

exploit economies of scale and organize their activities more efficiently resulting into increased profit streams compared to small firms. Thus if this intuition is valid we expect large clubs (according to total assets) to be more efficient by means of profitability and this will be depicted by a positive coefficient on the SIZE variable.

Additionally, firm specific choices are closely related to financial risk and the asset management efficiency may lead into heterogeneity within the industry which can help explain firm performance (Copeland & Weston 1983). In order to control for financial risk that can be associated to the club's financial performance we introduced the variables of leverage, liquidity and the level of cash flows per assets. A positive and significant coefficient on either LIQ or CF/TA indicates that football clubs are able to convert assets into cash thus resources can be used quickly so as to respond to profit opportunities. Furthermore, leverage is an indicator of the risks associated with the probability of default by the firm and as Penman (2001) argues the lower the leverage ratio the greater the financial security and the higher the level of the expected profits. Thus according to the previous discussion we expect to find a negative and significant coefficient on the LEV variable. Finally, the capital intensity variable is introduced in order to control for the level of efficiency in assets management. It is expected that the higher the ratio of assets over sales the higher the profitability, since clubs are more able to differentiate their product resulting into increased profits. Therefore, a positive and significant coefficient is expected on the CI variable.

4. Empirical Results

4.1 Descriptive Statistics

The following Table 1 includes the descriptive statistics of the sample variables for the whole period of investigation from 2007 to 2013. Regarding the on-field variables Greek football clubs have a medium level of attendance, achieve 13 wins during a season and the overall championship can be characterized by moderate uncertainty (0.43). As for the accounting variables we can argue that football clubs in the Greek professional league suffered from severe losses throughout the period of investigation, since the median net profit margin is negative and up to 21 per cent. Also the Greek football clubs are small in size, highly leveraged (1.29) and face intense liquidity problems since their current assets cover only the 28 per cent of current liabilities. Finally, the median CI value of 2.11 indicates that professional football clubs do not use their assets productively in order to create sales and they also generate cash flows up to 62 per cent of their total assets.

Table 1: Descriptive statistics of the sample variables from 2007-2013

| Variables | Mean | Median | St. Deviation | 1 st Quartile | 3 rd Quartile |
|-----------|-------|--------|---------------|--------------------------|--------------------------|
| ATT | 4.78 | 4.76 | 0.35 | 4.48 | 5.10 |
| POS | 8.05 | 7 | 6.03 | 3 | 12 |
| WIN | 14.08 | 13 | 6.54 | 9 | 19 |
| PASPOS | 0.37 | 0 | 0.48 | 0 | 1 |
| UNCERT | 0.36 | 0.43 | 0.24 | 0.14 | 0.56 |
| PR | -0.38 | -0.21 | 1.83 | -0.67 | 0.018 |
| SIZE | 14.68 | 14.58 | 1.64 | 13.60 | 15.91 |
| LEV | 2.52 | 1.29 | 3.17 | 0.87 | 2.76 |
| CI | 2.79 | 2.11 | 2.52 | 0.96 | 3.82 |
| LIQ | 0.43 | 0.28 | 0.66 | 0.16 | 0.55 |
| SALES | 6.07 | 6.14 | 0.61 | 5.56 | 6.52 |
| CF/TA | 1.18 | 0.62 | 10.75 | 0.23 | 1.03 |

Sample comprises from 17 football clubs participating on the Greek Super League from 2007-2013. ATT is the natural logarithm of the number of tickets, POS is the position the team has finished, WIN is the number of wins achieved by the team, PASPOS is a dummy variable taking the value of (1) if the team has finished in the six first positions of the ladder in the previous three periods and zero otherwise, UNCERT is the leagues uncertainty measured by the ratio of the points that each team lags from the champion divided by the total points of the champion team, PR is the ratio of earnings to sales, SIZE is the natural logarithm of total assets, LEV is the ratio of total debt to equity, CI is the ratio of assets to sales, LIQ is the ratio of current assets to current liabilities, SALES is the natural logarithm of net sales and CF/TA is the ratio of cash flow to total assets.

4.2 Results for Attendance and Sales Revenue

Table 2 reports the results on the determinants of the league attendance after estimating model 1. The model has a very good explanatory power since the R² adjusted is quite high up to 68.5 per cent and the coefficients on the explanatory variables have the predicted sign. Being more specific, the level of attendance of the Greek professional football league is positively affected by the short and long run success of the football clubs. The coefficient on the WIN variable is positive and significant (0.03) indicating that a single win can increase the level of tickets sold up to 3 per cent. Nonetheless, the position (POS coefficient has the predicted sign yet insignificant) that the team finishes in a given season seems to leave attendance unaffected.

Moreover, the past performance of the football clubs is also positively associated with the level of attendance (coefficient on the PASPOS variable is 0.17 and significant at $\alpha=1\%$). This result is actually verifying our initial assumption that the athletic performance persists over seasons thus a team which is successful on the long run is more possible to be also successful on the short run. However, the coefficient on the uncertainty variable even though it has the predicted sign is insignificant, a finding which is inconsistent with our preliminary hypothesis. Yet this result can actually be attributed to data measurement errors. For instance there may be noise on the models arising from proxies of league uncertainty and this could potentially deteriorate the statistical power of the tests.

Table 2: Empirical results on the determinants of league attendance

| Variables | Coefficient | t-statistic |
|---------------------|-------------|-------------|
| Constant | 4.35 | 31.1* |
| POS | -0.00058 | -0.14 |
| WIN | 0.03 | 4.92* |
| PASPOS | 0.17 | 2.88* |
| UNCERT | -0.14 | -0.91 |
| R ² -adj | 68.5% | |
| F-stat | 35.55* | |

*Denotes significance at the 1% significance level

$$\text{Model 1: } \text{LnATT}_{it} = \alpha_0 + \alpha_1 \text{POS}_{it} + \alpha_2 \text{WIN}_{it} + \alpha_3 \text{PASPOS}_{it} + \alpha_4 \text{UNCERT}_{it} + e_{it}$$

Where, LnATT is the natural logarithm of the number of tickets that each team has issued in a given period, POS is the position the team has finished on the end of the season, WIN is the number of wins achieved by the team in a given season, PASPOS is a dummy variable taking the value of (1) if the team has finished in the six first positions of the ladder in the previous three periods and zero otherwise, UNCERT is the leagues uncertainty measured by the ratio of the points that each team lags from the champion at the end of the season, divided by the total points of the champion team.

The following Table 3 presents the empirical finding from estimating the sales revenue regression equation. The results are consistent to the results depicted on the previous Table 1. Again the short and the long run success of the teams have a significant positive effect on sales. Specifically, the coefficient on the POS variable (-0.025) suggests that a one position improvement in the ladder position will lead on average, to a 2.5 per cent increase in sales revenue. Beyond that the coefficient on the PASPOS variable (0.31) suggests that when a team finishes within the first six places on the ladder position during a three year period results into an increase on its sales up to 31 per cent. Consequently, teams with the opportunity to participate on European level enhance their sale making abilities. Not surprising greater attendance is positively associated to greater sales revenue. These results are consistent to the results found by Pinnuck & Potter (2006) on the Australian Football League.

Table 3: Empirical results on the determinants of sales revenue

| Variables | Coefficient | t-statistic |
|---------------------|-------------|-------------|
| Constant | 3.20 | 3.60* |
| POS | -0.025 | -2.80* |
| WIN | 0.0051 | 0.35 |
| PASPOS | 0.31 | 2.41** |
| LnATT | 0.58 | 3.07* |
| UNCERT | 0.21 | 0.60 |
| R ² -adj | 48.7% | |
| F-stat | 24.15* | |

*,** denotes significance at the 1% and 5% significance level respectively.

$$\text{Model 2: } \text{LnSALREV}_{it} = \beta_0 + \beta_1 \text{POS}_{it} + \beta_2 \text{WIN}_{it} + \beta_3 \text{PASPOS}_{it} + \beta_4 \text{LnATT}_{it} + \beta_5 \text{UNCERT}_{it} + e_{it}$$

Where, LnSALREV is the natural logarithm of net sales revenue, LnATT is the natural logarithm of the number of tickets that each team has issued in a given period, POS is the position the team has finished on the end of the season, WIN is the number of wins achieved by the team in a given season, PASPOS is a dummy variable taking the value of (1) if the team has finished in the six first positions of the ladder in the previous three periods and zero otherwise, UNCERT is the leagues uncertainty measured by the ratio of the points that each team lags from the champion at the end of the season, divided by the total points of the champion team.

4.3 Results from Estimates of Profitability Equation

The final Table 4 presents the results from the estimation of model 3. All coefficients have the predicted sign yet only the SIZE and CF/TA variables are significant (0.18 and 0.11 respectively). These findings verify our assumption that large clubs may be able to generate superior performance since they can exploit economies of scale and organize their activities more efficiently resulting into increased profit streams compared to small clubs. Furthermore, the positive and significant coefficient on the CF/TA variable indicates that the ability of football clubs to convert assets into cash can help them to use their resources quickly so as to achieve higher levels of profitability.

However, the leverage, capital intensity and liquidity variables found insignificant. This result can be attributed to the special nature of this specific business organization. Football clubs operate mostly on their human resources (players and trainers) and their non-current assets and consequently this result may be driven by management decisions on their asset allocation on non-current assets, or the minimum importance of financial risk and asset management on profitability.

Table 4: Empirical results of the profitability equation

| Variables | Coefficient | t-statistic |
|---------------------|-------------|-------------|
| Constant | -3.21 | -2.34** |
| SIZE | 0.18 | 1.97** |
| LEV | -0.024 | -0.62 |
| CI | 0.026 | 0.50 |
| LIQ | 0.10 | 0.49 |
| CF/TA | 0.11 | 8.82* |
| R ² -adj | 38.3% | |
| F-stat | 18.54* | |

*,** denotes significance at the 1% and 5% significance level respectively.

$$\text{Model 3: } \text{PR}_{it} = \gamma_0 + \gamma_1 \text{SIZE}_{it} + \gamma_2 \text{LEV}_{it} + \gamma_3 \text{CI}_{it} + \gamma_4 \text{LIQ}_{it} + \gamma_5 \text{CF/TA}_{it} + e_{it}$$

Where PR is the ratio of earnings to sales, SIZE is the natural logarithm of total assets, LEV is the ratio of total debt to equity, CI is the ratio of assets to sales, LIQ is the ratio of current assets to current liabilities and CF/TA is the ratio of cash flow to total assets.

5. Concluding Remarks

The aim of this paper is to examine how the size and the profitability of the Greek football clubs are affected by their on-field performance. A key contribution of this study is to consider the specific factors (financial and non-financial) that contribute to football clubs' profitability. Being more specific, by examining firm specific characteristics such as leverage, liquidity, capital intensity and cash flows we provide an insight into the football costs that need to be invested and the managerial decisions need to be taken in order to achieve both a prosperous athletic and financial performance.

The results suggest that the level of attendance of the Greek professional football league is positively affected by the short and long run success of the football clubs but not on the uncertainty of the football league. Additionally, the short and the long run athletic success of the teams have a significant positive effect on sales suggesting that a one position improvement in the ladder position will lead on average, to a 2.5 per cent increase in sales revenue. Furthermore, the profitability analysis revealed that large clubs, by means of total assets, may be able to generate superior performance since they can exploit economies of scale and organize their activities more efficiently resulting into increased profit streams compared to small clubs. Finally, we find that football clubs with increased cash flows have the ability to use their resources quickly so as to achieve higher levels of profitability.

Our findings have implications for the growing body of empirical research on this field, as well as implications for the administrators of the Greek football federation and the managers of the Greek football teams. Specifically team managers can find the results very useful for receiving the proper decisions regarding team's on-field success, in order to improve their financial position.

Regarding future research we must consider additional variables in order to advance the explanatory power of the aforementioned models for instance membership level, stadium capacity, budget expenses etc. Also it will be interesting to examine the issue of the in-house talent development and its impact on the club's accounting disclosure and overall performance, and finally we must consider the on-going debate whether transfer fees paid to football clubs for acquiring players should be capitalized and amortized according to IAS 38.

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