision making process. The concern for more effective and efficient use of resources devoted into the health care sector renders hospitals a critical vehicle of the quest for superior economic performance, especially if we take into our consideration their mounting over time deficits. Economic performance is primarily traced through a set of specific financial ratios, which embrace important elements that constitute the substance of the financial well-being of hospitals as economic units. An array of financial ratios is critically reviewed and a combination of them is proposed as a means of effective financial management. The later is necessary to ameliorate the funding strain imposed on the health care system and especially on hospitals. The financial performance is determined by the return on capital (profitability) in connection with the risk involved. Both factors determine the value created, which in turn affects the amount of financing attracted in the sector. The financial information available to the supervising regional bodies (DyPE), don't considered sufficient for their management to assess financial management of hospitals effectively. The lack of the appropriate economic data is due to the fact that double entry accounting has not yet fully adopted by the economic units that report to the corresponding DyPE. So, double entry accounting is prerequisite for reporting and monitoring acceptable financial performance. The later is vital in securing that the financial needs of the health sector that are growing at an ever accelerating pace, are met.*

***Key Words:*** *Hospitals, Financial Management, Ratio Analysis, Economic Performance, Double Entry Accounting*

## 1. Introduction

What is reflected on the health system -and does not seem to be easily reversible- is the discrepancy between expenses and available resources. The rising trend of costs seems to be primarily due to, apart from the deterioration of demographics, the introduction of modern technology, bureaucracy, etc., and the ineffective financial management of hospital units. The problem is complex and multi-dimensional, and calls for large-scale and long-term structural changes in order to be solved, given that hospital units are the top and largest national business.

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The legislative intervention of establishing 17 Health Regional Councils (PESY) in 2001 and the corrective legislation renaming and merging them into 7 Health Regional Administrations (DYPE) in 2005 do not seem to have contributed substantially to more efficient financial management of hospitals. This ambitious project with the segmentation of 140 hospitals and 95 welfare agencies per geographic region remains a theoretic administration model, which has failed to achieve even minimum operational and economic efficiency.

Since 2001, PESY or DYPE are supposed to have assumed systematic control of hospital finances at regional level (budget approvals, amendments and execution), assets monitoring and management, introduction and roll-out of the double-entry system and analytical accounting, integrated IT systems for the implementation of the double-entry system, financial control and statistics on a single basis with inter-clinic and inter-hospital comparisons, collection of annual action plans of individual hospitals with target growth analysis and financing proposals for new programs, systematic supplies control (single procedures aimed at higher quality and lower costs) and on-site control of the above.

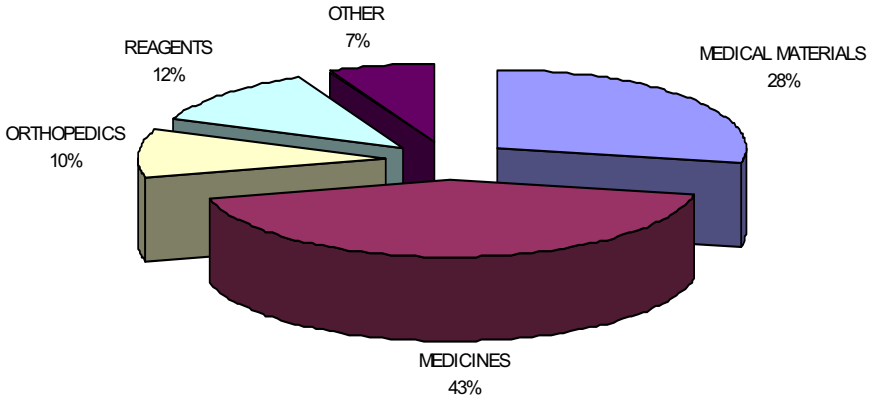
Reality, however, has hardly vindicated the initial plans. Hospitals and DYPE are restricted by the central administration and little room for actions. The Ministry of Health is not limited to a merely executive role but rather a tightly bureaucratic role. The staffing, opening and closing of clinics, industrial relations, high technology equipment and the recent establishment of the Health Supplies Committee (EPY) are all subject to decisions of the Ministry of Health. All bills following Law 2889/01 and Law 3329/05 provide for ministerial decisions and presidential decrees, i.e. Ministerial supervision and control. Nothing is judged by the outcome but based on central bureaucratic intervention. Thus, DYPE are formal administrative units for hospital control and coordination without having a say in any major operating issue.

## 2. Hospitals

The questionable viability of the Health System in our country is reflected in the present economic situation of the Public Hospitals. The total operating cost of hospital units has been estimated to be made up of payroll expenses for staff of all categories by approx. 65%, considered to be largely inelastic, and of operating costs by 35% (N. Polyzos, 2007). The latter are considered to be elastic in their overwhelming majority, whereof the key characteristic are supplies of all kinds (medicines, medical materials, chemical reagents, etc.). In Table 1 (expenses and revenues of hospitals), the expenses column does not include staff payroll which accounts for the largest part, because they are paid directly by the state budget. According to annual report data of the Ministry of Finance, payroll expenses for NHS hospitals amounted to € 2.24 billion at the end of 2006. Of the expenses shown in Table 1, operating costs account for 82.19% of total hospital costs.

## Chart 1

**PUBLIC HOSPITALS DEBT ANALYSIS FROM 01-01-2005 TO 31-12-2007**




Source: Ministry of Health and Social Solidarity

Hospital supplies make up the largest part of operating (elastic) costs and are the key source of debts. The debt distribution at the end of 2007 was as follows: 43% medicines, 28% medical materials, 12% chemical reagents, 10% orthopaedic materials and 8% other, according to the analysis of Chart 1.

One of the core reasons why hospital debts are generated (estimated[1] at 35% of total debt) is that hospitals do not pay their suppliers immediately; as result not only do they fail to benefit from any price reductions on products during negotiations, but are also further charged with the cost of payment delays.

This lack of liquidity is also attributed to the difference between actual and agreed hospitalization fees paid by insurance funds (N. Polyzos 1999, Yfantorpoulos 2006). The actual daily operating cost per hospitalization day has been estimated to

[1] General Accounting Office

be three times higher than the agreed hospitalization fee (K. Souliotis., G. Kyriakopoulos 2001, N. Polyzos 2007).

An additional problem is the long delayed collection of hospitalization fees from insurance funds, which are the key revenue of the hospital budgets (Table 1). A large part of such hospitalization fees are collected in instalments in different financial periods and up to 90% of the total. The remaining 10 % is not paid to set off the unpaid obligations of the central government to such funds. The above are structural operating problems of the broader health system and hence hospitals.

**Table 1**

**Revenues – Expenses of Hospitals per category (in € million)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **REVENUES** | **Potential Cash Balance 31.12.06** | **Hospitali-zation fees** | **State Budget subsidy** | **Grants from Public Inv. Programs** | **Return on assets** | **Other revenues** | **Total revenues** |
| | 233.32 | 2,948.40 | 104.80 | 87.71 | 20.93 | 345.20 | 3,740.36 |
| | 6.24% | 78.83% | 2.80% | 2.34% | 0.56% | 9.23% | |
| | | | | | | | |
| **EXPENSES** | **Operating costs** | **Purchases of property** | **Building improvements** | **Equipment** | **Other expenses** | **_** | **Total expense** |
| | 3,074.35 | 2.28 | 86.21 | 168.37 | 409.15 | | 3,740.36 |
| | 82.19 % | 0.06% | 2.30% | 4.50% | 10.95% | | |

Source: Social Budget 2007

To alleviate the deficits problem, the state has performed three settlements of public hospitals debts to suppliers in the past decade, in 1997 (€ 578 million), 2001 (€ 1.02 billion) and 2004 (€ 2.5 billion). These amounts are paid from the state budget, on top of the payroll cost, annually. According to data of the Ministry of Health as at 30.09.2007, amounts due amounted to € 3.15 billion. This amount had accumulated since 01.01.2005 following the last settlement of € 2.5 billion. It is evident that it is a problem reproduced immediately after the solution found by the

central administration at the expense of the state budget. Based on available data, it is also manifest that it is reproduced at an increasing rate. While debts increased by € 56.80 million per month between 2001 and 2004, they have risen by € 95.45 per month since 2004, i.e. 70% higher pro rata (Table 2).

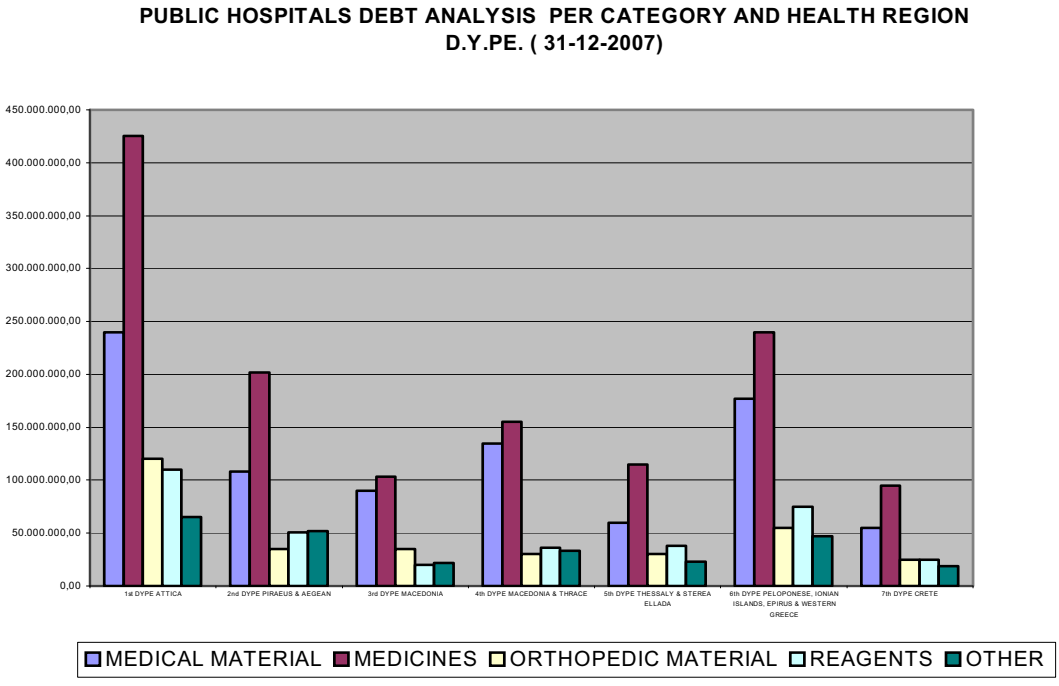
**Table 2**

**Debt Settlement**

| **2004 Settlement** | **Amount** | **Months** | **Amount per month** |
|---|---|---|---|
| | € 2.5 bn. | 44 | € 56.80 mil. |
| **Accumulated deficit 2007** | **Amount** | **Months** | **Amount per month** |
| | € 3.15 bn | 33 | € 95.45 mil. |

Such increase does not signal any aggravation in the system operation, because it mainly comes from increases in medicine prices, which is the highest expense, and VAT rate increase by one per cent on almost all products. However, another settlement will not only perpetuate the problem, but also aggravate it immensely.

Unpaid debts of hospitals as at 31-12-07 were as follows:



### *3. Ratio Analysis of Financial Statements - Review of the Literature*

Ratios have been used for a long time in the analysis of financial statements. Ratios are simple and readily comprehensible measures of financial performance that are calculated using data from published financial statements. Their popularity is due to their simplicity in measurement that expresses valid and very important relations among the economic data of the companies involved. "Financial ratio analysis is an accepted approach to hospital performance evaluation*" (*Zeller et al 1996, 161). The late adoption of ratios in the analysis of the financial soundness of hospitals at the end of 1970s was attributed to "the possibility that financial pressures to the hospital industry were not as pervasive as they were in other industries and the lack of availability of comparable financial statement information" (Watkins 2000, 75).

Ratios are used in tracing specific aspects of financial performance and especially in estimating liquidity, evaluating profitability, performing competitor analysis and forecasting corporate bankruptcy.

*Financial ratios as a means of analysis were used initially in the US.* In 1985 Cleverley and Rohleder examined the financial aspects of 29 ratios based on data gathered by Health-care Financial Management Association for the period 1978-80. They reached the conclusion that all these ratios refer to ten dimensions of financial performance related to long term, as well as to short-term period. Counte et al. (1988) three year later, applied the factor analysis to data from homogeneous group of hospitals and reached the conclusion that 25 ratios reflecting five (5) dimensions of financial health are suitable for that reason. The dimensions concern liquidity, debt structure, profitability, cash flow management and utilization of assets. Liquidity, debt structure and cash flow management determine risk. Assets utilization affects profitability. Profitability and risk determine value, which in turn is the ultimate goal of management and the final arbiter of successful strategy. So these factors are means of achieving the predetermined goal of value creation that keep stakeholders happy and secure the survival of the economic unit.

Hospitals are considered as capital intensive with regard to the configuration of their assets that appear in the balanced sheet and labour intensive with regard to their daily operations. The effectiveness with which their assets are used, determines their economic viability. Revenues are determined by the average duration of hospitalisation each patient, the number of the total beds available at the hospital that are utilized on daily basis through out the year and the revenues per patient received.

$$\text{Effective Use of Resources} = \frac{\text{Number of Patients}}{\text{Hospitalization Days}} \text{ X } \frac{\text{Hospitalization Days}}{\text{Number of Beds * 365}} \text{ X } \frac{\text{Revenues}}{\text{Number of Patients}} \quad (1)$$

The reduction in the duration of the treatment although seems to contribute in to the decrease of revenues, at the same time increases the capacity of patient reception every year (given the beds available) and simultaneously it constitutes an indication of quality of hospitalisation that strengthens the satisfaction of the patients and boost revenues through increased prices charged.

A full-fledged approach to financial performance include at least a) the liquidity b) the structure of liabilities, c) the level of activity and d) the Profitability of the economic entity (Liesz 2002). The last three aspects comprise the Return on Equity (ROE) which is calculated as follows

$$\textbf{ROE} = \textit{ROA} \text{ x } \frac{\text{Revenues}}{\text{Equity Capital}} \quad (2)$$

And

$$\textbf{ROA} = \frac{\text{Net Profits}}{\text{Sales}} \text{ x } \frac{\text{Sales}}{\text{Total Capital}} \quad (3)$$

Profitability, liquidity, capital structure, revenues, cost and assets utilization ratios were found as appropriate measures to compare financial performance among hospitals (Flex 2005, 26).

ROE represents a measure of evaluation of the total performance of the company's management (Flamholtz *et al* 2000,492) and traditionally the most important and widely used measure of benchmarking for the performance (Teitelbaum 1996,1). The return on equity indicates how effectively the management uses its internal resources, capabilities and competencies to create profit (Grant 2002).

The analysis of financial statements of 2.300 private hospitals in India for the period 1999-2004 with the use of twenty five ratios concluded that certain financial aspects are consistent and effective in judging economic soundness of the companies examined (Bhat and Jain 2006, 4). The financial dimensions that were proven reliable according to that analysis are the age of fixed assets, the current assets efficiency, the operating efficiency, the financial structure and profitability. The age of fixed assets determines the capability of the hospital to earn revenues, as well as the need for further investment funds. The size of fixed assets influences the business risk, emanating from the investment on hospitals. Since an important part of total assets are in the form of current one, their efficient use affects the

return on capital. The amount of current assets in conjunction with short term liabilities defines liquidity. Asset turnover measures how effectively total assets are used to generate revenues. As concern as the dimension of financial structure it has to do with the debt to equity ratio. It affects the return to equity capital and financial risk. Finally, profitability refers to the result of income statement. Low profitability and unsatisfactory operating efficiency in the sample of private hospitals of India, don't allow them to serve debt cost. As a result it increases the risk emanating from debt financing and creates impediments in attracting equity capital, which seeks value for the amount of money invested. The difficulty in attracting equity capital, that doesn't carry interest expenses, is of strategic importance for hospitals. That is why is so crucial the effective and efficient use of the invested funds (Bhat and Jain 2006, 4).

A composite indicator that is particularly useful for the analysis of the financial statements of hospitals is the following one (Cleverley and Associates, 2004).

$$\frac{\text{Net profit margin-4.0}}{4.0} + \frac{\text{cash-50}}{50} + \frac{\text{financing with debt\%-50}}{50} + \frac{\text{Average age of hospitals-9.0}}{9.0} \quad (4)$$

This indicator includes a measure of efficiency with respect to sales, another assessing liquidity, a third estimating the capital structure and finally one reflecting the age of the fixed assets. When the sum is bigger than three (3), it is considered excellent, between zero (0) and three (3), it is considered good, from zero (0) to minus two (-2) is characterized as bearable and in case it is smaller than minus two (-2), it is considered as bad (The Financial Effect 2005, 5).

These areas of operation may determine the "core competencies" which can apply to different activities. To the extent that they are unique, valuable, difficult or costly to be imitated, they create a sustainable competitive advantage and lead to superior profitability. Superior performance lasts only if a company is positioned accordingly, given its strength and weakness, in order to exploit opportunities and neutralize or abate the vigor of threats (SWOT analysis) emanating from the external environment. The degree of attractiveness of the industry is determined by the degree of which five forces affect the competition.

## 4. The Existing Reporting System and Analysis

Hospitals up to day are obliged to submit each year to the Ministry of Economics a standardized report (appendix) with specific type of economic information. The data provided by the hospitals don't include (among other things) the total capital invested. The lack of this important element limits the value of revenues the amount of which depends heavily on the amount invested for that purpose in order to be able to calculate the degree of their effective use. It constitutes a critical element of the financial viability of the hospital. It determines also the need for investment funds, their source, their cost and the depreciation

expenses. The change in capital invested can only indirectly be derived through the change in the number of the available beds, which of course doesn't capture investments on medical equipments or any type of renovations which upgrade the facilities of the hospital.

Based on the information provided

a) Profitability and return to capital ratios, which are means of satisfying ultimately al stakeholders can't be measured, since the amount of capital (total and equity) employed, as well as the result of income statement, are not available.
b) activity ratio that combines revenues and capital invested are not feasible to be estimated
c) debt – equity ratios can't be also accurately measured
d) Finally, the only types of ratios that can satisfactorily be computed are the ones that refer to liquidity.

On the other hand, based on the data that are reported yearly some other categories of ratios, mainly quantity and quality (as opposed to value which presuppose the prices involved) can be produced. More specifically, a useful ratio is the following:

$$\frac{\text{staff}}{\text{number of beds}}$$

It is a measure that affects the quality of service rendered at the specific hospital. The number of beds in connection with the number of staff available in general (doctors, medical technicians, nurses and administrative staff), are factors reflecting the capacity of the hospital**.** The degree of their utilization is a primary determinant of the revenues of hospitals. Revenues divided by the number of doctors or the number of staff in general measures is a measure of the degree of the efficient utilization of human factor. The maximization of revenues per employee (and especially patients served per doctor**)** is a critical factor reflecting operational effectiveness and is a critical factor of success. In the public hospitals the amount of revenues reported can not be measured accurately, given that prices of medical services are arbitrarily appointed by the state.

As far as the expenses are concerned, the average cost of funds used is not reflected. The ratio

$$\frac{\text{drug expenses}}{\text{total expenses}}$$

and its development over time is crucial for the control of the overall expenses of a hospital.

With respect to liquidity the following ratio is important:

$$\frac{\text{Accounts and notes Receivables}}{\text{Current Liabilities}}$$

The above ratio shall be considered in two respects a) as a percentage of values and b) the date of expiration of the items reflected in the ratio, since the same value worth more if the date of expiration of receivables is shorter compare to the one o liabilities, that must be met using the cash emanating from the collection of receivables. Values greater than one enhance liquidity. It should be noted that great amount of receivables that are transferred from a year to the next (increasing the receivables of the year), may mean that their quality is not good enough or that their probability to be collected by the company is low. The greater the value of the following ratio is the greater the probability that the quality of receivables is deteriorating.

$$\frac{\text{Uncollected Accounts Receivables}}{\text{Account Receivables}}$$

As the value of the following ratio

$$\frac{\text{Accounts and notes Receivables}}{\text{Revenues from medical treatment}}$$

is increasing, especially in comparison to the one of the previous year, it is considered as a sign of financial data manipulation when it is accompanied by a great increase in revenues of that year compare to previous one, since it is attributed to the excessive and rather abnormal rise in receivables (Beneish 1997).

The existing data allow comparisons from year to year using 2001 as the basis for evaluation through the horizontal analysis. Also, through vertical analysis it can examine the relative value of each particular item to the total it belongs. So, it can be observed the relative value of certain important expenses as it is drug expenses, food, compared to the total expenses of the corresponding year. At the same time it can be seen the change of total expenses or a particular part of it from year to year. Also it can be compare with the corresponding item of a specific hospital.

## 5. Conclusion

The viability of the health care system depends on the financial soundness of the hospitals, which represent the basis of the system. Competent and robust financial management of hospitals is necessary towards that end. Financial ratios indicate that exist some crucial and consistent, for the financial health of hospitals, relationships among the financial data of the economic units (including hospitals).

Ratio analysis emphasizes the need for achieving efficiency (internally) and effectiveness (externally) in operation dimensions which determine the competitive advantage that result in return to equity above the average for the specific level of risk. The later is affected by the capital structure and the liquidity conditions on one hand (the financial point of view) and the investment in fixed assets (for the operational side of risk) on the other.

Financing capability represents a vital element of competitive advantage. The later is reflected in superior ROE which "is the most comprehensive measure of profitability of a firm and it takes into account the operating and investing decisions"(Liesz 2002) and represents the criterion of attracting investment funds in the hospital sector.

The lacks of appropriate financial data, due to the fact that double entry accounting has not been applied yet by the hospitals, do not allow the supervising bodies (PESYs-DyPE) and the economic units under scrutiny to monitor their economic performance effectively.

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## *Appendix*

HELLENIC REPUBLIC
MINISTRY OF HEALTH AND
SOCIAL SOLIDARITY
**ATHENS GENERAL HOSPITAL "EVANGELISMOS"**

| | |
|---|---|
| Annual Report Approval No: | |
| Developed beds: | 928 |
| Total personnel: | 2.792 |
| Medical: | 785 |
| Paramedical: | - |
| Nursing: | 1.157 |
| Administrative-Other: | 850 |

**SUMMARY ANNUAL REPORT 2007**

| | | | |
|---|---|---|---|
| **1. Cash Balance as at 31/12/2007** | **0,00** | **1. Cash Balance as at 31/12/2007** | 0,00 |
| **REVENUES 2007** | | **EXPENSES 2004** | |
| 2.Operating costs subsidy | 0,00 | 2.Salaries and wages | 0,00 |
| 3.Fixed assets subsidy | 0,00 | 3.Medinices | 0,00 |
| 4.Subsidy for work execution | 0,00 | 4.Medical material | 0,00 |
| 5.Public Investments subsidy | 0,00 | 5.Chemical reagents | 0,00 |
| 6.Subsidy for Research-studies | 0,00 | 6. Food stuff | 0,00 |
| 7.EU projects subsidies | 0,00 | 7 Fuel | 0,00 |
| 8.Subsidies of other purposes | 0,00 | 8.Fixed assets | 0,00 |
| 9.Hospitalisation fees income | 0,00 | 9.Repair and maintenance | 0,00 |
| 10.Other own revenues | 0,00 | 10.Projects financed by ordinary budget | 0,00 |

| | | | |
|---|---|---|---|
| 11. Revenues from third party deductions | 0,00 | 11.Projects financed by Public Inv. | 0,00 |
| | | 12.Research and studies | 0,00 |
| | | 13.EU projects | 0,00 |
| | | 14.Other expenses | 0,00 |
| | | 15.Payment of third party deductions | 0,00 |
| **TOTAL REVENUES 2-11** | **0,00** | **TOTAL EXPENSES 2-15** | **0,00** |
| **TOTAL1-11** | **0,00** | **TOTAL 1-15** | **0,00** |
| Accounts receivable | 0,00 | Accounts payable | 0,00 |

**HOSPITALISATION DATA 2007**

Examined outpatients
Hospitalised patients
Hospitalisation days
Surgical operations
Laboratory tests
Average Bed Occupancy
Average Hospitalisation Period