Measuring Financial Sustainability of the Greek Construction Industry

**Odysseus G. Manoliadis and Alexandros Chatzigeorgiou**

Democritus University of Thrace

Vas Sofias 12 Xanthi Greece 60100

***Abstract***

*The aim of this paper is to assess the financial sustainability in the Greek construction industry. We apply sustainability indices in a sample of Greek construction firms listed in Athens Exchange to derive traditional accounting ratios of profitability. In the related Literature sustainable performance is examined through Sustainable Balanced scorecards using sustainability indicators. Our approach aims to disaggregate the sustainable performance of companies through tailored sustainable indicators formed after the Olympic Games of 2004 in Athens. This decomposition facilitates the examination of ROE in terms of a measure of profitability (profit margin), level of assets required to generate sales (asset utilization), and the financing of those assets (equity multiplier). In the light of the results of this paper, most of the top performers in the sample (i.e. the firms with higher ROE ratio values) indicated total assets turnover values above average, and higher values of equity multiplier.*

Keywords: Sustainable performance; financial ratios; construction industry; Greece

**Introduction**

Financial sustainability is the ability of an entity to operate at a level where revenues equal or exceed expenses on an on-going, long-term basis. Financial sustainability means you consider social, environmental and administrative factors when following any financial plan. Taking these aspects into account will enable you to make informed decisions in the best interest of everyone involved.

## There are four characteristics that define the financial sustainability of any organization. These are called the financial sustainability indicators.

## The four indicators are as follows.

## 1. Income diversification

You would know that diversification means different or varied. So, when you hear income diversification, what it refers to is how many different options you have to earn money, or in this case, raise funds.

Having only a few sources is not good for any construction company. Even if a few sources contribute huge sums that are sufficient for meeting companies goals, what happens if any of them pulled back?

Similarly, relying on a single channel of income is dangerous for your organization. Secure your financial stability by creating a large  base and employing other methods to collect resources.

Greek construction companies however contribute a large pannel of sources (government eu projects private)

Indicators ?

Profit diversification

(KPI dashboard)

## 2. Strategic and financial planning

 An important thing to ensure when running a construction company is to have some source of collecting monetary resources that has no strings attached. In other words, you should have some income that you can use to fulfill any of your goals.

Greek construction companies however contribute a large pannel of sources (highway, hydraulic works, building construction etc)

**Indicators**

Net profit growth

New business profit

Operating profit on long-term investments

Return on equity

Internal rare of return on new business information technology (IT) spending per employee

Economic profit

(KPI dashboard)

## 3. Sound administration and finance

Construction companies have key stakeholders, i.e. people who are interested in their work or are affected by it (Greek AXA). This includes the benefactors, volunteers, staff, and so on. Building a positive relationship with them will help you achieve a strong position and ensure a secure future for companies .If they ] only get financial support from them but they are also likely to help them in the long term or during a crisis you may face in future.

Indicators

Earnings per share

Effectiveness of the risk management practices that are controlling material risks

Employee engagement (as measured through survey participation)

Employee movement (such as time in position, transfers, and promotions)

External funds under management

Holding company cash flow

Level of inherent risk

Revenue mix

(KPI dashboard)

## 4. Own income generation

While donations are essential, complete financial sustainability means that construction companies can stand on your own feet if the need arises.

They must set aside additional funds or keep some monetary reserves that will help them through the rainy days. Delayed grants or withdrawn payments are a critical situation for nonprofits. So they must have resources to continue smooth operation even during such times.

**Indicators**

**(ROA/ debt ratio)**

Long-term debt

Short-term debt

the debt ratio was not considered as an important factor in financial performance in order to apply this factor to make better use of debt and/or better control the cost of borrowing of construction companies. This application in a sample of Greek construction firms listed in Athens Exchange is used in order to analyse the debt ratio in terms of Construction Company’s financial strategy. Though ROE remains the most comprehensive measure of profitability of the construction firm the debt ratio is one of the important factors analysed in this modification to see is debt is used wisely and promote investing decisions.

The corresponding formula to estimate ROE is as follows:

ROE=ROA/ DEBT RATIO(=TOTAL DEBT/ TOTAL ASSSETS)

Where ROA=[PROFIT MARGIN ON SALES (=NET INCOME/ SALES)]/ASSET TURNOVER(=SALES /TOTAL CURRENT ASSETS)

the flow chart for its derivation are shown in Figure 1.



The ROE still maintains its importance of the impact of operating decisions (i.e. profitability and efficiency) and financing decisions (leverage) upon, but uses another four ratios except the debt ratio -a total of five ratios - to uncover what drives ROE and give insight to how to improve this important ratio. These are(in the order that are calculated in the formula): 1. profit margin on sales: net incme/sales 2. asset turnover: (sales /total current assets) The firm’s financing decisions are those that determine the mix of debt and equity used to fund the firm’s operating decisions. These are captured in the third ratio of the modified model 3. debt ratio: total debt/total assets. The fourth ratio represents the return of assets 4. ROA=profit margin on sales /asset turnover

Finally the fifth ratio is the return of equity 5. **ROE : ROA/ debt ratio**

**Data**

The data set selected in the current study is a sample of 20 Greek construction companies’ traditional accounting lists from the Greek Exchange’s classification. All data corresponds to the financial years 2004 2006 and are obtained from the Greek Exchange’s standardized compilation of consolidated financial statements.

Table 1. Greek construction companies (Greek Exchange’s classification)

|  |  |  |  |
| --- | --- | --- | --- |
| **Α/Α** | **NAME OF COMPANY** | **ACTIVITY CODE** | **INDEX FTSE** |
| 1 | ΑVAX SA. CONSTRUCTION C | 4523 | FTSE40 |
| 2 | AEGEK SA. (CR) | 4523 | FTSE80 |
| 3 | ATHENA SA (CR) | 4521 | FTSE80 |
| 4 | ATTI-KAT SA. (CR) | 4523 | FTSE80 |
| 5 | VIOTER SA (CR) | 4521 | FTSE80 |
| 6 | GENER SA (CR) | 4521 |  |
| 7 | DIEKAT SA. (CR) | 4521 |  |
| 8 | DOMIKI OF CRETA (CR) | 4521 |  |
| 9 | EDRASIS-C.PSALLIDAS SA. | 4525 |  |
| 10 | EKTER SA. (CR) | 4521 |  |
| 11 | ERGAS SA. (CR) | 4521 |  |
| 12 | INTRAKAT S.A. | 4523 |  |
| 13 | INTRACOM | 4521 | FTSE80 |
| 14 | J.KLOUKINAS - J.LAPPAS | 4521 | FTSE80 |
| 15 | MESOCHORITIS BROS (CR) | 4523 |  |
| 16 | MICHANIKI SA. (CR) | 4523 |  |
| 17 | MOCHLOS SA. (CR) | 4523 |  |
| 18 | PROODEFTIKH TECHNICAL C | 4523 | FTSE80 |
| 19 | PANTEXNIKI SA (CR) | 4523 |  |
| 20 | TERNA TOURIST TECHNICAL | 4523 | FTSE40 |

4521 – Construction of Buildings and civil engineering projects

4523 – Construction of Highways, streets, airports and athletics

**Results**

Based on the DuPont model presented in the previous section and on data availability ROE ratio encompasses measures of profits before taxes, sales, total assets and equity (for more on the typical measures of traditional financial ratios used in the construction industry see also Edum-Fotwe et al., 1996. The application of financial ratio analysis in the sample of 20 Greek construction firms listed in Athens Exchange to assess their financial performance after the Olympic Games. The results of this approach in terms of ROE (i.e. Return on Equity, ROE) using the DuPont model are presented in Tables 1 and 2. The ROE distribution and mean ROE are illustrated in Figure 1 and 2.

**Table 2. Mean ROE for the years 2004-2006.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2004 | 2005 | 2006 |
| ROE | 9.33% | 1.68% | 3.28% |

In particular in table 2 the return of assets for the period of recession is presented.

**Table 3. ROE for the years 2004-2005**

|  |  |  |  |
| --- | --- | --- | --- |
| Α/Α | RETURN OF ΕQUITY 2004 | RETURN OF ΕQUITY 2005 | Reduction (%) |
| 1 | 18,56 | 10,09 | -28,96 |
| 2 | -5,68 | -9,93 | 3,60 |
| 3 | 3,00 | -17,32 | -13,13 |
| 4 | -1,42 | 0,72 | 16,91 |
| 5 | 9,94 | 3,81 | -40,45 |
| 6 | 23,20 | -0,77 | -57,27 |
| 7 | 20,06 | 25,61 | -32,18 |
| 8 | 13,95 | 0,31 | -12,12 |
| 9 | 5,13 | 2,28 | -9,50 |
| 10 | 6,00 | 16,35 | 245,42 |
| 11 | 3,92 | 0,64 | -59,59 |
| 12 | 21,73 | 13,56 | 28,35 |
| 13 | 22,74 | 0,52 | -3,47 |
| 14 | 12,22 | 5,60 | -13,96 |
| 15 | 0,05 | 0,90 | -6,61 |
| 16 | 6,20 | 10,71 | 10,25 |
| 17 | 11,66 | -29,10 | -12,03 |
| 18 | 3,13 | 5,22 | 19,07 |
| 19 | 9,38 | -11,50 | 22,67 |
| 20 | 26,07 | 5,68 | -40,27 |
| MEAN | 9,33 | 1,68 | -13,69 |

Figure 1. Distribution of ROE (2004-2006)



Figure 2. Mean ROE for the years 2004-2006



From Figure 1 it derives that there is a 54% improvement in terms of ROE

The results of the proposed approach in terms of ROA (i.e. Return on Assets, ROA) using the DuPont model are presented in Tables 4. The ROA distribution and mean ROA are illustrated in Figure 3 and 4.

Table 4. ROA for the years 2004-2006

|  |  |  |  |
| --- | --- | --- | --- |
| **Α/Α** | **ROA 2004** | **ROA 2005** | **ROA 2006** |
| 1 | 0,11 | 0,06 | 0,00 |
| 2 | -0,02 | -0,04 | -0,02 |
| 3 | 0,02 | -0,07 | -0,01 |
| 4 | -0,01 | 0,00 | 0,00 |
| 5 | 0,04 | 0,02 | 0,01 |
| 6 | 0,11 | 0,00 | -0,02 |
| 7 | 0,03 | 0,03 | 0,00 |
| 8 | 0,07 | 0,00 | 0,08 |
| 9 | 0,02 | 0,01 | 0,00 |
| 10 | 0,04 | 0,10 | 0,02 |
| 11 | 0,02 | 0,00 | 0,00 |
| 12 | 0,04 | 0,02 | 0,00 |
| 13 | 0,13 | 0,00 | 0,00 |
| 14 | 0,06 | 0,03 | 0,03 |
| 15 | 0,00 | 0,01 | 0,00 |
| 16 | 0,04 | 0,07 | 0,04 |
| 17 | 0,06 | -0,12 | -0,04 |
| 18 | 0,02 | 0,03 | 0,00 |
| 19 | 0,06 | -0,06 | 0,08 |
| 20 | 0,15 | 0,03 | 0,04 |
| **Mean** | **0,049** | **0,006** | **0,011** |

Figure 3 Distribution of ROA for the years 2004-2006



Figure 4 Mean ROA for the years 2004-2006



Also as can be seen from Figure 4 2005 was a recession year for the construction companies that lead in a 82% reduction of ROE and three firms out of the four firms to shift outside the target range.

As can be seen from figure 3 from the 19 construction companies that Greek construction firms listed in Athens Exchange Mochlos presented a significant reduction of ROA.

In Table 5 the classification of ROE in terms of Maltzman benchmarking is presented. There are three distinct groupings of Greek construction firms of the sample with respect to the results of the ROE ratio calculation (ngative, 10 to 20% and 20%-30). Negative performance exhibit 2 for the year 2004 and 4 for the years 2005 and 2006. For more than the 75% of the firms, the range in values for ROE ratio was positive but below 20%; for the other firms only few 4 for the year 2004 and 1 for the years 2005 and 2006 are between 20-30%.

Table 4 Classification of ROE in terms of Maltzman benchmarking

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **year** | **negative** | **<20** | **20-30** | **>30** |
| **2004** | **2** | **13** | **5** | **0** |
| **2005** | **4** | **15** | **1** | **0** |
| **2006** | **4** | **15** | **1** | **0** |

This is low according to benchmarking standards used internationally (Maltzman 2005) the ranges that maybe should be targeted by a construction firm, especially for production-oriented builders, are 10-15% for Net Profit (as percentage of sales) and 20-30% for ROE ratio.

References

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Kpi dashboard https://kpidashboards.com/kpi/industry/public-administration/