




Adam Metelski  <https://orcid.org/0000-0003-1016-7579>

Poznań University of Economics and Business, Institute of Socio-Economics, Department of Education and Personnel Development, Poznań, Poland, adam.metelski@ue.poznan.pl

Money and Uncertainty of Outcome in Modern Sports Based on the Example of Football

Abstract:

One of the fundamental aspects of professional football is competition, which not only captivates fans but also drives its economic success. Money undeniably plays a significant role in determining sports outcomes, as clubs with larger budgets often possess better players. This article aims to examine the relationship between the market value of football clubs' squads and their performance in the top 15 European leagues, as per the UEFA ranking. Among these leagues, Manchester City boasts the highest players market value in Europe, estimated at 1,110 million EUR, accounting for a mere 11.21% of the total market value of all English Premier League players. In summary, over the course of the last five seasons, out of 75 possible champions across the analysed leagues, the team with the most expensive squad has emerged victorious on 54 occasions. Consequently, it prompts consideration as to whether any measures should be taken to foster greater balance and to reduce the domination of wealthy teams in national football leagues.

Keywords:

football, uncertainty of outcome, sports finance

JEL:

G10, J00, J20

1. Introduction

One of the most essential aspects of professional football is competition, which is a key factor that makes the sport both attractive to fans and financially successful (Pawlowski, Breuer, Hovemann, 2010). This attribute can be interpreted as the uncertainty of the outcome, a concept that has implications for financial and sporting performance in professional team sports, as well as economics (Plumley, Wilson, Ramchandani, 2017). Football is particularly susceptible to unpredictability among all sports (Mackenzie, Cushion, 2013). The performance of footballers and teams is reliant on numerous factors, such as match importance, score, location, opposition, the number of recovery days, and the tactical system employed (Paul, Bradley, Nassis, 2015). Since football is a low-scoring sport, a small mistake or moment of brilliance can entirely alter the outcome of a match. For instance, a team can win 1–0 after a single good shot. In contrast, in other team sports, such as basketball, handball, or volleyball, just one successful action does not determine a team's victory or defeat. In football, the result of a game is usually uncertain, and even the most powerful and talented teams can be defeated by underdogs. Sometimes, an unexpected team may even win a major tournament, as evidenced by Greece's victory at the 2004 European Championship (Kokkinidis, 2022) or Leicester City's Premier League title in 2016 (Chroust, 2022). This unpredictability makes football more exciting for fans since they are not sure what will happen on the field. The uncertainty of outcome also generates a sense of drama and tension that can be thrilling to watch. Fans are often drawn to matches where the outcome is uncertain, as they are more likely to be on the edge of their seats and emotionally invested in the outcome. From a commercial perspective, the uncertainty of outcome is essential because it creates excitement and anticipation that can boost ticket sales, television ratings, and other revenue streams.

This article aims to examine the relationship between the market value of football clubs' squads and their performance in the top 15 European leagues, as per the UEFA ranking. The adopted hypothesis states that football clubs boasting higher player valuations tend to achieve greater success in their respective national football leagues when compared to clubs with less valuable players. This means that the greater the value of a given club's players, the higher it ranks in the league at the end of the season. Exploring the topic of uncertainty of outcome in football holds significant importance for several reasons. Understanding the factors that contribute to the unpredictability of football outcomes allows for a deeper understanding of the sport and the strategies implemented by teams and players to maximise their chances of success on the field (Alavy et al., 2010; Buraimo, Simmons, 2015). However, it is worth noting that some argue that the significance of uncertainty of outcome may not be as paramount in determining the popularity of matches (Pawlowski, Anders, 2012), with suggestions that the star status of players may have a greater impact (Buraimo, Simmons, 2015).

The article also delves into the significance of finances in football. Money plays a crucial role in the sport, exerting a substantial impact on a team's success both on and off the field. Financial resources enable clubs to acquire top-quality players, who often serve as the key to winning matches and championships. Acquiring such players typically comes at a high cost, and the greater the financial resources a club possesses, the more likely it is to afford them. Hence, clubs with substantial financial backing often enjoy greater success. However, exceptions to this rule exist, as illustrated by, for example, Paris Saint Germain's struggles in European competitions (Rutzler, 2023). Money not only facilitates player acquisitions but also allows clubs to invest in other crucial aspects of the game, such as training facilities, sports science departments, and scouting networks. Similar to other sports, football is also exploring the utilisation of statistics to enhance performance, as previously observed in baseball (Lewis, 2003). These resources aid in player development and talent identification, and also provide clubs with a competitive advantage.

2. Literature Review

The market potential of football is exemplified by various indicators. For instance, the 2022 World Cup final attracted a staggering 1.5 billion viewers (FIFA, 2023). Other football tournaments also enjoy immense popularity. For instance, the final of the last European Championship between England and Italy garnered a viewership of 31 million people in England alone (with a population of 56.27 million), marking the highest TV audience since the funeral of Diana, Princess of Wales, in 1997 (BBC, 2021). Furthermore, the European Championship matches in 2021 were broadcast in over 200 territories worldwide, amassing an estimated live event audience of 4.7 billion (UEFA, 2021). From an economic standpoint, football holds substantial significance as a multi-billion dollar industry (Kutwa, Rafał, 2019; UEFA, 2022), encompassing various sectors such as professional leagues, clubs, broadcasting, merchandising, and sponsorship. Professional football clubs primarily generate revenue through broadcasting rights, sponsorship agreements, and ticket sales (UEFA, 2022). Successful clubs also generate considerable income from merchandising, with fans purchasing jerseys, scarves, and other team-branded merchandise. Additionally, football has a notable impact on local economies, particularly in regions where the sport is popular (Kuper, Szymanski, 2014). Football matches attract large crowds, contributing to local businesses through spending on transportation, food, lodging, and other amenities. Moreover, the construction of new football stadiums and related infrastructure can bring economic benefits to local communities (Chadwick et al., 2022). The sport's economic significance has continued to grow, propelled

by the globalisation of the game and the emergence of digital technologies that have expanded its reach to new audiences worldwide (Leszczyński, Metelski, 2021; Leszczyński, Metelski, Rabczun, 2022).

The transfer market in football refers to the buying and selling of players between professional clubs. It is a key aspect of the sport's economic dimension and is a highly competitive and complex process that involves a wide range of stakeholders, including clubs, agents, and players (Metelski, 2021). In the transfer market, clubs are able to buy and sell players in order to strengthen their squads and improve their chances of success on the field. The transfer market is typically open during specific periods of the year, known as transfer windows, during which clubs are able to make deals for new players. The transfer market is governed by a set of rules and regulations established by the sport's governing bodies, such as UEFA and FIFA (FIFA, 2022). These rules are designed to ensure that transfers are conducted fairly and transparently, and that players are protected throughout the process. The transfer market involves a number of key actors, including: clubs, agents and players. Players often consider a wide range of factors when deciding where to play, including salary, playing time, and the quality of the club.

The value of top football players continues to rise (Poli, Ravenel, Besson, 2019; Majewski, 2021). In the history of football, 17 transfers have surpassed the 100 million EUR mark, with the highest transfer fee being 220 million EUR (Neymar to Paris SG in 2017) (Transfermarkt, 2023). Remarkably, all of these transfers have occurred within the past decade. Establishing an accurate economic value for football players is highly desirable as it allows for club valuation, budget planning, and remuneration considerations (He, Cachucho, Knobbe, 2015). Assessing player values and determining whether transfers should occur pose significant challenges for club managers (Herm, Callsen-Bracker, Kreis, 2014). If a team anticipates high demand for a particular player in the future, they can strategise to offer a new contract to retain or sell the player at a premium to maximise profits. Numerous researchers have also sought to identify the factors that have the greatest impact on player value (Tunaru, Clark, Viney, 2005; Kiefer, 2014; Majewski, 2016; Felipe et al., 2020; Metelski, 2021). It is widely believed that there is a strong positive correlation between transfer fees and productivity (Ruijg, van Ophem, 2015; Majewski, 2016). However, it should be noted that evaluating an individual player's performance (beyond the team context) and determining their precise value in a team sport like football can be challenging. It is also worth mentioning that transfer markets exist in other sports, such as hockey or rugby, although they may not be as widely recognised or regulated as in football. The specifics of these transfer markets may vary depending on the sport, country, and league, but the fundamental concept of buying and selling athletes between teams remains similar across various sports.

Just as the athletic prowess of individual football players is represented by their respective market values, the collective strength of an entire team can similarly be represented by aggregating the market values of all its players (Gerhards, Mutz, 2017). There is predictive power of market values in anticipating the teams vying for the title even before the commencement of the season. Much research has been conducted on the topic of association between players' athletic performance and their financial compensation (Frick, 2011; Lee, Harris, 2012). This correlation also extends beyond the individual level to encompass team dynamics (Pedace, 2008). Nevertheless, Frick's study (2011) underscores that in football, player salaries are predominantly influenced by factors such as age and experience, mainly reflecting a player's past performance rather than their potential future contributions. The literature also suggests that an athlete's performance can fluctuate over the course of a contract, for example, there can be observed a decline in performance after signing a long-term contract (Stiroh, 2007). Consequently, relying solely on salaries may fail to capture fluctuations in players' performance attributable to their specific stage within a contractual period. That is why it can be assumed that transfer fees and market values represent an alternative and better measurement of players' ability (than salaries) (Gerhards, Mutz, 2017).

3. Research Methods

The ranking of the top 15 football leagues in Europe was based on UEFA coefficients (UEFA, 2023). The UEFA coefficient is a system for ranking the performance of football clubs in the UEFA Champions League, UEFA Europa League, and UEFA Conference League. The ranking of national leagues is based on the performance of clubs from each country in UEFA club competitions over the previous five seasons. The coefficients of individual clubs are used to determine seedings for UEFA club competition draws and qualification rounds.

Data on the value of players, clubs and leagues were collected from the Transfermarkt portal. Transfermarkt is a website that compiles football information, such as scores, results, statistics, transfer news, and fixtures. One of the features of Transfermarkt is its player valuation system, which estimates the market value of each player. The market value of a player is determined by a number of factors, including their age, position, playing statistics, contract status, and international experience. The Transfermarkt team of experts evaluates each player based on these factors and assigns a market value that they believe reflects the player's worth in the transfer market. The Transfermarkt website is considered to be a good source of data about market and transfer values that has been used in many scientific articles (Bryson, Frick, Simmons, 2013; Herm,

Callsen-Bracker, Kreis, 2014; Müller, Simons, Weinmann, 2017). In turn, data on which team won the league in a given season are available on many websites, and were collected for the purpose of the presented study mainly from soccerway.com.

The study consisted of collecting data on the value of the squads of the clubs in the top 15 leagues. The next step was to calculate the ratio of the value (in %) of the most valuable team in a given league to the value of all teams in that given league. Descriptive statistics and the Pearson correlation coefficient were employed in the study. The correlation study was used to determine the relationship between the value of the club's players and its league results. Microsoft Excel and IBM SPSS Statistics 28 were both used to process the quantitative data of the research.

4. Results

The most valuable squad of all the top 15 leagues in Europe is Manchester City, whose players are worth 1,110 million EUR, which is 11.21% of the value of all Premier League players. Interestingly, this is the lowest percentage of all 15 leagues. In turn, the highest percentage was recorded in Austria, where RB Salzburg players account for 56.6% of the value of all players in the league. It is worth considering whether such dominance of one team is good for the league. If the value of the players of one team in the league is greater than the value of all the other players in the league (like in Austria), can the league be expected to be unpredictable and is there any uncertainty of the final outcome? The table below presents the 15 most valuable clubs in the top 15 leagues in Europe (according to the UEFA ranking) and their value (in %) in relation to the value of the entire league. The table also indicates how many teams are playing in each league. The number of clubs that play in top leagues in Europe varies by country and by league. These numbers can also change over time due to league expansion, promotion and relegation, as well as other factors. It is also worth noting that in football, there is often talk of the BIG5 (UEFA, 2020), which refers to the five major European football leagues that are considered to be the most prestigious and competitive. The BIG5 leagues are: English Premier League, Spanish La Liga, German Bundesliga, Italian Serie A, and French Ligue 1.

Table 1. The 15 most valuable clubs in the top 15 leagues in Europe

UEFA ranking	Country	Most valuable club	Club value	% of league value	No. of clubs in the league
1	England	Manchester City	1110.00	11.21%	20
2	Spain	Real Madrid	849.00	17.43%	20

UEFA ranking	Country	Most valuable club	Club value	% of league value	No. of clubs in the league
3	Italy	AC Milan	574.05	12.37%	20
4	Germany	Bayern	933.70	22.07%	18
5	France	PSG	914.55	26.28%	20
6	Portugal	Benfica	317.00	25.56%	18
7	Netherlands	Ajax	286.05	27.50%	18
8	Austria	RB Salzburg	235.53	56.60%	12
9	Scotland	Celtic	128.05	35.79%	12
10	Russia	Zenit	156.10	20.46%	16
11	Serbia	Crvena Zvezda	64.35	27.23%	16
12	Ukraine	Szachtar Donieck	123.70	33.73%	16
13	Belgium	Club Brugge	184.20	20.70%	18
14	Switzerland	BSC Young Boys	56.68	22.59%	10
15	Greece	Olympiakos	115.65	30.62%	14

Source: own elaboration

In the best football league in Europe (according to UEFA coefficients) – the Premier League, the squads are the most valuable. The most expensive squad in the Premier League – Manchester City, accounts for only 11.21% of the value of the entire league. The figure below shows the value of the squads of the top 5 clubs in the Premier League relative to the value of the players of the entire league.

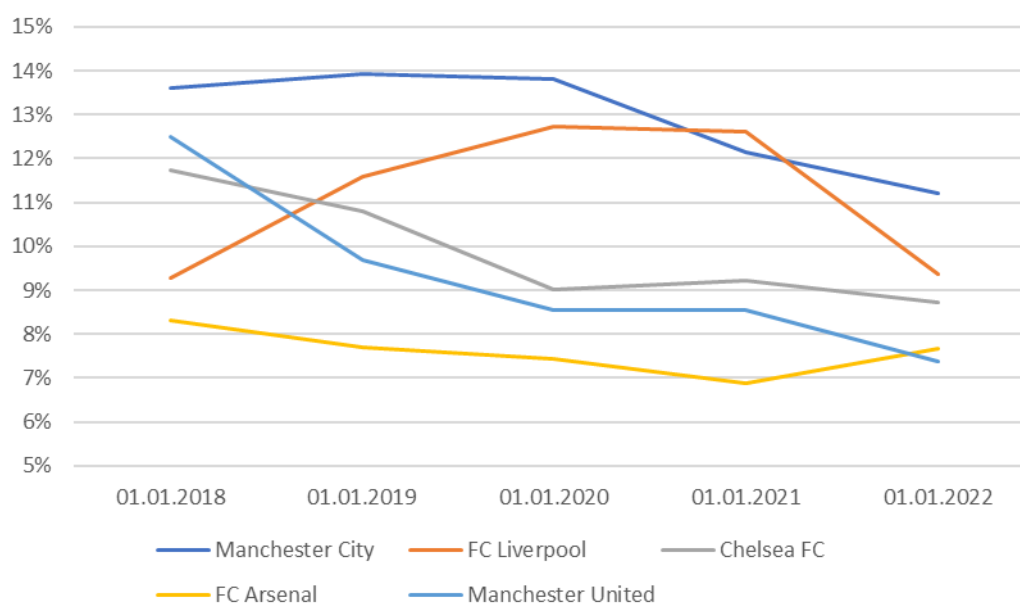


Figure 1. The value of the squads of the top 5 Premier League clubs relative to the value of all the league players

Source: own elaboration

It can be seen that the value of the teams in the Premier League is fairly even, that is, there are no clearly dominant teams. The average for all 15 analysed leagues is 26.01%, which means that the most expensive team accounts for more than a quarter of the total league's value. Can it therefore be assumed that the most expensive squad will usually win the league? The table below shows the last five seasons final standings of the present most valuable clubs in Europe's top 15 leagues as ranked by UEFA.

Table 2. Results in the last five seasons in the top 15 leagues in Europe

Club	2021/22	2020/21	2019/20	2018/19	2017/18
Manchester City	1	1	2	1	1
Real Madrid	1	2	1	3	3
AC Milan	1	2	6	5	6
Bayern	1	1	1	1	1
PSG	1	2	1	1	1
Benfica	3	3	2	1	2
Ajax	1	1	1	1	2
RB Salzburg	1	1	1	1	1
Celtic	1	2	1	1	1
Zenit	1	1	1	1	5
Crvena Zvezda	1	1	1	1	1
Szachtar Donieck	1	2	1	1	1
Club Brugge	1	1	1	2	1
BSC Young Boys	3	1	1	1	1
Olympiakos	1	1	1	2	3

Source: own elaboration

Looking at the table above, it is easy to see that the teams with the most expensive squad definitely win the league most often. Out of the 75 league results presented in the table above, the team with the most valuable squad won 54 times (which is 72%). In the case of three countries (Germany, Austria and Serbia), the most valuable team won the title in each of the last five seasons. The most valuable clubs in these leagues are Bayern (22.07%), RB Salzburg (56.60%) and Crvena Zvezda (27.23%). In turn, the only league where the most expensive team won only once in the last five seasons is the Portuguese league – but Benfica ended each of the last five seasons on the podium.

Using two extreme examples from the analysed leagues, the English Premier League and the Austrian Bundesliga, the correlations between the values of the squads and the final results in leagues were calculated for the 2017/18–2021/22 seasons. In each season, clubs were ranked, separately in the Premier League and the Bundesliga, from those with the most expensive squad (1) to those with the cheapest squad (20 or 12/10).

Table 3. Results of Pearson's correlation between the value of the squad and the final league results

Season	English Premier League			Austrian Bundesliga		
	Pearson's correlation	<i>N</i>	<i>p</i>	Pearson's correlation	<i>N</i>	<i>p</i>
2021/22	0.871	20	< 0.001	0.748	12	< 0.01
2020/21	0.866	20	< 0.001	0.797	12	< 0.01
2019/20	0.736	20	< 0.001	0.790	12	< 0.01
2018/19	0.898	20	< 0.001	0.657	12	< 0.05
2017/18	0.791	20	< 0.001	0.794	10	< 0.01

Source: own elaboration

It turned out that in each analysed season a very strong positive correlation was obtained for both the Premier League and the Bundesliga. This means that the higher the market value of a given club's players, the better the club's position in the league at the end of the season. It is worth noting that the correlation results are very strong and statistically significant. Interestingly, the correlation coefficient turned out to be higher in the Premier League than in the Bundesliga. This may be due to the fact that in the Austrian Bundesliga there is one dominant team, and the other clubs have much lower, more equal values.

5. Discussion

Returning to the opening statements of the article and emphasising the aspect of unpredictability, it is important to examine the extent to which football truly embodies this characteristic. The article presents an analysis of the relationship between the value of clubs' squads in the top 15 European leagues and their final league results over the five past seasons. The findings reveal that the club with the most expensive squad emerged as the league champion in 72% of cases. This raises the question of whether measures should be taken to mitigate such dominance by individual teams, or if the current situation should be deemed acceptable. It is worth noting that there is no clear dominance in terms of squad value in the highly regarded Premier League. However, even in the Premier League, Manchester City has claimed the league title on four occasions in the past five seasons. The implications of these findings invite further reflection on the balance between financial resources and competitive balance in football. While it is natural for clubs with greater financial means to have an advantage in acquiring top-quality players, an excessive concentration of power among a few teams may

undermine the unpredictability and excitement of the sport. On the other hand, some argue that financial dominance is a natural outcome of the market and competitive dynamics within football.

Ultimately, the question of whether action should be taken to address the dominance of individual teams remains open for debate. It requires careful consideration of the impact on the overall competitiveness, integrity, and appeal of the sport, while also considering the complex factors that contribute to team success beyond squad value alone. There are several ideas that have been proposed to counteract the dominance of wealthy clubs in football, for example, financial fair play regulations (UEFA, 2018). This can definitely be further expanded. One potential solution is to implement financial fair play regulations that limit the amount that clubs can spend on players and require them to operate within a certain financial framework. This could help to level the playing field and reduce the competitive advantage of wealthy clubs. Another approach is to introduce salary caps, which would limit the amount that clubs can spend on player salaries. This would help to reduce the competitive advantage of wealthy clubs and make it easier for smaller clubs to compete. Another solution is to introduce revenue sharing mechanisms, where a portion of the revenue generated by the sport is distributed more evenly among all clubs, regardless of their size or financial resources. Finally, some have proposed investing in youth development programmes as a way of reducing the reliance on expensive transfers and giving smaller clubs a better chance of producing their own top-quality players. In summary, these are just a few of the ideas that have been proposed to counteract the dominance of wealthy clubs in football. Each approach has its own advantages and disadvantages, and there is an ongoing debate about which solutions are the most effective and feasible.

Some football leagues already have such limits, for example, the Designated Player Rule in the Major League Soccer (MLS, 2022) in the United States, to ensure that one team does not overwhelmingly dominate another in terms of squad value. The National Basketball Association has a draft for new players conducted in such a way that the weakest teams are promoted to pick first (NBA, 2023). All this is done to keep the sporting level of the clubs as close as possible, so that there are no dominant teams.

The results of this study show that based on the squad value it is possible to largely predict the final result in a given league. It can therefore be said that the study managed to confirm the hypothesis that football clubs boasting higher player valuations tend to achieve greater success in their respective national football leagues when compared to clubs with less valuable players. Therefore, it is worth considering whether solutions such as designated players, salary cap and draft could also be introduced in European conditions. Perhaps this would increase the attractiveness of league games in individual countries. Although it should be remembered that international competitions, such as the UEFA Champions League or Europe League, are very popular in European football,

and that is where the biggest money in football is made (UEFA, 2022). Due to the fact that the most money is in international football competitions, UEFA and national associations do not invest enough in maintaining a good balance in national leagues. That is also why there has been a recent controversy about the creation of the European Super League (Dorsett, Solhekol, 2023).

6. Conclusions

The finding that the club with the most expensive squad won their league 72% of the time and also that there is a very strong correlation between the value of a club's squad and its final position in the league carries several implications and conclusions. First and foremost, it underscores the significance of financial resources in football. Money plays a crucial role in the sport, enabling clubs to attract and retain top-tier players, thereby granting them a competitive advantage over their counterparts. This relation emphasises the influence of financial power on team success. Furthermore, the study's results suggest a notable level of competitive imbalance within football. The dominance of clubs with greater financial means can create challenges for smaller clubs, hindering their ability to compete on an equal footing. Consequently, this can lead to a lack of diversity in terms of which teams are able to secure major titles and achievements. The financial dominance of certain clubs may also impact the fans' perception of the sport. If supporters perceive a lack of genuine competition and an ongoing trend of the same teams consistently emerging victorious, their enthusiasm and connection to the game may diminish over time. The study raises pertinent questions regarding the need for increased regulation of the transfer market or the implementation of financial fair play rules. These measures could potentially level the playing field and mitigate the dominance of wealthier clubs. However, it is important to recognise that finding the right balance between regulation and maintaining the economic dynamics of the sport is a complex endeavour. Different approaches have been taken in various leagues and countries, such as the United States, where sports competitions and clubs have achieved remarkable global standing. In summary, the study's findings emphasise the role of money in football and shed light on the competitive imbalance that exists within the sport. Addressing this issue requires careful consideration of potential solutions, taking into account the impact on fan engagement, the economic sustainability of clubs, and the overall integrity and appeal of the game.

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Pieniądze i niepewność wyniku w nowoczesnym sporcie na przykładzie piłki nożnej



Streszczenie:

Jednym z fundamentalnych założeń zawodowej piłki nożnej jest rywalizacja, która nie tylko jest istotna dla kibiców, ale także napędza sukces ekonomiczny. Pieniądze niezaprzeczalnie odgrywają znaczącą rolę w sporcie, ponieważ kluby z większymi budżetami często mają lepszych zawodników. Niniejszy artykuł ma na celu określenie związku między wartością rynkową zawodników klubów piłkarskich a ich wynikami w 15 najlepszych ligach w Europie według rankingu UEFA. Manchester City ma najwyższą wartość rynkową zawodników w Europie, oszacowaną na 1110 milionów EUR, co stanowi 11,21% całkowitej wartości rynkowej wszystkich zawodników angielskiej Premier League. Podsumowując, w ciągu ostatnich

pięciu sezonów – spośród 75 możliwych mistrzów w analizowanych ligach – klub z najdroższym składem wygrywał 54 razy. W konsekwencji nasuwa się pytanie, czy należy podjąć jakiegokolwiek środki w celu promowania większej równowagi i zmniejszenia dominacji bogatych klubów w krajowych ligach piłkarskich.

Słowa kluczowe: piłka nożna, niepewność wyniku, finanse w sporcie

JEL: G10, J00, J20

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