

Annex I – Financial Distress

State of the Game

This annex provides a detailed analysis of financial distress, which is summarised in Section 3.4 of the State of the Game report. The annex:

- outlines the types of financial distress
- describes the previous literature on the causes and archetypes of financial distress
- presents an analysis of the predictors of financial distress

Types of financial distress

Financial distress arises when a club is unable to meet its financial obligations as they fall due. In practice, financial distress for English football clubs can be defined and observed in several ways. For the analysis presented in this annex and the main report, we consider financial distress across three escalating degrees of severity: overdue payables, formal insolvency procedures such as administration and Company Voluntary Arrangements (CVAs), and ultimately liquidation.

- **Overdue payables** occur when clubs fail to pay creditors on time, including HMRC, players, staff or other clubs. Often the earliest sign of financial distress, it typically reflects cash-flow pressures rather than insolvency, although persistent overdue payables may indicate deeper financial difficulties and can trigger regulatory action.¹
- **Administration** occurs when a licensed insolvency practitioner takes control of a club.² The aim is to rescue the club, achieve a better outcome for creditors than liquidation, or realise assets for creditors. Clubs can usually continue operating during administration, although sporting sanctions such as points deductions often apply.³
- A **Company Voluntary Arrangement (CVA)** is a legally binding agreement that restructures a club's unsecured debts, for example through reduced repayments or extended payment terms, allowing the club to continue trading.⁴ CVAs are commonly used to exit administration.⁵
- **Liquidation** is the most severe form of financial distress and involves winding up the club's corporate entity, selling its assets and distributing proceeds to creditors.⁶ League membership is terminated, although a successor or "phoenix" club may sometimes re-enter the pyramid at a lower level.

¹ For example, EFL clubs are subject to a number of measures (e.g. transfer embargoes and fee restrictions) should they fail to meet certain financial obligations such as paying transfer fees, player wages or amounts due to HMRC. EFL, '[Embargoes and Fee Restrictions](#)', accessed 1 October 2026

² Legislation.gov.uk, '[Insolvency Act 1986](#)', UK

³ EFL, '[EFL Regulations 2026/27](#)'

⁴ Legislation.gov.uk, '[Insolvency Act 1986](#)', UK

⁵ House of Commons, '[Culture, Media and Sport Committee: Written evidence submitted by R3, the insolvency trade body](#)', July 2012

⁶ GOV.UK, '[Liquidate your limited company](#)'

Previous literature on the causes and archetypes of financial distress

Several academic studies have analysed insolvency events in football to identify potential causes and archetypes of financial distress.⁷

Beech et al. (2010) identified five recurring ‘types’ of insolvency events among English clubs:⁸

- failures to cope with relegation
- failures to pay monies due to the UK government
- cases where ‘soft debts’ become ‘hard debts’⁹
- losses of stadium ownership
- ‘Repeat offenders’ that have entered insolvency more than once.

Some of these types of insolvency events are associated with sharp revenue shocks (i.e. relegation), others with short-term cash pressures and arrears (including tax liabilities) and others with balance sheet fragility and asset loss. Beech et al. note that these types are not mutually exclusive and that their research focuses on the symptoms of financial failure, rather than direct causal relationships. For example, the conversion of soft debt to hard debt is often precipitated by the transfer in ownership of a club’s stadium from the club to the owner.

Szymanski (2012, 2017) found empirical evidence that suggests insolvency is often preceded by a sustained deterioration phase, frequently coinciding with sporting decline.¹⁰ Szymanski plots average league rank for insolvent English clubs in the years surrounding insolvency and complements this with a regression analysis of negative performance and demand shocks. The analyses showed that in the years prior to insolvency, average league rank declined substantially (a drop, he notes, that almost inevitably implies relegation), while in earlier years the average rank was comparatively stable. The evidence also suggested that insolvencies are more likely to be caused by demand shocks (relative to sporting and revenue expectations) rather than irrational overspending. This pattern is consistent with insolvency functioning as an acute episode within a longer cycle of deterioration and attempted recovery.

⁷ This section presents a targeted review of the academic literature that examines the causes and archetypes of financial distress in football. This review is not completely exhaustive in all aspects of financial distress but reflects the key literature that is relevant to the common pathways framework and analysis that is presented in the main report. A broader literature review on different themes related to the economics of football can be found in the published review of academic literature on sporting success and spending prepared by Oxera Consulting on behalf of the IFR. This includes literature on unsustainable financial practices and insolvency.

⁸ Beech et al., ‘[Insolvency events among English football clubs](#)’, 2010

⁹ ‘Soft debt’ refers to funding, typically owner or benefactor loans, extended to a club with no expectation of repayment, effectively subsidising operations that would otherwise be unsustainable. As Beech et al. note, this model is common in English football, with many clubs dependent on an owner’s continued support. The debt becomes ‘hard’, or formally callable, when the owner withdraws, sells, or becomes unable to continue funding the club, frequently triggering an insolvency event ‘as the speed with which support is withdrawn may be dramatic’.

¹⁰ Szymanski, ‘[Insolvency in English professional football: Irrational exuberance or negative shocks?](#)’ 2012; Szymanski, ‘[Entry into exit: insolvency in English professional football](#)’, 2017.

A recent study by Evans (2024) identified four causal ‘scenarios’ for 33 historic insolvencies in English football:¹¹

- **Scenario 1: Demand shocks.** An exogenous event adversely affecting football club finance, such as the drops in revenues following the collapse of ITV Digital and Covid-19.
- **Scenario 2: Exuberance.** Over-spending on wages to finance sporting success, defined by a total wage increase greater than increases in revenue in the current or previous two years.
- **Scenario 3: Finance shocks.** The loss of a critical source of finance, defined by the sum of short-term loans and long-term debt due to owners and related parties, net of cash, which exceed total assets.
- **Scenario 4: Sporting distress.** The financial impact of pending relegation (in the current season) or actual relegation (in the previous season).

Evans used a multi-discriminant analysis to test which financial metrics are most correlated with, and therefore predictive of, insolvency events for each causal scenario. He found that:

- liquidity metrics were consistently associated with insolvency across all scenarios
- solvency and wage spending metrics were also good predictors of insolvency in combination with liquidity metrics for Scenario 2 and Scenario 3 insolvency events
- profitability measures were not significant predictors of insolvency events.

In a study of 234 European clubs, Alaminos and Fernandez (2019) used a combination of regression and neural network modelling to test the best predictors of financial distress. They found that low liquidity, high leverage, poor sporting performance and a smaller population in the club’s city were the best predictors of financial distress.¹²

Taken together, the academic literature on the types and causes of financial distress suggests that:

- **Clubs that became insolvent typically experienced a reduction in, or shock to, the finances flowing into the football club.** This could be in the form of a drop in revenue (for example, due to a demand shock or relegation) or an owner becoming unwilling or unable to continue financing the club (for example, cases where ‘soft debts’ become ‘hard debts’). Ultimately, it is the inability of a club to fund its costs, either through revenue or owner funding, that leads to financial distress.
- **A range of factors make clubs more vulnerable to these shocks.** Examples include over-spending on wages or the prior sale of a club’s non-player assets. These behaviours are indicative of financial overreach and, in some cases, governance failures.

¹¹ Evans, ‘[The S-Score of financial sustainability for professional football clubs](#)’, 2024

¹² Alaminos and Fernandez, ‘[Why do football clubs fail financially? A financial distress prediction model for European professional football industry](#)’, 2019

- **Low liquidity is consistently the best predictor of a club entering distress.** While establishing causality is difficult, studies have demonstrated that liquidity metrics are good at distinguishing between clubs that entered distress and those that did not. While solvency and sporting measures do also appear to be associated with financial distress and insolvency in some circumstances, liquidity is consistently predictive.

Predictors of financial distress analysis

Predictors, or leading indicators, are quantitative metrics that are associated with a higher risk of a club entering financial distress. They are not necessarily the direct causes of distress; rather, they are characteristics observed more frequently among clubs that subsequently entered financial distress compared to those that did not.

The actual direct causes of financial distress, rather than predictors, are difficult to identify quantitatively. Financial distress typically results from the interaction of multiple factors, including both adverse shocks and underlying vulnerabilities that make clubs less resilient to those shocks. These factors often operate over different time horizons and may be closely intertwined. As a result, observed indicators can reflect the causes of financial distress, early symptoms of deteriorating financial health, or even actions taken by clubs in response to emerging financial difficulties. In addition, some potentially important drivers of financial distress, including governance arrangements or ownership dynamics, are not readily captured in quantitative datasets. For these reasons, the analysis in this annex focuses on identifying predictors of financial distress rather than establishing direct causal relationships.

To assess potential predictors of financial distress, we undertook two complementary analyses:

- **Characteristics of distressed clubs.** A comparison of average financial and sporting metrics between clubs that entered financial distress and those that did not.
- **Econometric analysis of financial distress predictors.** Statistical analysis of the association between different financial metrics and the probability of a club entering distress, while controlling for other factors. This helps identify which metrics may be the most useful predictors of distress.

The remainder of this section outlines the method, results and limitations for each analysis, starting with a description of the data used for both analyses.

Data

The analysis covers the Premier League and EFL from the 2021/22 season to the 2025/26 season.¹³ It primarily relies on two sets of data:

1. data required to identify financially distressed clubs
2. club financial data

Data required to identify financially distressed clubs

Financially distressed clubs are defined as those that incurred significant overdue payables procedures during the period. These clubs were identified using Premier League and EFL data on the amounts and durations of overdue payables owed by clubs that were reported to the leagues.¹⁴ Using overdue payables as the definition of financial distress requires a level of judgement in two areas:

- **The level and duration of overdue payables that constitute financial distress.** To avoid insignificant cases, we exclude instances where there is evidence that the overdue payables were less than 30 days in duration, involved very small sums (less than £50k) or that appeared to be related to administrative or communication errors.
- **When a club is considered to have entered financial distress.** One option is to use the first season in which the club incurred overdue payables as the season that the club entered financial distress. Another option is to use the season in which the club entered formal insolvency proceedings (if relevant for that specific club). In many cases these points fall in the same season, but where they do not, we have made club-specific choices based on the dates, levels and frequency of overdue payments to determine the season that each club is considered to have entered financial distress. This typically involved selecting the season in which the main period of continuous overdue payables began.

This method identified seven clubs in the top four tiers that entered financial distress from 2021/22 to 2025/26. We also excluded clubs that entered financial distress between 2018/19 and 2020/21, identified using publicly available sources, from the analysis sample.¹⁵ This was done to avoid potential contamination of the comparison group of non-distressed clubs, as clubs that had recently experienced distress may have continued to exhibit the financial characteristics associated with distress during the period of analysis, despite not entering a new distress event.

¹³ The National League was excluded from the analysis due to a lack of historic data

¹⁴ Data received from the Premier League and EFL in response to IFR requests for information on instances and amounts of overdue payables reported to the leagues.

¹⁵ These clubs were identified based on those identified as entering insolvency procedures in Deloitte (2022), '[Annual Review of Football Finance 2022](#)', accessed 1 October 2026, and other publicly reported instances of overdue payables during the period, namely: BBC Sport, '[Oldham Athletic face High Court winding-up petition over unpaid taxes](#)', 2020, accessed 1 October 2026; BBC Sport, '[Notts County: New Danish owners pay two months of overdue wages at Meadow Lane](#)' 2019, accessed 1 October 2026; BBC Sport, '[Macclesfield Town FC wound up in High Court over debts exceeding £500,000](#)', 2020, accessed 1 October 2026.

Club financial data

Financial data for distressed and non-distressed clubs in the EFL and Premier League from 2021/22 to 2025/26 was collected via league RFIs.¹⁶ The collection and cleaning of this data, and variables created using it, are detailed further in Annex A – Financial information.

Combined dataset

The data identifying distressed clubs and club financial data are combined to create a dataset that, for each club-season combination (for example, Club A in the 2024/25 season), outlines financial metrics for that season and the two seasons prior (for example, Club A total revenue in 2024/25, 2023/24 and 2022/23). In total, this dataset includes 410 unique club-season combinations out of a possible 415, after accounting for exclusions to limit potential bias.^{17 18}

Characteristics of distressed clubs

Method and results

To assess the characteristics of distressed clubs, we compare the average financial and sporting metrics of the seven clubs in the top four tiers that entered financial distress with the rest of the clubs during the period 2021/22 to 2025/26. A broad set of metrics were selected for analysis to give a view of differences across profitability, costs, liquidity, solvency, external financing and league position.

Profitability and costs

Chart I.1 compares a set of average profitability and cost metrics for the two groups of clubs. The black lines are for club-season combinations where the club did not enter distress during the period, and the red lines are for club-season combinations where the club did enter distress. The horizontal axis shows time relative to the distress event:

- T-2 = two seasons before the club entered distress.
- T-1 = one season before distress.
- T = the season the club entered distress.

The further apart the red and black lines are, the larger the difference between distressed and non-distressed clubs.

¹⁶ Data received from the Premier League and EFL in response to IFR requests for information.

¹⁷ The full dataset included 455 unique club-season combinations out of a possible 460. 45 club-season combinations were excluded from this dataset where they were (a) for clubs that entered financial distress in the three years prior to our period of analysis (i.e. 2018/19 to 2020/21), or (b) seasons for clubs that entered distress during the period but were not the season in which that club actually entered distress (i.e. the season the club actually entered distress already captures data for that season and the two seasons prior). These exclusions were made to avoid contamination of the comparison group of non-distressed clubs.

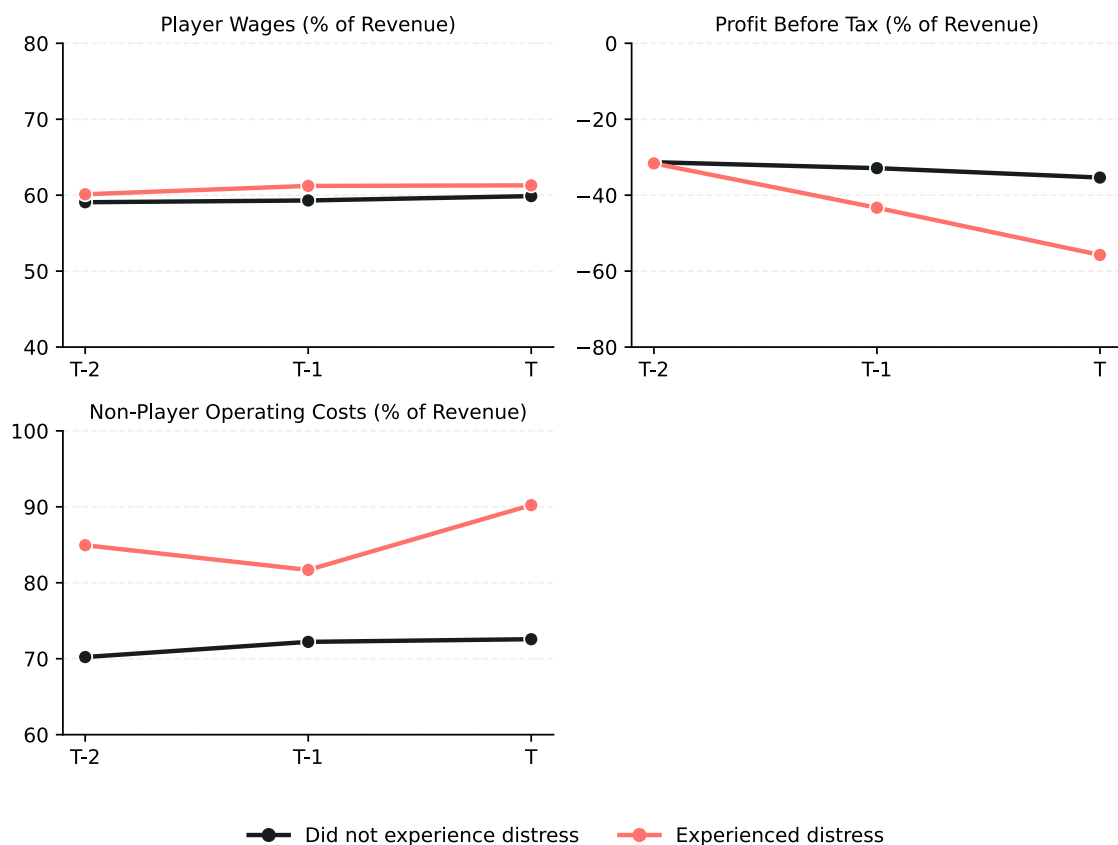
¹⁸ Note, not all club-season combinations include a complete set of financial variables due to incomplete or missing data. For example, for club-season combinations for the 21/22 season, data for the two seasons prior (e.g. 20/21 and 19/20) is not available.

The chart shows that clubs that entered distress:

- **spent similar amounts on player wages, as a % of revenue**, as non-distressed clubs in the years before entering distress
- **became increasingly loss-making as they approached distress**, with losses increasing from roughly 30% of revenue to over 50%
- **had persistently higher non-player operating costs**, as a % of revenue, compared to clubs that did not enter distress

Clubs that experienced financial distress tended to have higher proportional non-player operating costs and made larger proportional losses.

Chart I.1: Average cost and profit metrics for clubs that entered financial distress vs. clubs that did not, 2021/22 – 2025/26



Source: IFR analysis of data received from the Premier League and EFL in response to IFR requests for information.

Note: The chart above shows a set of average P&L metrics for clubs that entered financial distress during the period compared to clubs that did not experience financial distress during the period. The black lines are for clubs that did not experience financial distress during the period, and the red lines are clubs that did experience financial distress. The horizontal axis shows time relative to the distress event.

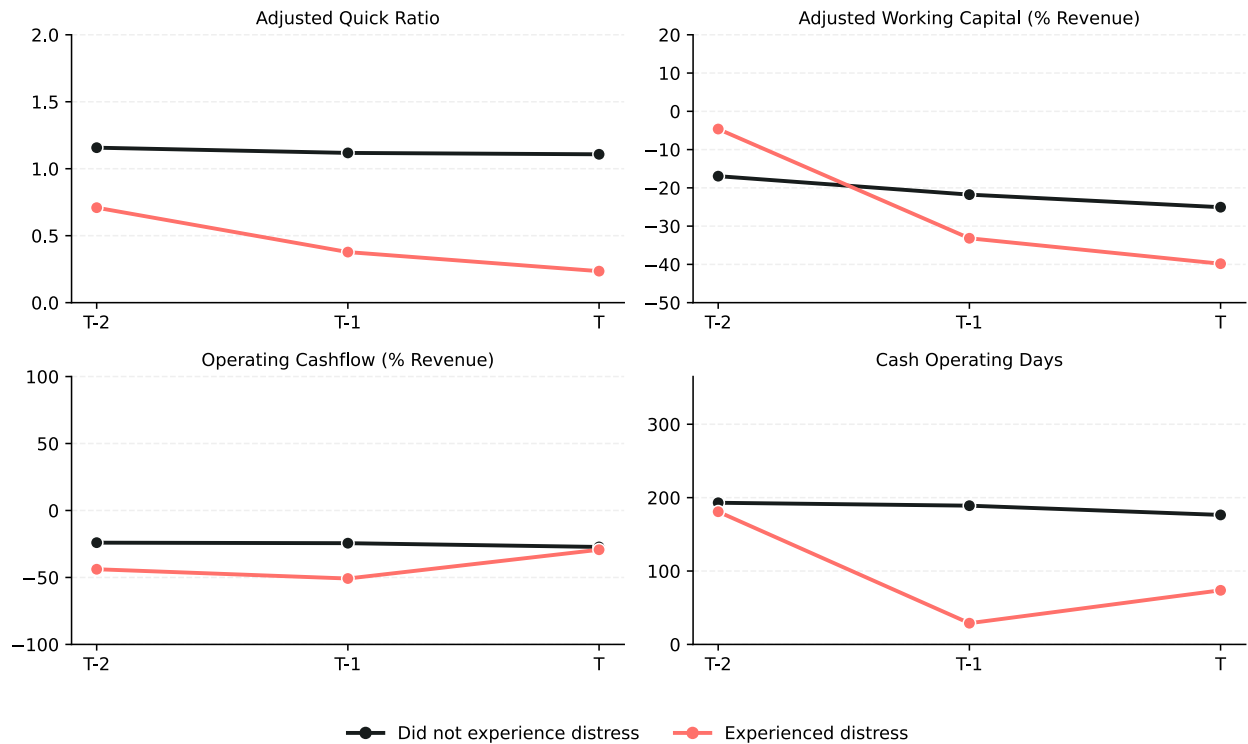
Liquidity

Chart I.2 outlines a similar comparison but for liquidity metrics. For each of these metrics, higher values indicate stronger liquidity and a greater ability to meet short-term obligations. Given that, by definition, a club enters financial distress when it is unable to meet its short-term obligations, we would expect liquidity to be worse for clubs that experienced distress. In some cases, liquidity levels may not be the original cause of financial distress but instead a symptom of (or a response to) broader financial issues. Taking each metric in turn:

- **Adjusted quick ratio** measures a club's ability to meet its short-term liabilities using its most liquid assets. On average, clubs that did not enter distress maintained a relatively stable ratio of around 1.1 throughout the period. Clubs that entered distress started at around 0.7 two years before entering distress and declined sharply to around 0.25 by the season of distress. This suggests that clubs entering distress become progressively less able to meet their short-term obligations from readily available resources.
- **Adjusted working capital (% revenue)** compares a club's short-term assets and liabilities relative to its revenue. Clubs that entered distress experienced a much larger fall in the metric, moving from slightly negative at T-2 to around -40% of revenue by the time they entered distress. This indicates that distressed clubs became increasingly reliant on cash inflows to meet their short-term obligations.
- **Operating cashflow (% revenue)** measures the cash generated or consumed by day-to-day operations relative to revenue. Both groups exhibited negative operating cashflows but clubs entering distress tended to have somewhat worse cashflows in the years before distress. However, by the time these clubs entered distress the gap between the two groups narrowed considerably. Intuitively, this may be because as a club fell closer to financial distress, mitigation efforts were made to reduce costs, thereby potentially improving the operating cashflow.
- **Cash operating days** estimates how long a club could continue operating using its available cash reserves, capped at 365 days. Non-distressed clubs consistently held around 180-190 days of cash reserves, while distressed clubs fell from around 180 days at T-2 to around 30 days at T-1, before partially recovering to around 75 days in the season of distress.

Clubs that experienced financial distress tended to have lower levels of liquidity.

Chart I.2: Average liquidity metrics for clubs that entered financial distress vs. clubs that did not, 2021/22 – 2025/26



Source: IFR analysis of data received from the Premier League and EFL in response to IFR requests for information.

Note: The chart above shows a set of average liquidity metrics for clubs that entered financial distress during the period compared to clubs that did not experience financial distress during the period. The black lines are for clubs that did not experience financial distress during the period, and the red lines are clubs that did experience financial distress.

Solvency

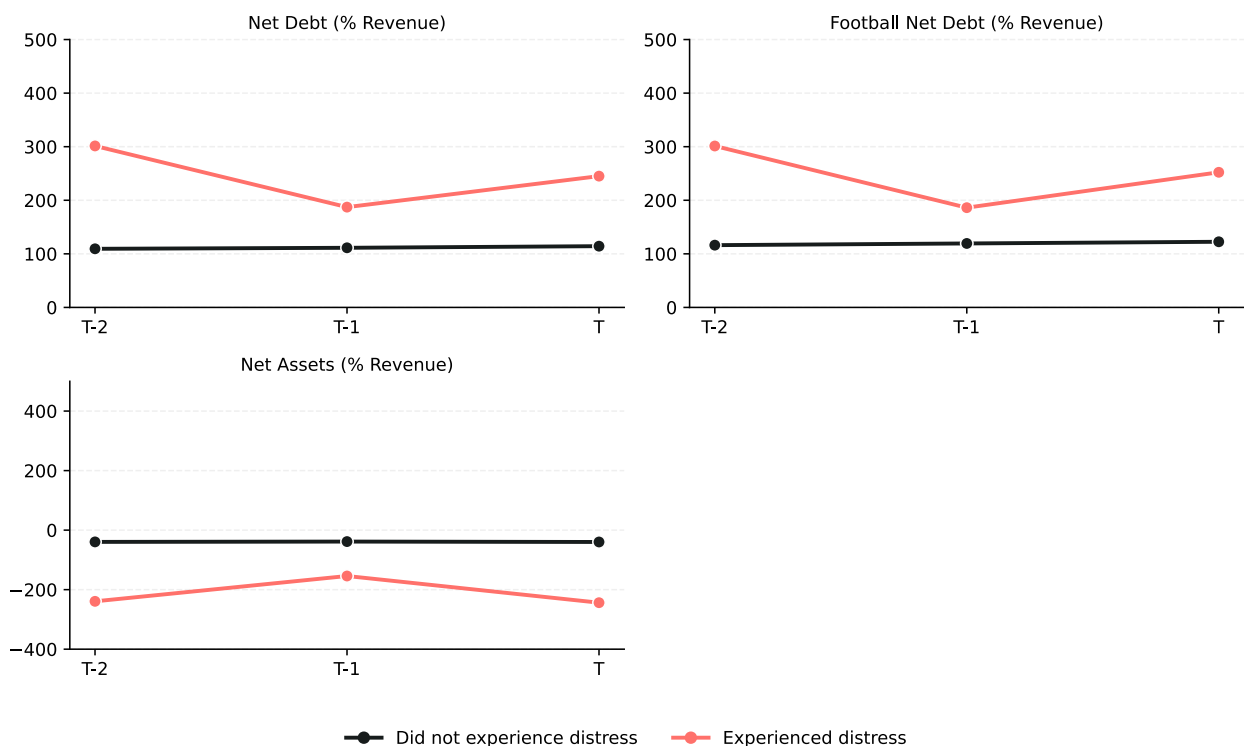
Chart I.3 shows how solvency and indebtedness differed between clubs that experienced distress and those that did not. The three balance sheet metrics – net debt to revenue, football net debt to revenue and net assets to revenue – all point to the same conclusions:

- On average, clubs that entered financial distress carried higher levels of debt relative to revenue and had weaker balance sheets than clubs that did not enter distress.

- Distressed clubs typically had debt levels equivalent to around 2–3 times annual revenue and consistently reported much larger negative net asset positions.
- This suggests that clubs entering distress were generally more highly leveraged and had less capacity to absorb financial shocks, making them more vulnerable to sudden reductions in revenue or owner funding.

Clubs that experienced financial distress tended to have higher proportional levels of debt.

Chart I.3: Average solvency metrics for clubs that entered financial distress vs. clubs that did not, 2021/22 – 2025/26



Source: IFR analysis of data received from the Premier League and EFL in response to IFR requests for information.

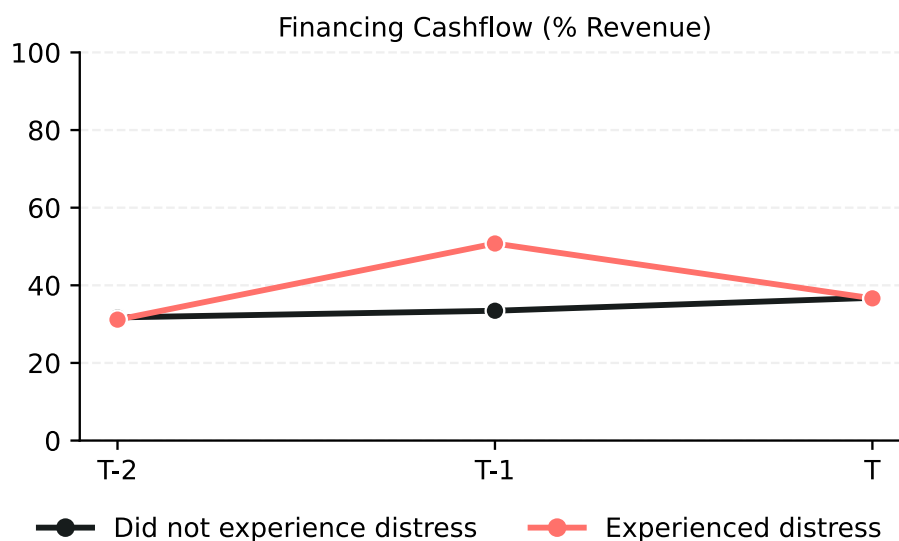
Note: The chart above shows a set of average solvency metrics for clubs that entered financial distress during the period compared to clubs that did not experience financial distress during the period. The black lines are for clubs that did not experience financial distress during the period, and the red lines are clubs that did experience financial distress.

Financing

Financing cashflow as a percentage of revenue measures the extent to which clubs rely on external sources of funds, such as owner injections or borrowing, relative to revenue. Chart I.4 shows that average financing cashflows were broadly similar between clubs that entered financial distress and those that did not. While distressed clubs exhibited a notable increase in financing cashflows one year prior to entering distress, this difference largely disappears by the year of distress. This may indicate that some clubs seek additional external financing as financial pressures emerge, although overall the metric does not appear to distinguish distressed clubs from non-distressed clubs as clearly as the liquidity or solvency measures. This may be because many clubs are reliant on external funding, but this reliance only creates a distress issue if that source of external finance can no longer fund the club.

Clubs that experienced financial distress tended to have similar levels of proportional external financing as those that did not experience distress.

Chart I.4: Average financing cashflow for clubs that entered financial distress vs. clubs that did not, 2021/22 – 2025/26



Source: IFR analysis of data received from the Premier League and EFL in response to IFR requests for information.

Note: The chart above shows the average financing cashflow as a percentage of revenue for clubs that entered financial distress during the period compared to clubs that did not experience financial distress during the period. The black line is for clubs that did not experience financial distress during the period, and the red line is for clubs that did experience financial distress.

Sporting metrics

Alongside the financial differences between clubs that experienced distress and those that did not, we also see differences in sporting success between the two groups. On average, distressed clubs:

- **fell 8 places in the football pyramid** in the season they entered financial distress compared to the previous season.
- **were more likely to have been relegated in the prior season.** 29% of clubs that experienced financial distress during the period had been relegated in the prior season.

This supports the view that sporting shocks may have a role to play, or at least be associated with, a heightened risk of financial distress.

Limitations

This analysis provides a descriptive comparison of the characteristics of distressed and non-distressed clubs. However, the results are subject to several limitations. Most notably, only seven clubs entered financial distress in the top four tiers during the period analysed, limiting the extent to which average characteristics can be generalised. With such a small sample of distress events, the results may be sensitive to the specific circumstances of individual clubs or outliers.

In addition, comparisons based on average values do not account for the interaction between different financial indicators. Consequently, while the analysis identifies metrics that appear to differ between distressed and non-distressed clubs, it cannot determine which factors are most informative once other characteristics are controlled for. The analysis also compares distressed and non-distressed clubs across all divisions. As a result, some of the differences observed between distressed and non-distressed clubs may partly reflect structural differences between leagues rather than factors that are independently associated with financial distress.

For these reasons, the average comparisons should be viewed as indicative rather than conclusive. The econometric analysis, outlined below, helps address some of these limitations.

Conclusions

Despite its limitations, this analysis indicates that **clubs entering financial distress tend to exhibit weaker profitability, poorer liquidity and weaker balance sheets compared to clubs that do not enter distress**, with many of these differences emerging one to two years before a distress event. Taken together, these findings suggest that deteriorating liquidity, high leverage and persistent losses could provide useful early warning indicators of financial distress.

Econometric analysis of financial distress predictors

While the descriptive analysis above highlights several characteristics that appear to distinguish distressed clubs from non-distressed clubs, it does not establish which factors have the strongest statistical association with distress once other club characteristics and structural differences between leagues are taken into account. Econometric modelling helps address this by analysing multiple financial and sporting indicators simultaneously, allowing us to assess which metrics are most closely associated with financial distress while also controlling for differences between divisions. The results should only be interpreted as evidence of a predictive association rather than causation, but they provide a useful view of which metrics may act as leading indicators of distress.

Method

We use the same combined dataset and a logit regression approach to test the association between the probability of entering financial distress and the same set of metrics included in the previous analysis.

A potential challenge with this approach is that some of the explanatory variables in the logit regressions (i.e. the profitability and costs, liquidity, solvency, financing and sporting metrics) may be correlated with one another. This is particularly likely for variables that measure similar aspects of a club's financial position. For example, different liquidity metrics may capture related features of financial cashflows, while multiple solvency measures may provide overlapping information about a club's financial resilience. High levels of correlation between explanatory variables (multicollinearity) can make it more difficult to identify the independent association between any single type of metric and financial distress.¹⁹

To mitigate these risks, our base specifications (outlined below) exclude pairs of variables within the same metric group (for example, within profitability and costs, liquidity, solvency, financing or sporting) that have an absolute correlation greater than 0.4.²⁰ Prior to excluding highly correlated variables, formal multicollinearity diagnostics indicated substantial overlap between the available metrics. Across the full set of candidate variables, the maximum variance inflation factor (VIF) was 104, and the maximum condition index was 31, both of which suggest potentially problematic multicollinearity. Following the exclusion of highly correlated variables, the maximum VIF and condition index fell to 2.1 and 2.9, respectively. These values are well below commonly used thresholds for concern and indicate that the approach helps reduce overlap between explanatory variables while retaining information from each broad group of metrics.²¹

¹⁹ In practice, this can result in unstable regression coefficient estimates, larger standard errors and greater sensitivity of model results to the inclusion or exclusion of individual variables.

²⁰ 0.4 was selected as a conservative threshold to limit potential multicollinearity between variables measuring similar aspects of club finances. While there is no universally accepted correlation threshold for variable exclusion, correlations above 0.4 are often considered indicative of a moderate relationship. Given the small number of distress events available for analysis, a relatively conservative threshold was adopted to improve coefficient stability while retaining at least one representative variable from each metric grouping. This exercise excludes the following variables from their respective groups in our base specifications:

- Profitability and costs: Profit before tax (% of revenue)
- Liquidity: Cash Operating Days, Adjusted Working Capital (% of revenue)
- Solvency: Football Net Debt (% of revenue), Net Assets (% of revenue)

²¹ Where one variable from a highly correlated pair is excluded from the base specifications, sensitivity testing is undertaken using alternative specifications that substitute the excluded variable for the included measure. This allows us to assess whether the main results are robust to reasonable alternative choices of indicator within each grouping.

Models

Our approach uses three base models. The first model, outlined in equation (1), tests the contemporaneous association between the probability of a club entering distress in a given season and a range of metrics in that same season:

$$P(\text{Distress}_{it} = 1) = \frac{1}{1 + e^{(-Z_{it})}}$$

Where:

$$(1) Z_{it} = \alpha + \beta_1 \text{Profitability and costs}_{it} + \beta_2 \text{Liquidity}_{it} + \beta_3 \text{Solvency}_{it} + \beta_4 \text{Financing}_{it} + \beta_5 \text{Sporting}_{it} + \delta X_{it} + \epsilon_{it}$$

In the above equation:

- Distress_{it} is an indicator equal to one if club i enters financial distress in period t , and zero otherwise
- $\text{Profitability and costs}_{it}$ represents a vector of non-correlated profitability and cost metrics for club i at time t .²² In our base specification, these metrics are player wages (% of revenue) and non-player operating costs (% of revenue)
- Liquidity_{it} represents a vector of non-correlated liquidity metrics for club i at time t . In our base specification, these metrics are adjusted quick ratio and operating cashflow (% of revenue)
- Solvency_{it} represents a vector of non-correlated solvency metrics for club i at time t . This includes just one metric, net debt (% of revenue)
- Financing_{it} represents financing cashflow (% of revenue) for club i at time t
- Sporting_{it} represents club i 's rank at time t , as a measure of sporting performance²³
- X_{it} represents division fixed effects, included to control for structural differences between each league that may influence the probability of a club entering financial distress²⁴
- ϵ_{it} is the error term

The second model, outlined in equation (2), examines the same relationship but with the key explanatory variables lagged by one season. This tests the association between the probability of a

²² Where “non-correlated” is defined as including no pairs of metrics that have an absolute correlation of 0.4 or higher.

²³ Rank is defined as the club's position in the top four tiers of English football, with the top of the Premier League having a rank of one, and the bottom of League Two having a rank of 92. When a club falls further down the pyramid, its rank increases.

²⁴ Where division fixed effects are used, Premier League observations are excluded from the estimation sample. This is because no financial distress events were observed in the Premier League during the analysis period, preventing meaningful estimation of division-specific effects and potentially introducing separation issues in the logit regression. Sensitivities of the base models that include Premier League observations but exclude division fixed effects were estimated and are summarised in the *Results* section.

club entering distress in season t and the club's financial and sporting performance in the previous season ($t-1$), helping to identify useful short-term leading indicators.

$$(2) Z_{it} = \alpha + \beta_1 \text{Profitability and costs}_{i,t-1} + \beta_2 \text{Liquidity}_{i,t-1} + \beta_3 \text{Solvency}_{i,t-1} + \beta_4 \text{Financing}_{i,t-1} + \beta_5 \text{Sporting}_{i,t-1} + \delta X_{it} + \epsilon_{it}$$

Finally, the third model, outlined in equation (3), replaces the level explanatory variables with their changes from $t-1$ to t . This tests whether recent changes in a club's financial and sporting position, rather than their absolute levels, are associated with a higher probability of entering financial distress.

$$(3) Z_{it} = \alpha + \beta_1 \Delta \text{Profitability and costs}_{it} + \beta_2 \Delta \text{Liquidity}_{it} + \beta_3 \Delta \text{Solvency}_{it} + \beta_4 \Delta \text{Financing}_{it} + \beta_5 \Delta \text{Sporting}_{it} + \delta X_{it} + \epsilon_{it}$$

As noted previously, where variables are excluded from this base specification due to high correlation, alternative sensitivity specifications were estimated to test the robustness of the results to different indicator choices.

Results

Core results

Table I.1 reports the results of the three core logit models, displaying the average marginal effects of each metric on the probability of a club entering financial distress.

Overall, the results suggest that measures of liquidity are the most consistent predictors of financial distress. In both the contemporaneous and lagged models, the adjusted quick ratio is negatively associated with the probability of entering financial distress and is statistically significant at the 90% level. In the lagged model, operating cashflow as a percentage of revenue is also negatively associated with the probability of entering financial distress and is statistically significant at the 85% level. These findings are consistent with both the descriptive analysis and the academic literature, which indicate that clubs entering distress tend to have weaker liquidity positions than other clubs, both in the season they enter distress and the preceding seasons. While the estimated marginal effects are relatively small,²⁵ the results suggest that clubs that are less able to meet their short-term obligations are more likely to experience financial distress.

By contrast, the results provide limited evidence that the absolute levels of profitability, costs, indebtedness or external financing are associated with financial distress once other factors are controlled for. Player wage expenditure, non-player operating costs, net debt and financing cashflows are not statistically significant in either the contemporaneous or lagged specifications. This does not imply that these factors are unimportant in the development of financial distress, particularly in the longer term, which this analysis does not explore. Rather, it suggests that their

²⁵ For example, an one-unit increase in quick ratio is associated with a 5 to 6 percentage point decrease in the risk of entering financial distress in the contemporaneous and lagged models.

absolute levels may be less useful in distinguishing between higher-risk and lower-risk clubs in the short term compared to liquidity measures.

The year-on-year change model suggests that changes in a club's financial position may be more informative than absolute levels for some metrics. Increases in net debt are positively associated with the probability of distress, while increases in financing cashflows are negatively associated with the probability of distress. This is consistent with the view that clubs experiencing a deterioration in their balance sheet position face a heightened risk of financial distress, while greater access to external financing may help mitigate emerging financial pressures. The year-on-year change model also shows a significant positive association between worsening league rank and financial distress, suggesting that deteriorating sporting performance may accompany periods of financial difficulty.

One of the more counterintuitive findings is that improvements in operating cashflow are positively associated with the probability of financial distress in the year-on-year change model. This may reflect clubs with already weak liquidity positions taking mitigating actions as financial difficulties emerge, such as reducing costs or generating short-term cash savings. More generally, this result illustrates the challenge of distinguishing between the causes of financial distress, the symptoms of deteriorating financial health and the actions taken by clubs in response to emerging financial pressures.

Despite relatively few variables being consistently statistically significant, the models exhibit a strong ability to distinguish between clubs that entered financial distress and those that did not. The relatively small number of consistently significant predictors is not unexpected given the limited number of distress events in the sample, the different time horizons captured by each specification, and the fact that financial distress often arises from the interaction of multiple factors rather than any single indicator. Nevertheless, all three models achieve high levels of in-sample discriminatory power, with AUC values ranging from 0.86 to 0.90.²⁶ This suggests that, when considered together, the included financial and sporting metrics contain useful information for identifying clubs at elevated risk of financial distress, even where individual predictors are not consistently significant across all specifications. A variable not being statistically significant does not mean that it is not relevant to an overall assessment of financial soundness for a football club. As noted throughout this annex, these results should be interpreted as evidence of predictive associations rather than causal relationships, and the estimated marginal effects should be treated as indicative rather than precise estimates of the impact of any particular variable.

²⁶ AUC (Area Under the Curve) measures a model's ability to distinguish between clubs that entered financial distress and those that did not. An AUC of 0.5 indicates no predictive power beyond random chance, while an AUC of 1 indicates perfect discrimination between distressed and non-distressed clubs. Values above 0.8 are generally considered to indicate strong predictive performance. The reported AUC values here suggest that the models perform well at distinguishing between clubs that subsequently entered financial distress and those that did not.

Table I.1: Base Model Results: Average Marginal Effects

	(1) Contemporaneous model, t	(2) Lagged Model, $t-1$	(3) YoY Changes Model, Δ
Player Wages (% revenue)	-0.0004 (0.0006)	-0.0012 (0.0009)	0.0006 (0.0006)
Non-player operating costs (% revenue)	0.0004 (0.0006)	-0.0001 (0.0004)	0.0001 (0.0004)
Adjusted quick ratio	-0.0551* (0.0335)	-0.0513* (0.0299)	0.0065 (0.0054)
Operating cashflow (% revenue)	0.0002 (0.0002)	-0.0008+ (0.0005)	0.0009*** (0.0004)
Net Debt (% revenue)	0.0000 (0.0000)	-0.0000 (0.0000)	0.0003*** (0.0001)
Financing cashflow (% revenue)	-0.0001 (0.0002)	0.0001 (0.0002)	-0.0003** (0.0002)
Rank	0.0005 (0.0018)	-0.0034 (0.0024)	0.0025* (0.0014)
League One (Division FE)	-0.0420 (0.0458)	0.0824 (0.1403)	-0.0287 (0.0199)
League Two (Division FE)	-0.0485 (0.1129)	0.4246 (0.3284)	-0.0021 (0.0212)
Observations	256	197	188
Log-likelihood	-25.6	-20.8	-18.5
Pseudo R-Squared	0.203	0.225	0.305
AUC	0.900	0.878	0.862

Average marginal effects are reported. Cluster-robust standard errors at the club level are shown in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$, + $p < 0.15$

Source: IFR analysis of data received from the Premier League and EFL in response to IFR requests for information.

Sensitivity Analyses

Two sensitivity analyses were undertaken to assess the robustness of the core results to alternative modelling choices.

- **Correlated variable sensitivities.** These analyses focused on variables that were excluded from the base specifications due to high pairwise correlations with other variables in the same metric grouping. For each excluded variable, an alternative specification was estimated that substituted the excluded measure for the correlated variable included in the base models. Across these specifications, the headline findings remained unchanged. In the contemporaneous and lagged models, liquidity measures continued to be the only consistently significant predictors of financial distress. Regardless of the specific indicator included, the results consistently pointed to weaker liquidity being associated with a higher short-term probability of entering financial distress. The key findings from the year-on-year change models were similarly robust to alternative variable choices. These results suggest that the headline conclusions are not driven by the particular choice of indicator within each metric grouping.
- **Premier League inclusion.** We re-estimated the models including Premier League observations. Because no Premier League clubs entered financial distress during the analysis period, these specifications omitted division fixed effects to avoid separation within the models. The inclusion of Premier League observations did not affect the core results. The statistically significant associations identified in the contemporaneous, lagged, and year-on-year change models were unchanged, providing further evidence that the core findings are robust to reasonable variations in model specification.

Limitations

The results presented in this annex should be interpreted in the context of several important limitations:

- **Limited number of distress events.** The analysis is based on a relatively small number of observed financial distress events. Only seven clubs in the top four tiers entered financial distress during the period covered by the analysis, which limits the statistical power of the results and increases the likelihood that findings may be influenced by the circumstances of individual clubs. In addition, the National League is excluded due to data constraints, meaning that distress events occurring outside the top four tiers are not captured. The definition of financial distress is also based on significant overdue payables reported to the leagues. As a result, the analysis may not capture other forms of financial difficulty, such as defaults on payments to suppliers or other creditors that were not reported to the leagues.
- **Omitted variables.** The analysis is necessarily limited to variables that are observable and available in our datasets. While the models include a broad range of financial and sporting indicators, they may not capture other potentially important factors that could influence the probability of financial distress. These include club-specific governance arrangements, ownership structures, strategic decision-making and other organisational characteristics. To

the extent that these omitted factors are associated with financial distress outcomes, the estimated relationships may not fully reflect the underlying drivers of financial distress.

- **Inability to establish causality.** The analysis identifies statistical associations between financial and sporting indicators and the likelihood of financial distress, but it does not establish clear causal relationships. Financial distress often develops through the interaction of multiple shocks and vulnerabilities over time, making it difficult to disentangle causes from symptoms. Some indicators may reflect underlying causes of distress, others may capture the consequences of deteriorating financial health, and some may represent actions taken by clubs in response to emerging financial difficulties. Therefore, identified relationships should not be interpreted as evidence that changes in a particular metric directly cause financial distress.

Taken together, these limitations mean that the results should be interpreted as evidence of predictive associations. The estimated average marginal effects show which financial and sporting indicators are most closely associated with financial distress within the available data, but they should not be interpreted as precise point estimates of the impact of any particular variable on the probability of a club entering financial distress.

Conclusions

Overall, the econometric analysis suggests that:

- **Liquidity measures are the most consistent predictors of financial distress.** Clubs with weaker liquidity positions, including lower adjusted quick ratios and weaker operating cashflow generation, are more likely to enter financial distress in the current or subsequent season.
- **Changes in a club's financial position may be more informative than absolute levels for some metrics.** In particular, increases in indebtedness and reductions in external financing were associated with a higher probability of financial distress in the year-on-year change specifications, suggesting that deteriorating financial conditions can provide useful indicators of emerging distress.
- **The results are consistent with the academic literature on financial distress.** The analysis supports previous findings that liquidity is among the strongest predictors of financial distress, while also highlighting the importance of deteriorating sporting performance and financial resilience in the period leading up to distress events.
- **Financial metrics can provide useful early warning indicators of financial distress risk.** While no single metric is sufficient to identify clubs at risk and the wider context remains important, the models demonstrate a strong ability to distinguish between distressed and non-distressed clubs and provide evidence that financial metrics can help identify clubs that may require closer monitoring.

Notwithstanding the limitations of the analysis outlined above, the consistency of these findings across alternative specifications and sensitivity tests provides confidence that they capture meaningful associations between club characteristics and financial distress risk. As such, they provide a useful evidence base for assessing financial vulnerability and identifying clubs that may be at heightened risk of experiencing financial distress.