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Farmers league: squad structure and resource dependency

The case of French Ligue1

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Abstract

Purpose – This research aimed to measure the influence of resource dependency (trading and/or shareholder’s dependencies) squad age structure by building archetypes to identify strategic dominant schemes.

Design/methodology/approach – Based on the Ligue 1 football clubs from the 2009/2010 season to the 2018/2019 data, the authors use the k-means classification to build archetypes of resource dependency and squad structure variables. The influence of resource dependency on squad structure is then analysed through a table of contingency.

Findings – Firstly, the authors identify archetypes of resource dependency with some clubs that are dependent on the transfer market and others that do not count on sales to balance their account. Secondly, they provide different archetypes of squad structure choices. The contingency between those archetypes allows to identify three main strategic schemes (avoidance, shaping and adaptation).

Originality/value – The research tests an original relationship between resource dependency of clubs and their human resource strategy to respond to it. This paper can help to provide detailed profiles for big clubs looking for affiliate clubs to know which clubs have efficient academy or player development capacities.

Farmers league: squad structure and resource dependency

The case of French Ligue1

Introduction

The Bosman ruling had revolutionised the professional sports labour market in 1995 by liberalising the movement of the players. Since then, the transfer market has played a growing role in the football economy. The amount paid (Andreff, 2018) and the number of players transferred demonstrate how the management of the transfer market has become strategic (Coates *et al.*, 2020). The business model of football clubs has been massively and consistently dominated by broadcasting rights in the major European leagues since the end of the 1990s (Andreff and Staudohar, 2000). These injections of money have given extra economic power to the dominant clubs in important domestic (and for some international) media markets. Thus, the relaxation of the mobility barrier leads to an increase in cross-country inequality among European leagues by 25% between 1998 and 2010 (Vasilakis, 2017). In more recent years, Hoey *et al.* (2021) demonstrate that transfer fees do not significantly reduce inequality between clubs and that middle-size clubs are the most likely to benefit from redistribution compared to small clubs. The increase in transfer spending has made teams interdependent and dependent on a new type of revenue and has structured the financial ties between football clubs into complex networks (Parnell *et al.*, 2021). These new dependencies can be associated with the resource dependency literature.

Surprisingly little research has investigated the management of football clubs using the resource dependency theory which has had a major impact on management literature since Pfeffer and Salancik (2003). The link between resource dependency and the structuration of the club's main resources (players) is almost not investigated especially with quantitative analysis. The resource dependency theory describes the need for a firm to interact with its environment

to access critical resources. Ultimately, decisions and choices are contingent on a social context in which:

what happens in an organization is not only a function of the organization, its structure, its leadership, its procedure or its goals. What happens is also a consequences of the environment and the particular contingencies and constraints deriving from that environment (Pfeffer & Salancik, 1978, p.3).

Therefore, our interest relies on the reaction of organisations to this resource dependency or in other words, their strategic responses which are “the repertoire of behaviors that organizations may exhibit” (Oliver, 1991, p. 159). We can range these strategic responses in archetypes that are defined as "the basis of typologies and classification in organizational theory” (Greenwood & Hinings, 1988, p. 297).

This literature appears to us to be very appropriate to be applied to the management of football clubs considering the need to access external resources (human and financial resources). French clubs have an important operating loss margin, similar to the Eredivisie in the Netherlands and the Swiss Football League, that is compensated to a great extent by transfer (UEFA, 2020, p. 112). Thus, in the context of the French Ligue 1 which is mainly a supplier of talent, how clubs do try to limit or not their resource dependency and what are the archetypes of strategic responses to resource dependency? Our study aims to determine the archetypes of a strategic response to resource dependency of football clubs on the squad structure in the case of French Ligue 1 football clubs. The main hypothesis of this research is that the clubs' structure of the squad is determined by a reaction to their environment, or in other words, to their resource dependency. We use quantitative analysis based on k-means classification to build (1) resource dependency archetypes and (2) squad structure archetypes of French Ligue 1 clubs over 10 years to (3) identify a potential contingency between both types of variables. Therefore, our

results allow us to (4) propose four schemes of strategic responses to adapt, shape, or avoid resource dependency.

This paper is structured as follows: the theoretical background is presented with a focus on resource dependency and its strategic responses, squad structure, and a contextualisation of our study. Then, the methodology is described with the database, variables, archetypes, and the processing of data. The results are analysed by presenting archetypes of resource dependency variables and squad structure variables before a study of the contingency of both classifications.

Theoretical background

Resource dependency

The main postulate of the resource dependency approach (Pfeffer & Salancik, 2003) is that organisations are facing uncertainties regarding their environments to access critical resources. The interactions firm environment allows one to nuance the deterministic dimension of the theory, as the firm has also a voluntarist influence in response to its environment (Pfeffer & Salancik, 2003). Thus, managers play an active role to reduce uncertainties linked to resource dependency (Malatesta & Smith, 2015). This role is more or less constrained based on specific contexts “that affect the abilities of the parties to obtain certain inputs, including financial resources and talent” (Mascarenhas, 1989, p. 583). Furthermore, Malatesta and Smith (2015) explain that the resource dependency theory is relevant to approach the relationships between organisations (bargain power in the player labour market, between football clubs in our case) and within an organisation unit (choice of squad age structure in our case). The response to resource dependency on the environment is not unique, and organisations can adopt a variety of strategies to respond to their resource dependency (Mitchell, 2014), particularly due to

specific context conditions (Malatesta and Smith, 2014). The resource dependency theory has been accepted so rapidly that it might have been underexplored:

The idea, seemingly now widely accepted, that organizations are constrained and affected by their environments and that they act to attempt to manage resource dependencies, has become almost so accepted and taken for granted that it is not as rigorously explored and tested as it might be (Pfeffer and Salancik, 2003, p. xxxiii).

In this regard, football clubs can be of particular interest considering the structural losses observed in the sector to explore the strategic responses set up to manage different types of dependencies (shareholders and the transfer market) and the increasing importance of players' sales as an economic resource (Neri *et al.*, 2023).

Strategic response to resource dependency

Strategic response to resource dependency

Generally speaking, the two classical responses to resource dependency are presented as the domination or adaptation of the environment (Greenwood and Hinings, 2006). In his study of non-governmental organisations, Batley (2011) proposes a typology of three strategic responses to resource dependency: avoid, shape or adapt. They are described by Mitchell (2014, p. 74) as: “adaptation strategies reflect the greatest vulnerability to external control; avoidance strategies reflect a lower vulnerability to external control; and shaping strategies reflect an organization’s ability to resist and even reverse the direction of influence”. Adaptation strategy is externally driven and refers to a position of reaction to an event that is given, and, on the other hand, shaping strategies are internally driven at the initiative of the organisation to gain competitive advantage (Turner *et al.*, 2010). Moreover, Malatesta and Smith (2014, p. 14) consider that: “the RD manager’s choice of action will likely maximize autonomy (by minimizing dependence on others) and leverage influence (by controlling resources that others

need)". Malatesta and Smith (2014) proposed a series of questions to manage resource dependency which can be summarised in three points: the degree of resource dependence, the degree of resource autonomy and the degree of resource scarcity.

Strategic response to resource dependency and football clubs

Despite a major impact on management research, resource dependency theory has not been used frequently in sports management research when looking at European football, showing a potential important research gap in sports management research. This is peculiarly astonishing considering the “coopetitive” nature of the relationships between clubs (Feuillet *et al.*, 2021) and the important effects of the network in the sector (Parnell *et al.*, 2021; Coates *et al.*, 2020). The resource dependency of football clubs is often associated with the dependence on TV revenues (Andreff, 2014). However, for some leagues such as Ligue 1 in France, Eredivisie in the Netherlands or la Liga Portuguesa in Portugal, transfer fees have been a major source of revenue (Hoey *et al.*, 2021). The most powerful leagues are in demand of scarce talent to be competitive at the domestic and, most notably, at the European level when the other leagues are the suppliers of talent, such as Ligue 1 (Andreff, 2007). This might imply a trade-off for the clubs to make between minimising dependencies (towards transfer or shareholders) and maximising efficacy (win maximisation). The choice to balance the budget can be made before or after transfer, which implies that clubs that choose to try to balance their budget after transfer have more resources and more talent which conditions sporting performance (Hall *et al.*, 2002).

In our specific case of professional football clubs, adaptation strategy may be related to clubs following strategic trends from clubs of a similar segment (e.g. trading strategies), avoidance may be linked to clubs that renounce or are unable to select aggressive strategies (small clubs) and shaping strategy could be linked to clubs with internal competitive advantage

(e.g., performance of the clubs' academy). These three strategies might be useful to apply to the case of football clubs' resource dependency linked to the squad structure as the sector is known for its financial vulnerability (Hammershmidt *et al.*, 2021), and scarcity of talent as critical resources (Di Minia *et al.*, 2014). The latter might indicate an increasing concentration of economic power in a small number of clubs. For football clubs, and manager's choice can be based on how he organised his squad structure to reduce or not its resource dependencies. Football clubs' management of resource dependency can offer an original area of exploration to study strategic responses following Hillman *et al.* (2009, p.16) call to explore “other actions firms can take to manage/reduce environmental dependencies” compared to the seminal work of Pfeffer and Salancik (2003).

The historical economic approach of professional sports leagues describes a model of organisation with similar objectives as profit maximisation (Jones, 1969) or utility maximisation (Sloane, 1971). Zimbalist (2003, p. 10) proposed to “take fuller account of the diversity of ownership objectives within a given league”. In this regard, football clubs can be of particular interest considering the structural losses observed in the sector to explore the strategic responses set up to manage different types of dependencies (shareholders and the transfer market) and the increasing importance of players' sales as an economic resource (Neri *et al.*, 2023). Management research can complement the economic approach of sports leagues by taking into account the diversity of their governance (Dufau *et al.*, 2022; Rohde and Breuer, 2017), the relative plasticity of such organisations leading to strategic adaptation (Terrien *et al.*, 2017) or their degree of cooperation (Feuillet *et al.*, 2021). We consider our research object of football clubs as more complex strategic entities than usually presented.

Squad structure

The firm resources of our interest are financial and human capital resources (Becker, 1964). In football, player contracts are considered an accounting asset (Morrow, 1996; Neri *et al.*, 2023). Therefore, some players in the labour market have a certain financial value regardless of whether they are superstars or some journeymen (Andreff, 2018) mainly based on their performance on the pitch. This leads to a specific labour market where human capital has an exchange value, as players must respect their contracts. Therefore, the training and trading of players' assets are decisive to fuel the French club's economy. They must interact with their environment to maintain their level of expenses. The age has been consistently tested to determine the value of the football player and shows most of the time a significant positive impact on it in the early career until a decline (Franceschi *et al.*, 2023) The CIES (2022a) shows a significant difference in the average age of the players in 2022 in the top division between Ligue 1 (25.97 years) and more performant leagues such as La Liga (26.67 years old) and the English Premier League (27.02 years old). Interestingly the difference in average age is also quite important within the Ligue 1, with a 5.41-year difference between the oldest and the youngest team (CIES, 2022b). We can also note that some French clubs have consistently based their recruitment on acquiring young players such as Lille, AS Monaco, OGC Nice and Olympique de Marseille (CIES, 2022b). Compared to the other five leagues, Ligue 1 is the only one to have a positive net transfer balance between 2013 and 2022 (€m350). In the same period, the English Premier League had a net transfer balance of -m9,499V (CIES, 2022c). The average squad age structure in Ligue 1 has seen a significant decrease over time (Figure 1), leading to an important total of minutes played by young players (under 21) compared to the "Big Four" leagues (Figure 2, The Analyst, 2022).

Figure 1

Evolution of squad age structure in Ligue 1 (source: Transfermarkt)

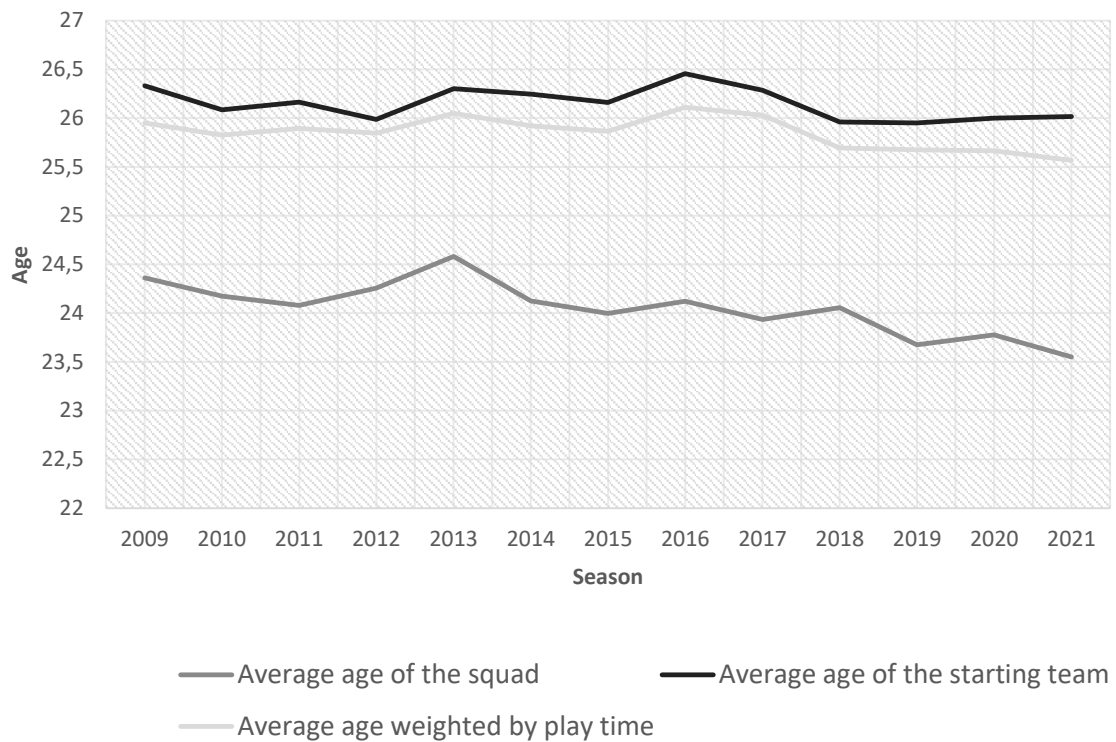
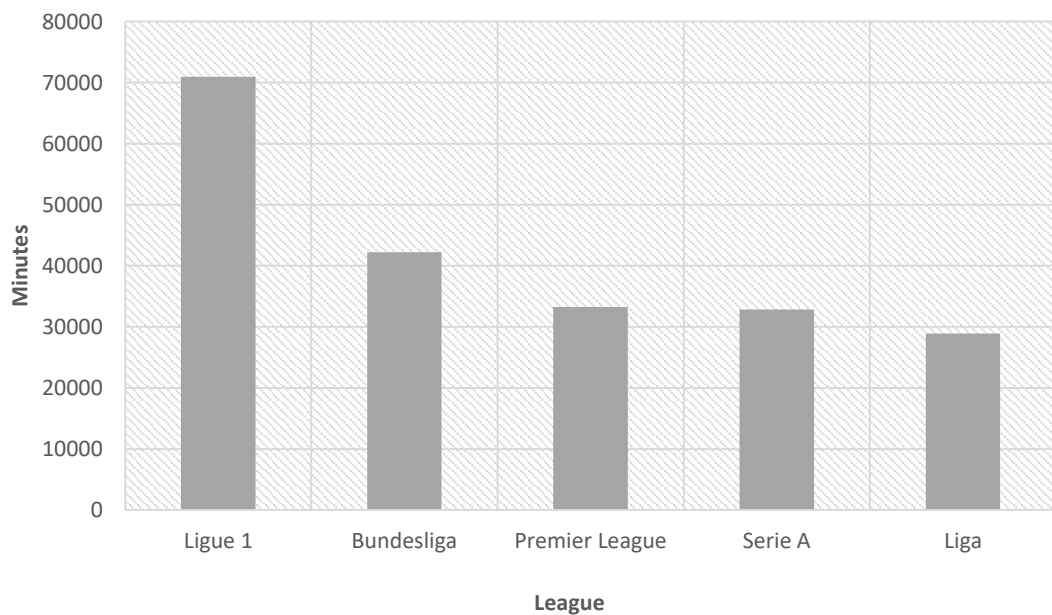


Figure 2

Total minutes played by U21 in the big 5 leagues in 2021/2022 (source: The Analyst, 2022)



Context

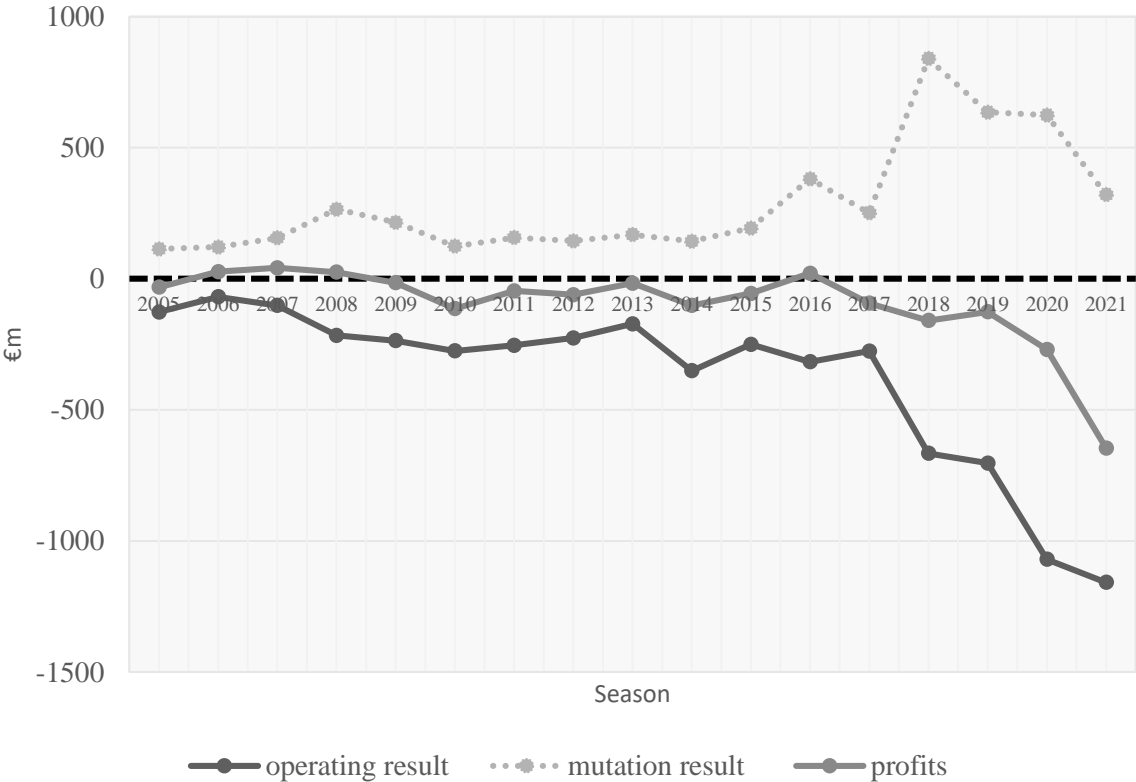
The financial model of professional football clubs in Europe shifted between the 1980s and 1990s from the SSSL model (Spectators-Subsidies-Sponsors-Local) to the MCMMG model (Media-Corporations-Merchandising-Markets-Global) (Andreff & Staudohar, 2000). In our study, the market of players is of peculiar interest. Since the Bosman case, French football clubs are known to be in an intermediary position with a clear distance from the English Premier League, La Liga, Bundesliga, and Serie A (Andreff, 2018) (Table 1) and suffer from a lack of efficiency (Terrien & Andreff, 2020). Therefore, according to DNCG (2021), transfer fees accounted for 33% (€840m) of the aggregate revenue of French Ligue 1 clubs in 2017-2018, just ahead of broadcast revenues of 31% (€791m). In terms of total revenue, they were recently close to the Big four leagues. The explanation for that is the importance of the market of the media in France, until the crash of the broadcaster Mediapro in France in 2020 (Feuillet & Scelles, 2022), which fuelled for many years French clubs' revenues and the position of French clubs as a net supplier of football players (Andreff & Staudohar, 2000). This peculiarity compared to the Big Four leagues can be explained by the financial vulnerability (Figure 3) of French clubs which are dependent on transfer revenues to soften their budget constraint (Andreff, 2007, Pache & N'Goala, 2011, Feuillet *et al.* 2021). In France, the club's soft budget constraint is not a new phenomenon. A senator report shows three factors that fuelled the financial trouble of clubs: weak governance, shareholders that do not seek profit, and the arm's race for talent (Collin, 2004). According to Andreff (2007, p. 657) "top French clubs are drawn to spending more than their budget to attract much efficient players, and afterward, they beg patrons and tycoons to bail them out". Thus, in case of a large deficit, the support of shareholders is decisive as one of the last funders of last resort. The recurrent losses can be the result of the moral hazard between the club's directors and shareholders but also an intended

strategy of the main shareholder when opting for a win maximisation strategy under a soft budget constraint (Terrien *et al.*, 2017).

Table 1
Results by country in the Champions' League from 1994 to 2022 (source: created by author)

Results/Country	Spain	England	Italy	Germany	France	Others
Quarter-finalist	51	47	26	30	18	33
Semi-finalist	32	27	14	18	9	6
Runner up	18	15	11	9	2	3
Winner	12	6	5	1	0	2

Figure 3
Breakdown of the Ligue 1 financial results (source: DNCG)



Methodology

Database

The subject of our study is the Ligue 1 football clubs from the 2009/2010 season to the 2018/2019 one. Hence, with 20 clubs taking part in the Ligue 1 each season, the starting sample is 200 observations. Due to the absence of some financial data for some clubs in the period, the intermediary sample is 187 observations. Regarding financial data, we relied on the Direction Nationale du Contrôle de Gestion report (DNCG), which monitors French clubs' accounts every year. For the squad variables, we used Transfermarkt to collect the data. The final sample is made up of 181 observations after the deletion of 6 outliers. The latter is made up of three seasons of AS Monaco (seasons 2016, 2018 and 2019) which relied heavily on sales in the transfer market. Thus, Monaco has sales for €m178,160, €m199,500, and €m332,250 for these respective seasons. They have also enjoyed a massive bailout of their shareholders to balance their financial results, for example, the ratio of the shareholder's loans on the total products was 1.94, 2.68 and 2.72 for the respective 2016, 2018 and 2019 seasons. No other clubs exceeded 1.0 for this ratio in the period. The other outliers are the one of Lille (seasons 2017, 2018 and 2019), which are observations that show an ineffective trading strategy in which the transfer revenues are not sufficient to balance the extremely deficient financial results because of the relatively low support of the shareholder compared to AS Monaco's observations. Thus, the ratio of net results on the total products was extremely negative for Lille for these seasons: -0.73 in 2017, -1.04 in 2018 and -2.63 in 2019. In the total period studied, no other club was over -0.73 for this ratio. It should be noted that these two extreme examples come from Dmitri Rybolovlev in AS Monaco and Gerard Lopez in Lille at this time. They are foreign investors

which could imply some specificities (Rohde and Breuer, 2016; Wilson *et al.*, 2013).

Variables

Financial variables. We use four financial variables to test the potential diversity of clubs in terms of resource dependency. All of these variables are controlled as a proportion of the total club revenue to avoid the influence of inflation. We consider two types of dependencies, one towards the shareholder(s) and the other towards the transfer market. Thus, our resource dependency variables are composed of net results, which inform the level of (un)profitability of a team. The operating result helps us to identify the dependence on the transfer market as this variable does not take into account the result of transfers. In this regard, the hypothesis is that resource dependency is characterised if the operating income is insufficient. The latter is the difference between the total product of the transfer fees and the costs of amortisation of the transfer fees during a player's contract (Dermit-Richard, 2013). Then, shareholder loans shed light on shareholder support, as it is a debt and can also describe weak governance if they do not supervise well their managers (Andreff, 2007).

Squad variables. In this section, we have 18 variables. For the following variables, we used the age categories of the CIES classification with under 21 years old, 22–26 years old, 27–31 years old and over 32 years old: percentage of players, percentage of minutes, and percentage of Transfermarkt value. These variables are relevant to study the age structure and its effective market value and use. We also have the variable of the percentage of minutes of club-trained players that can inform a club's capacity to create internal resources. The percentage of minutes of players coming from a Big5 league the previous year informs us about the quality of the players and the ability of recruitment. In this way, the percentage of minutes from free agents can be an indicator of the lack of financial resources to invest in the transfer market even if some superstars are acquired as free agents. The percentage of minutes of former or present internationals is taken into account to inform about the experience and quality of a player on

the international stage. The percentage of recruits (summer or winter transfer window) describes how much a team relies on a new player from one year to another. Finally, the percentage of minutes of players on loan informs of a relatively low capacity to invest in the transfer market. Descriptive statistics of variables of both archetypes are provided in Appendix Tables A1–A4.

Archetypes

This concept has been introduced in organisational theory to give a better understanding of organisation, design, dynamics, and change (Greenwood & Hinnings, 1988) in line with a more complex approach to organisation (Miller, 1981). Greenwood & Hinnings (1988, p. 294) explain that archetype “derives from the idea that organizations operate with a limited number of configurations of structure, strategy, and environment”. In a similar way to the concept of the archetype, Miller (1981) describes *gestalts* as statistically significant clusters and called researchers to « search for different organizational configurations or adaptive patterns that are richly described by the dynamic interaction among variables of environment, organization, and strategy » (1981, p. 3).

Methods

Clusterisation and test. The K-means classification is used to create archetypes for both types of variables. It allows us to define the precise archetypes of a group of clubs. We proceed in three steps, starting with a clusterisation of resource dependency variables (first archetype) before a clusterisation of squad structure variables (second archetype). In the following, we

present a table of the contingencies of the combined archetypes. Chi-square tests are then performed to verify significant statistical differences in the distribution of the contingency table.

Results

Resource dependency archetype

The k-means classification of resource dependency variables provides five distinct archetypes. As two of them are composed of, respectively, only one club (Monaco and Lille), and three observations each, we have considered them outliers. Therefore, we retain three archetypes concerning resource dependency (Table 2). The first one is composed of 98 observations and can be called the ‘well-balanced’. The barycenters of these observations in this archetype present a balanced net result and a slightly negative operating result (-0,070) and slightly positive barycenters for net results (0.019), shareholder loans (0.057), and transfer results (0.094) related to total products. The second one, which is named ‘supported by the shareholder’, is composed of 33 observations. The latter presents barycenters that indicate a similar balance in the transfer market result (0.107) compared to the first archetype but a significant disequilibrium in operating (-0.378) and net results (-0.253). In this archetype, the shareholder bails out the club (0.367) to relieve the soft budget constraint. The third archetype is made up of 50 observations and is called ‘transfer-dependent’. The observations in this archetype have an important positive transfer result (0.408), balanced net results (0.020), and low shareholder loans (0.056) related to the total products. However, their operating results are significantly negative (-0.356).

Table 2*Barycenters* of classes of resource dependency archetype (source: created by author)*

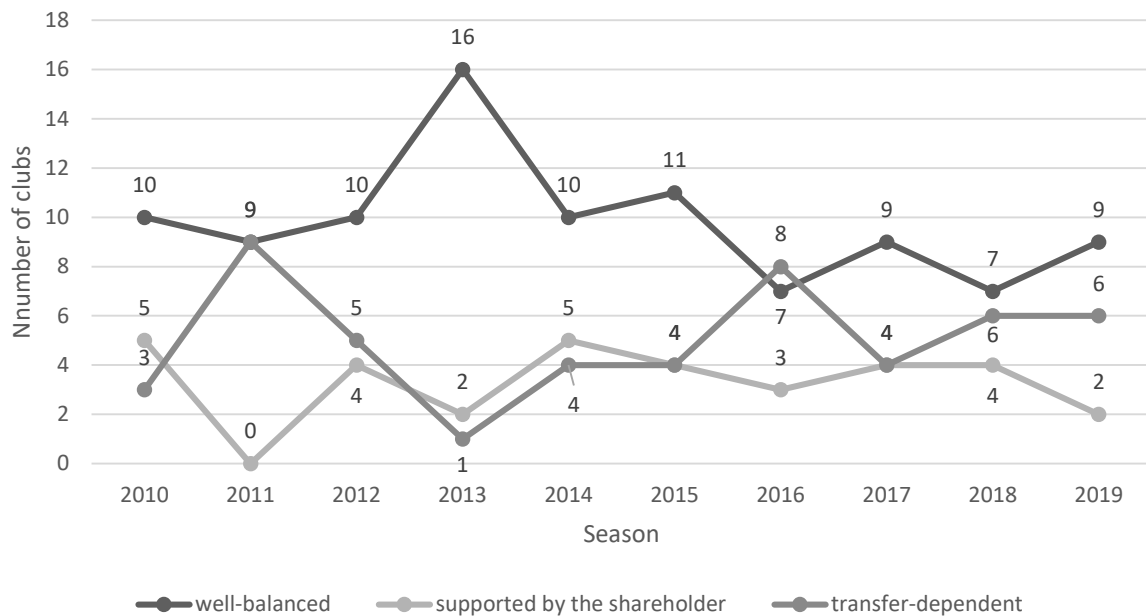
Archetypes/Variables	Net results /total products	Operating result /Total products	Shareholder loans/ total products	Transfer results/total products
Well-balanced	0.019	-0.070	0.057	<i>0.094</i>
Supported by the shareholder	<i>-0.253</i>	<i>-0.378</i>	0.367	0.107
Transfer-dependent	0.020	-0.356	<i>0.056</i>	0.408

*highest value for each variable are in bold and the lowest value are in italics

These three archetypes demonstrate the different strategic patterns employed by French clubs. However, all clusters use their trading activities to soften their budget constraints, but not to the same extent. The longitudinal study of the composition of these archetypes (Figure 4) shows that most clubs are in the ‘well balanced’ archetype, which can be explained by the fact that most clubs have no guarantee of maintaining their position in the Ligue 1 constraint supported by positive transfer results but not by the shareholder and that their shareholders are not interested in taking risks in the transfer market due to their limited resources. Therefore, the number of ‘well-balanced’ clubs has significantly decreased since 2013 when 16 clubs out of 19 were listed in this archetype. In the 2019 season, only nine clubs were listed in the ‘well-balanced’ archetype.

Figure 4

Longitudinal evolution of resource dependency archetypes (source: created by author)



Squad structure archetypes

The second step of our study allows us to identify four archetypes of squad structure using k-means classification (Table 3). The first one named the “handymans” has 34 observations. It presents an important value in the barycenter of classes of variables for the percentage of players aged 22–26 (0.508), the playing minutes’ percentage of players coming from the Big 5 leagues (0.244) and the minute’s percentage given to free agents (0.474). Furthermore, the archetype has the lowest value for the percentage of minutes given to players aged less than 21 years (0.118) and players trained at the club (0.106). The second archetype, which consists of 38 observations, is called the “veterans”. As its name suggests, this archetype relies on a more experienced player on the field. Thus, in total, more than 50% of the playing time is dedicated to players aged 27–31 years (0.410) and players over 32 years (0.142). In addition, this archetype also has a high percentage level of recruits (0.380), players on loans (0.095) and free agent (0.526) playing time. The third archetype of 56 observations is named “post-trainer”. In

this group, the playing time given to players aged 22–26 is important (0.392) relative to the percentage of players of this age in the team (0.352). A low percentage level of minutes is given to recruits (0.219), players on loan (0.041) and players over 32 years old (0.062). The last archetype, called the “trainers” with 53 observations, is prominent in the percentage of playing time for those under 21 years of age (0.263) and players trained in the club (0.271). Contrary to that, this archetype has low usage of playing time for free agents (0.153) and players aged of 27–31 (0.186). The evolution of the squad structure archetypes (Figure 5) shows a balanced level of the squad structure archetypes from 2016 to 2019. The “post-trainers” archetype has seen its number of clubs decrease from 2011 (9 clubs) to 2019 (4 clubs). This could be due to the doubling of French clubs’ revenues from €m1195 in 2010 to €m2538 in 2019 (DNCG), which has reduced the resource dependence for some clubs.

Figure 5
Longitudinal evolution of squad structure archetypes (source: created by author)

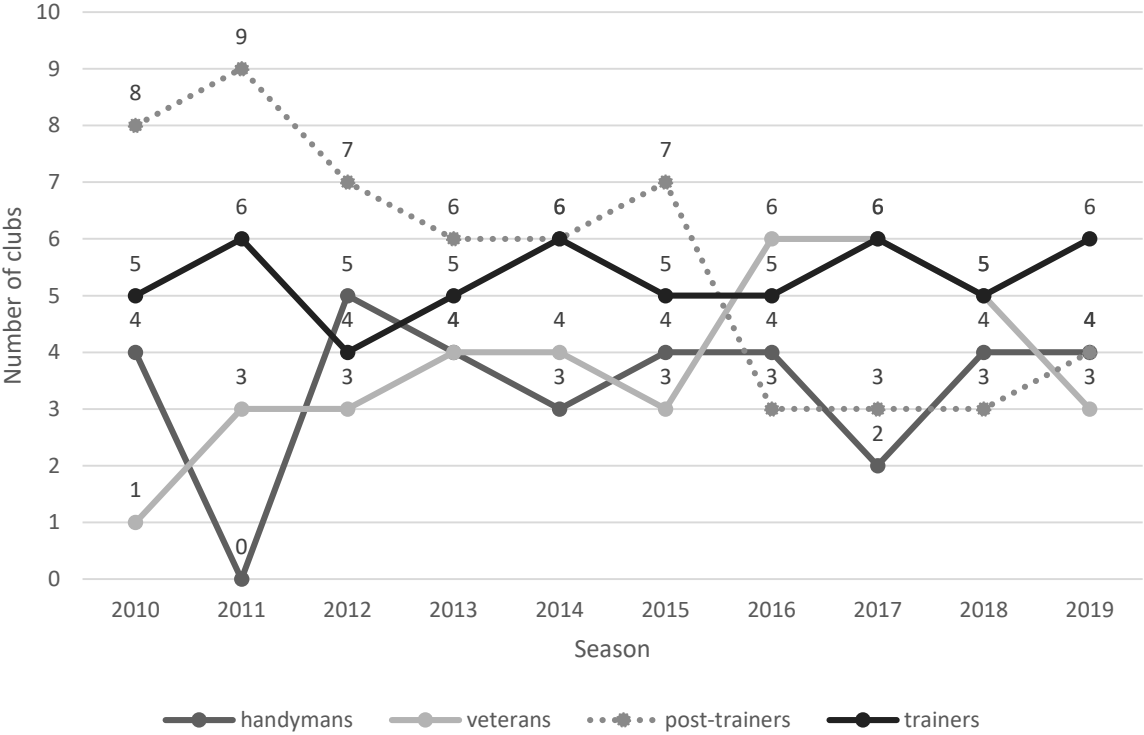


Table 3

Barycenter* of classes of squad structure archetype (source: created by author)

Archetypes /Variables	%P- 21	%P22- 26	%P27- 31	%P+32	%Min- 21	%Min22- 26	%Min27- 31	%Min+32	%TM- 21	%TM22- 26	%TM27- 31	%TM+32	%PFamin	%Big5min	%FAmin	%InterMin	%RecruitMin	%Loanmin
Handymans	<i>0.191</i>	0.470	0.241	0.098	<i>0.118</i>	0.508	0.264	0.110	<i>0.086</i>	0.568	0.289	0.056	<i>0.106</i>	0.244	0.474	<i>0.326</i>	0.355	0.085
Veterans	0.245	<i>0.310</i>	0.321	0.119	0.142	<i>0.305</i>	0.410	0.142	0.137	<i>0.350</i>	0.434	0.079	0.122	0.211	0.526	0.349	0.380	0.095
Post-trainers	0.246	0.352	0.329	0.070	0.146	0.392	0.400	<i>0.062</i>	0.116	0.427	0.426	<i>0.031</i>	0.166	<i>0.166</i>	0.181	0.544	<i>0.219</i>	<i>0.041</i>
Trainers	0.354	0.410	<i>0.170</i>	<i>0.065</i>	0.263	0.476	<i>0.186</i>	0.075	0.208	0.536	<i>0.215</i>	0.042	0.271	0.167	<i>0.153</i>	0.332	0.274	0.066

*highest value for each variable are in bold and the lowest value are in italics

Contingency table of archetypes

The contingency table presented in Table 4 highlights a significant link between the archetypes using the Chi-2 test (observed statistic: 24.9; p-value: 0.0003). Firstly, the ‘well-balanced’ club is represented in a balanced manner in every squad structure archetype. We must point out the importance of the archetype of ‘handymans’ (68% of the clubs in the squad structure archetype) and ‘veterans’ (74% of the squad structure archetype). However, they do not need to rely on young players. In these two archetypes, we find clubs that are for most of them at sporting risk of being relegated (see Table 5). The structure of the squad will differ depending on sporting risks and opportunities. We find the recurrence of some clubs such as Ajaccio (ACA), Bastia (SCB), Brest (SB), Caen (SMC), Evian (ETG), Lorient (FCL), and Troyes (ESTAC) for three years. Plus, Guingamp (EAG) has been present for four years, and Reims (STR) for five years. Reims might be the better example of this well-balanced and handyman's club with no negative profit registered during its five years in Ligue1 in the period and the high use of free agents (e.g. 70% of the total playing time in 2015). It should be noted

that ‘post-trainers’ are the most important in ‘well balanced’. In the period observed, most of the observations (54%) are in our ‘well-balanced’ archetype.

Table 4

Table of contingency of archetypes (percentage per columns are in parentheses)

(source: created by author)

Resource Dependency/Squad Structure	Handymans	Veterans	Post-trainers	Trainers	Total
Well-balanced	23 (0.68)	28 (0.74)	32 (0.57)	15 (0.28)	98 (0.54)
Supported by the shareholder	2 (0.06)	5 (0.13)	<u>11 (0.20)</u>	<u>15 (0.28)</u>	33 (0.18)
Transfer-dependent	9 (0.26)	5 (0.13)	<u>13 (0.23)</u>	<u>23 (0.43)</u>	50 (0.28)
Total	34 (1.00)	38 (1.00)	56 (1.00)	53 (1.00)	181 (1.00)

Note. the three schemes identified are presented in bold (avoidance), in italics (shaping), and underlined (adaptation)

Table 5

Composition of the contingency table of archetypes (source: created by author)

Resource Dependency/Squad Structure	Handymans	Veterans	Post-trainers	Trainers
Well-balanced	ACA 12. AMI 18-19. DFCO 12. ESTAC 18. ETG 13-14 FCL 10. 13-15. FCM 15. GFCA 16. MHSC 10. OGCN 13. SMC 12. 15. STR 13-16. 19. USBO 10	ACA 13-14. ARA 11. ASNL 17. ASSE 16. 19. DFCO 17. EAG 14-15. 17-18 ESTAC 13. 16. ETG 12. FCM 17. GRE 10. RCS. 18-19. SB 11-13. SCB 13-16. SCO 16-17. SMC 18	AJA 10-11. ASM 10. ASSE 15. 17-18. DFCO 19. EAG 19. ETG 15. FCGB 10. FCN 14-15. LOSC 13. MHSC 12-13. OM 10-14. PSG 11. 13-18. SR 10. 17. 19. VAFC 12-13	ASSE 11. 13. FCN 17. FCSM 11. 13. N0 19. OGCN 14-15. PSG 19. SMC 11. SR 11-13. TFC 10. 12.
Supported by the shareholder	OGCN 12. SR 16	ASM 14. LOSC 16. OM 17. RCL 15. SCO 19.	AJA 12. ASM 15. ASNL 10. FCGB 12-14. OM 18-19. PSG 10. 12. VAFC 10	ASM 17. ASNL 13. FCGB 15-18. FCSM 10. 14. OGCN 10. 17-18. SR 14. 15. 18. VAFC 14
Transfer-dependent	ASNL 12. DFCO 18. FCL 12. 17. LOSC 10. MHSC 18-19. SMC 16. 19	EAG 16. FCM 18. MHSC 11. OM 17. SCO 18	ASM 11. ASNL 11. ASSE 14. FCGB 11. FCN 16. LOSC 11. 12. 14. 15. OGCN 11. OM 15-16. VAFC 11	ASSE 10. 12. FCGB 19. FCN 18-19. FCL 11. 16. FCSM 12. MHSC 14-17. MUC 10. OGCN 16. 19. TFC 11. 13-19

Second, the ‘supported by the shareholder’ represents a small number from the observations of all clubs (18%). Twenty-six of these of the thirty-three clubs are ‘post-trainers’ and ‘trainers’. The fact that they are massively helped by their shareholders can indicate the acceptance by the owners of an important deficit (35% of the total products). Shareholders’ loans count for 36% of the total products of these clubs and the transfer results are only 10% (see Table 2). Regarding the composition of these clubs following the post-trainer and/or trainer squad structure, we can cite the presence of Nice (OGCN) and Rennes (SR) for three years and Bordeaux (FCGB) for seven years (see Table 5). Bordeaux illustrates very well these clubs that are heavily supported by the shareholders with negative profits and high shareholder loans every year from 2011 to 2019. For example, the shareholder loans in relation to the total products were extremely high (0.80) just before the sale of the club in the 2018 season.

Thirdly, most of the observations of the ‘transfer-dependant’ are the ‘post-trainers’ and ‘trainers’ (36 out of 50 observations or 72%). These clubs rely on young talents. On the financial side, the transfer results represent 40% of the total products (see Table 2). Shareholder loans account for only 5% of total products. Studying the composition of the contingency table of archetypes (Table 5) allows us to see the presence of clubs for multiple years in the post-trainer and trainer archetypes such as Saint-Etienne (ASSE), Nice (OGCN), and Nantes (FCN) for three years, Lille (LOSC) and Montpellier (MHSC) for four years, and Toulouse (TFC) for eight years. Toulouse is a good example of these clubs that rely on their academy (up to 48% of players' minutes in 2010) to support their recurrent negative operating results. Therefore, the clubs registered important negative operating results every year from 2010 to 2019 and relied

on transfer to support its deficit with for example a massive transfer balance in relation to total products of 0.93 in 2019.

Discussion

Managerial and theoretical implications

We can sum up our results in three dominant schemes (Table 4) that can be related to the typology of strategic response proposed by Batley (2011). First, the scheme of ‘well-balanced’ clubs can be assimilated as the avoidance strategic response. They rely on ‘veterans’ or ‘handyman’ archetypes because of the limited resources of the shareholders (hard budget constraint). Second the scheme of ‘well-balanced’ clubs that has room for manoeuvre to take risks based on ‘post-trainers’ and ‘trainers’ strategies. This type of club can be related to shaping strategic responses. Third, the unbalanced clubs rely on the bailout of their shareholder or their trading activities to structure their squad (win maximisation under soft budget constraint). They can represent the adaptation strategic responses, which are the ones that are the most vulnerable to external resources (from the shareholders or the transfer market). The latter may be the riskier strategy considering that shareholders do not intervene to bail out the clubs and that the ‘trainers’ and ‘post-trainers’ archetypes can be subject to, respectively, negative demand shock (for example, market transfer shrinkage) and negative production shock (for example, a generational gap in academy talent).

Only well-balanced clubs seem to have real freedom to choose the profile of their squad (Feuillet *et al.*, 2021). Most of the observations of this archetype are clubs with limited resources. These clubs are less developed in terms of economic resources but also less dependent, which demonstrates an interesting way to manage dependence with due diligence. Income from trading strategies in the football transfer market is positively related to the club’s

profitability (Neri *et al.*, 2023). Nonetheless, not all the ‘well-balanced’ clubs can build up strategies based on post-trading or training as there is a minimum of investment needed (infrastructure to train, youth coaches, scouting department) to be competitive in such strategies. Our results may also provide additional evidence that coach evaluation should not be assessed solely based on sporting objectives. Financial constraints, owner strategies, and regulatory tools are determining factors in several sports choices and the allocation of playing time (Carlsson-Wall *et al.*, 2016). There is the heterogeneity of the trade-off between win and profit maximisation within the same league and also a temporal factor associated with the club’s strategic choices (Terrien *et al.*, 2017). Thus, the strategic responses to resource dependency can be determined by the level of flexibility for clubs when choosing between maximisation under sporting constraints, win maximisation under soft budget constraints, or win maximisation under hard budget constraints.

Our archetypes regarding squad structure and resource dependency bring new insights into the relationships between football clubs' resource dependencies and their links to sporting strategies. Thus, the schemes identified in our results can be relevant to capture the granularity of the owner objectives and club strategies and go beyond existing theoretical analysis, which simplifies strategies to analyse the economics of clubs. Leagues and regulation institutions may benefit from having a more defined understanding of the club’s strategies. In this vein, the British government’s report on the sustainability of football club governance (DCMS, 2023) shows an example of how a strategic response to resource dependency has important regulatory implications. Indeed, the report proposes for example a licensing system in which “The club must have adequate financial and non-financial resources, and controls in place, to meet committed spending and foreseeable risks” (DCMS, 2023, p. 30).

It is interesting to note that since 2019, some French clubs have been sold to consortiums

that aim to use them as “farming” entities: City Group owns Troyes, Chelsea owns Strasbourg, and Bournemouth owns Lorient among other multi-club ownerships such as Redbird investment funds that own Milan AC and Toulouse. In a way, this can be compared to the use of farming teams in the MLB (Olson & Schwab, 2000). Multi-club ownership raises several controversies and the UEFA president wants to “rethink” the rules about multi-club ownership as the actual limit is of the control of two clubs maximum that participate in the same UEFA competition (BBC, 2023).

Limitations

The limits of our study are multiple in terms of data, method, and results. In fact, for the last 10 years, some data is missing regarding the financial results of Olympique Lyonnais and RC Lens. We have also chosen to remove some observations that we have to consider as outliers, as they represent extreme cases of one club financially balanced by the transfer result but most importantly by the shareholder (Monaco) and the other with large losses and betting on the transfer market without the bailout of the shareholder (Lille). They would have represented the sole observation of two supplementary resource dependence archetypes. Our method of analysis is also somewhat limited by its descriptive aspect as we are exploring archetypes and not measuring the effects of such strategies on sporting performance.

Regarding the interpretation of our results, we note that the inertia regarding trading activity is not taken into account. Indeed, some clubs might have a shift from one strategy to another regarding their squad structure or their financial objectives. This latency related to trading activity and player valuation in the transfer market has been pointed out by Campa (2022). Moreover, we explore squad structure archetypes every year. This may limit the capture of the granularity of the valuation opportunities. Thus, some clubs may change their squad structure within a year, notably when there are no more sporting stakes. The end of a season

can be the theatre of more playing time for the players that a club wants to expose to increase its market value for the transfer window to come (Carlsson-Wall *et al.*, 2016).

Avenues

In terms of future research, it could be interesting to explore and replicate our methods in comparison with another league with similar economic characteristics (e.g. Serie A) but different cultural orientations (Hofstede, 1980), especially about old players. As the characteristics of French football finance and squad structure might not be replicable to all main football leagues, this could bring other archetypes and strategic schemes that are not present in French Ligue 1. Qualitative analysis may be interesting to identify changes in archetypes or schemes (Hoye *et al.*, 2020). Further research could investigate the use of young players despite the lack of financial impact thanks to the use of new institutionalism such as mimetic isomorphism in a context of high uncertainty (Di Maggio and Powell, 1983). As pointed out by Pfeffer and Salancik (2003), the knowledge of the environment is the result of the interpretation of ambiguous events. Thus, the subjective perception of reality shapes an organisation's response to its environment. In this regard, the isomorphism might be the result of the mirage created by the economic power driven by the Premier League on the transfer market. Nevertheless, barrier imitations may protect the competitive advantage of an organisation (Demsetz, 1982). For football clubs involved in the competition to sell their players on the transfer market, these barriers can be linked to the club's competencies to train and develop their players' skills (for example, high training skills in the club in the academy).

The large expenses of English Premier League clubs have raised interest in trading strategies. This is especially the case in France as the country is known to train quality youth players (The Athletic, 2018). Although it seems to be an established belief, it is not necessarily useful to structure the squad based on young players to balance the budget due to trading. The

transfer market has certainly not enabled a trickle-down of revenues between big and small clubs (Hoey *et al.* 2021) but more likely benefitted more or less durably to some clubs of middle size. Plus, it may have extended the resource dependency of some middle-size clubs which have been attracted by the injection of money coming from the English Premier League. These clubs may have been tempted to take a chance at the highly volatile transfer market game without the financial flexibility to manage their resource dependencies. Ultimately, French clubs seem to have a trade-off to make between leaning towards more dependencies (to the shareholders and/or the transfer market) to have access to more resources and leaning towards more autonomy which implies fewer resources. Since 2019, the latter have been amplified by two major exogenous shocks with COVID-19 which have impacted the league from the end of 2020 to 2021, and the bankruptcy of the main broadcaster of Ligue 1, Mediapro, at the end of 2021 (Feuillet *et al.*, 2023).

In terms of methodology, case studies may be relevant to explore the impact of managerial and ownership changes on the links between resource dependency and squad structure. In this regard, the foreign investments in French clubs are quite interesting notably because of the diversity of the types of investors: state (Qatar with Paris Saint-Germain), billionaires (Franck McCourt with Marseille and Jim Radcliffe with OGC Nice), investment funds (Redbird with Toulouse, Merlyn Partners with Lille) and entrepreneur-investor (Gerard Lopez with Bordeaux, John Textor with Lyon).

Conclusion

Our research aimed to measure the influence of resource dependency on squad structure in French football by building strategic archetypes for both types of variables. We use the k-means classification to build both archetypes and measure their relations in a table of contingency. Statistic tests show significant links between both archetypes. Our research

contributes to identifying three dominant strategic schemes of the squad structure related to their resource dependency: the well-balanced clubs that are using handyman's squad structure strategy because of very limited resources (avoidance); the well-balanced clubs that are using trainer or post-trainer strategy thanks to some financial resources (shaping) and the unbalanced clubs that are supported by shareholder loans and/or trading activities (adaptation). These schemes demonstrate a variety of clubs' possible strategic responses to resource dependency (towards shareholders' loans or transfer market), which can explain how clubs choose to limit or not their resource dependency. Our results may be useful for practitioners (owners, regulatory boards, financial control authorities, public authorities) to better understand the strategy possible in a specific context and the risks associated with some strategies. This could be relevant to manage risks more efficiently in a league that has suffered from negative economic shocks and has been massively helped by public authorities which is not sustainable (Carin and Terrien, 2021, Dufau *et al.*, 2022). Thus, we have identified recurrence in strategic schemes, which can also indicate strategic frontiers linked to resource dependency that allow some clubs to be more flexible than others to adopt new strategies. The fact that more clubs have been sold to foreign investors in France since 2019 might confirm the relevance of resource dependency theory in this specific context as domestic owners may have been resigned to selling clubs due to the fragility of its economy (volatility of transfer market and persistent deficit) and their unwillingness to bail out clubs at any cost. Therefore, foreign investments can be seen as an escape way for domestic owners to sell their clubs after realising the challenges and uncertainties associated with the squad structure strategy of trading. Hence, it is interesting to point out that since 2019, some French clubs have been sold to consortiums that aim to use them as 'farming' entities: City Group owns Troyes, Chelsea owns Strasbourg, Bournemouth owns Lorient among others multi-club ownerships such as Redbird investment funds that owns Milan AC and Toulouse. The fact that middle-size clubs in France are being used as farming

teams could be the result of the important resource dependency occurring in Ligue1 and the economic downturn compared to top European leagues. French clubs may have to rethink their strategy to avoid recovering strategic autonomy and avoid becoming a development league.

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Appendixes

Appendix 1

Descriptive statistics of resource dependency archetypes (source: created by author)

Well-balanced	Net results /total products	Operating result /Total products	Shareholder loans/ total products	Transfer results/total products
mean	0.02	-0.07	0.06	0.09
max	0.21	0.20	0.40	0.28
min	-0.13	-0.33	0.00	-0.20
Standard deviation	0.07	0.12	0.10	0.10
Supported by the shareholder	Net results /total products	Operating result /Total products	Shareholder loans/ total products	Transfer results/total products
mean	-0.25	-0.38	0.37	0.11
max	0.09	0.04	1.31	0.38
min	-0.71	-0.86	0.00	-0.11
Standard deviation	0.21	0.20	0.32	0.13
Transfer-dependent	Net results /total products	Operating result /Total products	Shareholder loans/ total products	Transfer results/total products
mean	0.02	-0.36	0.06	0.41
max	0.36	-0.12	0.37	0.93
min	-0.30	-0.71	0.00	0.13
Standard deviation	0.11	0.14	0.09	0.18

Appendix 2

Descriptive statistics of squad structure archetypes (source: created by author)

Handymans	%P -21	%P22- 26	%P27- 31	%P +32	%Min- 21	%Min2 2-26	%Min2 7-31	%Min +32	%T M-21	%TM22 -26	%TM27 -31	%TM +32	%PFA min	%Big5 min	%FA min	%Inter min	%Recruit min	%Loan min
mean	0.19	0.47	0.24	0.10	0.11	0.51	0.27	0.11	0.08	0.57	0.29	0.06	0.11	0.23	0.48	0.33	0.35	0.08
max	0.31	0.60	0.41	0.22	0.26	0.67	0.39	0.30	0.21	0.79	0.46	0.17	0.36	0.73	0.71	0.54	0.60	0.25
min	0.04	0.30	0.06	0.00	0.00	0.35	0.14	0.00	0.00	0.30	0.10	0.00	0.00	0.06	0.20	0.08	0.13	0.00
Standard deviation	0.07	0.08	0.07	0.06	0.06	0.07	0.07	0.08	0.05	0.10	0.09	0.04	0.09	0.13	0.17	0.12	0.12	0.07
Veterans	%P -21	%P22- 26	%P27- 31	%P +32	%Min- 21	%Min2 2-26	%Min2 7-31	%Min +32	%T M-21	%TM22 -26	%TM27 -31	%TM +32	%PFA min	%Big5 min	%FA min	%Inter Min	%Recruit Min	%Loan min
mean	0.25	0.31	0.32	0.12	0.15	0.30	0.41	0.14	0.14	0.35	0.43	0.08	0.12	0.22	0.52	0.34	0.39	0.10
max	0.41	0.48	0.48	0.22	0.33	0.50	0.56	0.31	0.33	0.52	0.57	0.28	0.40	0.54	0.83	0.64	0.66	0.29
min	0.11	0.18	0.08	0.00	0.02	0.14	0.23	0.00	0.02	0.13	0.29	0.00	0.00	0.00	0.21	0.10	0.00	0.00
Standard deviation	0.09	0.08	0.08	0.05	0.08	0.08	0.08	0.08	0.09	0.09	0.08	0.06	0.11	0.12	0.18	0.12	0.15	0.07
Post Trainers	%P -21	%P22- 26	%P27- 31	%P +32	%Min- 21	%Min2 2-26	%Min2 7-31	%Min +32	%T M-21	%TM22 -26	%TM27 -31	%TM +32	%PFA min	%Big5 min	%FA min	%Inter Min	%Recruit Min	%Loan min
mean	0.25	0.35	0.33	0.07	0.15	0.39	0.40	0.06	0.12	0.43	0.43	0.03	0.17	0.17	0.18	0.54	0.22	0.04
max	0.52	0.53	0.52	0.21	0.46	0.66	0.64	0.21	0.33	0.64	0.64	0.19	0.44	0.54	0.52	0.82	0.56	0.27
min	0.07	0.13	0.18	0.00	0.03	0.10	0.21	0.00	0.02	0.08	0.23	0.00	0.00	0.00	0.00	0.24	0.05	0.00
Standard deviation	0.09	0.08	0.07	0.06	0.09	0.10	0.10	0.06	0.08	0.10	0.11	0.04	0.11	0.11	0.12	0.14	0.12	0.06
Trainers	%P -21	%P22- 26	%P27- 31	%P +32	%Min- 21	%Min2 2-26	%Min2 7-31	%Min +32	%T M-21	%TM22 -26	%TM27 -31	%TM +32	%PFA min	%Big5 min	%FA min	%Inter Min	%Recruit Min	%Loan min
mean	0.10	0.24	0.04	0.00	0.05	0.29	0.00	0.00	0.01	0.31	0.02	0.00	0.06	0.00	0.00	0.10	0.08	0.00
max	0.52	0.69	0.32	0.16	0.45	0.72	0.36	0.24	0.40	0.80	0.40	0.13	0.52	0.51	0.42	0.79	0.60	0.26
min	0.10	0.24	0.04	0.00	0.05	0.29	0.00	0.00	0.01	0.31	0.02	0.00	0.06	0.00	0.00	0.10	0.08	0.00
Standard deviation	0.09	0.09	0.06	0.04	0.09	0.11	0.07	0.06	0.09	0.11	0.08	0.03	0.12	0.10	0.09	0.13	0.11	0.06

Appendix 3:

Database of resource dependency variables for each observation (source: created by author)

Club/year	Net results /total products	Operating result /total products	Shareholder loans/ total products	Transfer results/ total products
ACA12	0,16	0,16	0,00	0,00
ACA13	-0,09	-0,14	0,01	0,08
ACA14	-0,08	-0,13	0,00	0,04
AJA10	-0,12	-0,18	0,00	0,04
AJA11	0,07	0,04	0,00	0,03
AJA12	-0,64	-0,70	0,00	0,01
AMII8	0,21	0,02	0,05	0,23
AMII9	0,10	-0,15	0,02	0,28
ARA11	0,06	0,18	0,00	-0,02
ASM10	0,00	-0,29	0,07	0,13
ASM11	-0,01	-0,50	0,00	0,13
ASM14	0,00	-0,66	0,86	0,00
ASM15	0,00	-0,33	1,31	0,37
ASM16	0,00	-1,08	1,94	1,18
ASM17	0,00	-0,20	1,07	0,23
ASM18	0,00	-1,02	2,68	2,55
ASM19	0,00	-1,48	2,72	1,39
ASNL10	-0,44	-0,54	0,00	0,01
ASNL11	0,06	-0,36	0,08	0,36
ASNL12	-0,08	-0,27	0,14	0,22
ASNL13	-0,15	-0,30	0,17	0,17
ASNL17	0,15	-0,07	0,07	0,26
ASSE10	-0,06	-0,49	0,00	0,35
ASSE11	0,00	-0,19	0,01	0,23
ASSE12	0,00	-0,24	0,00	0,29
ASSE13	0,02	-0,18	0,04	0,24
ASSE14	0,03	-0,33	0,00	0,38
ASSE15	0,00	-0,17	0,00	0,19
ASSE16	0,03	-0,16	0,00	0,20
ASSE17	0,02	0,00	0,00	0,03
ASSE18	0,01	-0,22	0,00	0,24
ASSE19	0,01	-0,20	0,00	0,23
DFC017	0,07	0,09	0,03	0,04
DFC012	0,01	0,01	0,00	0,00
DFC018	0,18	-0,12	0,00	0,38
DFC019	0,04	-0,10	0,04	0,22
EAG14	0,06	0,01	0,00	0,07

EAG15	0,01	0,01	0,00	0,03
EAG16	0,08	-0,29	0,00	0,29
EAG17	0,03	-0,11	0,00	0,16
EAG18	0,02	-0,19	0,00	0,23
EAG19	0,01	-0,17	0,00	0,17
ESTAC13	0,15	0,04	0,00	0,15
ESTAC16	0,14	-0,05	0,07	0,26
ESTAC18	0,05	0,04	0,00	0,02
ETG12	0,03	0,03	0,00	0,00
ETG13	0,00	-0,06	0,00	0,00
ETG14	0,00	-0,17	0,00	0,18
ETG15	0,00	-0,13	0,00	0,15
FCGB10	0,02	0,08	0,00	-0,01
FCGB11	-0,11	-0,30	0,14	0,19
FCGB12	-0,22	-0,27	0,46	0,06
FCGB13	-0,11	-0,17	0,31	0,06
FCGB14	-0,12	-0,23	0,31	0,11
FCGB15	-0,23	-0,32	0,36	0,08
FCGB16	-0,08	-0,30	0,52	0,23
FCGB17	-0,22	-0,28	0,54	0,07
FCGB18	-0,38	-0,82	0,80	0,29
FCGB19	-0,30	-0,56	0,00	0,54
FCL10	0,09	-0,12	0,03	0,22
FCL11	0,05	-0,29	0,02	0,38
FCL12	0,04	-0,21	0,00	0,32
FCL13	0,08	-0,15	0,00	0,25
FCL14	-0,01	-0,22	0,00	0,20
FCL15	-0,06	-0,33	0,00	-0,02
FCL16	0,14	-0,41	0,05	0,64
FCL17	0,20	-0,51	0,00	0,84
FCM15	-0,06	-0,20	0,00	0,15
FCM17	0,02	-0,06	0,00	0,09
FCM18	0,01	-0,71	0,00	0,79
FCN14	0,01	0,05	0,07	0,00
FCN15	0,00	0,04	0,15	0,01
FCN16	0,02	-0,20	0,29	0,46
FCN17	0,01	-0,02	0,14	0,09
FCN18	0,00	-0,32	0,11	0,31
FCN19	0,01	-0,49	0,31	0,54
FCSM10	-0,36	-0,42	0,00	0,06
FCSM11	0,06	0,02	0,00	0,05
FCSM12	0,02	-0,33	0,00	0,59
FCSM13	0,04	-0,11	0,00	0,15
FCSM14	-0,60	-0,59	0,00	-0,01
GFCA16	0,09	0,11	0,00	0,00
GRE10	-0,11	-0,19	0,00	0,05

LOSC10	-0,02	-0,41	0,00	0,41
LOSC11	-0,09	-0,32	0,00	0,18
LOSC12	0,05	-0,56	0,00	0,67
LOSC13	-0,03	-0,21	0,00	0,19
LOSC14	-0,24	-0,65	0,14	0,46
LOSC15	0,01	-0,40	0,20	0,48
LOSC16	-0,31	-0,66	0,26	0,36
LOSC17	-0,73	-1,10	0,97	0,45
LOSC18	-2,63	-1,91	0,00	0,81
LOSC19	-1,04	-1,44	0,00	0,84
MHSC10	0,01	0,14	0,12	0,00
MHSC11	0,00	-0,19	0,18	0,39
MHSC12	0,02	0,06	0,06	0,03
MHSC13	0,13	-0,02	0,00	0,23
MHSC14	-0,07	-0,31	0,00	0,21
MHSC15	0,05	-0,28	0,00	0,37
MHSC16	0,00	-0,25	0,04	0,23
MHSC17	0,00	-0,32	0,08	0,29
MHSC18	0,13	-0,31	0,06	0,48
MHSC19	0,07	-0,31	0,08	0,40
MUC10	-0,07	-0,19	0,05	0,33
NO19	0,10	0,12	0,31	0,01
OGCN10	-0,23	-0,38	0,19	0,11
OGCN11	-0,05	-0,42	0,05	0,39
OGCN12	-0,28	-0,35	0,22	0,12
OGCN13	0,02	-0,06	0,17	0,13
OGCN14	-0,13	-0,21	0,16	0,02
OGCN15	0,02	-0,17	0,17	0,18
OGCN16	0,14	-0,17	0,37	0,35
OGCN17	0,03	-0,10	0,45	0,17
OGCN18	0,01	-0,25	0,40	0,29
OGCN19	0,12	-0,58	0,17	0,73
OM10	0,00	-0,08	0,08	0,08
OM11	-0,10	-0,14	0,08	0,03
OM12	-0,06	-0,19	0,01	-0,02
OM13	0,00	-0,18	0,00	0,09
OM14	-0,10	-0,09	0,00	0,01
OM15	-0,03	-0,49	0,04	0,32
OM16	0,00	-0,42	0,03	0,44
OM17	-0,39	-0,42	0,87	0,10
OM18	-0,55	-0,53	0,25	0,01
OM19	-0,71	-0,86	0,31	0,14
PSG10	-0,26	-0,20	0,19	-0,11
PSG11	0,00	-0,29	0,23	0,02
PSG12	-0,02	0,04	0,64	0,01
PSG13	-0,01	-0,02	0,06	0,02

PSG14	0,00	-0,05	0,10	0,05
PSG15	0,02	0,03	0,40	0,00
PSG16	0,02	0,00	0,38	0,01
PSG17	-0,04	-0,06	0,37	0,03
PSG18	0,08	-0,17	0,19	0,26
PSG19	0,04	-0,07	0,22	0,12
RCL15	-0,40	-0,45	0,25	0,15
RCS18	0,14	0,17	0,00	0,05
RCS19	0,10	-0,07	0,00	0,23
SB11	0,07	0,10	0,00	-0,01
SB12	0,03	-0,08	0,00	0,11
SB13	-0,09	-0,10	0,00	0,06
SCB13	0,03	-0,06	0,00	0,09
SCB14	0,00	-0,12	0,00	0,12
SCB15	-0,04	-0,15	0,00	0,04
SCB16	-0,07	-0,19	0,01	0,12
SCO 16	0,19	0,04	0,00	0,20
SCO 17	0,15	0,06	0,00	0,15
SCO 18	0,36	-0,16	0,00	0,71
SCO 19	-0,33	-0,35	0,03	0,02
SMC11	-0,05	-0,06	0,00	-0,06
SMC12	0,00	0,00	0,00	0,00
SMC15	-0,01	0,01	0,00	-0,01
SMC16	0,14	-0,18	0,00	0,38
SMC17	0,04	-0,23	0,00	0,29
SMC18	0,01	-0,22	0,00	0,24
SMC19	0,02	-0,38	0,01	0,40
SR10	0,00	-0,06	0,21	0,00
SR11	0,00	0,05	0,34	0,00
SR12	0,00	-0,04	0,21	-0,20
SR13	-0,02	-0,18	0,21	0,22
SR14	-0,36	-0,30	0,14	-0,09
SR15	-0,37	-0,25	0,20	-0,11
SR16	-0,06	-0,24	0,26	0,22
SR17	-0,03	-0,06	0,12	0,11
SR18	0,09	-0,21	0,54	0,38
SR19	-0,01	-0,02	0,39	0,02
STR13	0,12	0,20	0,07	0,00
STR14	0,09	0,12	0,00	0,01
STR15	0,00	-0,07	0,00	0,07
STR16	0,02	-0,07	0,00	0,11
STR19	0,00	-0,17	0,02	0,17
TFC10	-0,01	-0,21	0,05	0,18
TFC11	0,02	-0,24	0,02	0,29
TFC12	-0,02	-0,12	0,00	0,09
TFC13	0,04	-0,30	0,00	0,42

TFC14	0,14	-0,33	0,01	0,54
TFC15	-0,08	-0,38	0,00	0,28
TFC16	-0,06	-0,44	0,00	0,35
TFC17	-0,13	-0,33	0,00	0,19
TFC18	-0,01	-0,31	0,08	0,29
TFC19	0,28	-0,62	0,03	0,93
USBO10	0,01	0,03	0,00	0,00
VAFC10	-0,38	-0,48	0,21	0,03
VAFC11	-0,10	-0,34	0,00	0,21
VAFC12	-0,13	-0,21	0,00	0,11
VAFC13	0,03	-0,21	0,00	0,20
VAFC14	-0,29	-0,32	0,00	0,02

Appendix 4:

Database of squad structure variables for each observation (source: created by author)

Clubyear	%P-21	%P22-26	%P27-31	%P+32	%Min-21	%Min22-26	%Min27-31	%Min+32	%TM-21	%TM22-26	%TM27-31	%TM+32	%PFAmin	%Big5min	%FAmin	%Intermin	%Recruitmin	%Loanmin
ACA12	0,08	0,48	0,28	0,16	0,08	0,49	0,31	0,13	0,08	0,68	0,18	0,06	0,15	0,73	0,71	0,36	0,44	0,05
ACA13	0,11	0,39	0,39	0,11	0,05	0,39	0,40	0,15	0,08	0,52	0,35	0,05	0,07	0,20	0,80	0,48	0,30	0,03
ACA14	0,38	0,21	0,26	0,15	0,15	0,30	0,39	0,16	0,12	0,24	0,52	0,11	0,16	0,23	0,64	0,39	0,37	0,11
AJA10	0,21	0,42	0,38	0,00	0,06	0,31	0,63	0,00	0,04	0,36	0,59	0,00	0,13	0,13	0,13	0,63	0,13	0,03
AJA11	0,20	0,48	0,32	0,00	0,07	0,46	0,47	0,00	0,02	0,40	0,58	0,00	0,17	0,03	0,21	0,60	0,06	0,00
AJA12	0,31	0,31	0,31	0,07	0,15	0,34	0,37	0,14	0,07	0,38	0,48	0,07	0,26	0,15	0,27	0,55	0,19	0,03
AMI18	0,13	0,37	0,30	0,20	0,01	0,52	0,37	0,10	0,11	0,48	0,31	0,09	0,01	0,25	0,52	0,40	0,48	0,15
AMI19	0,12	0,56	0,24	0,08	0,10	0,50	0,32	0,08	0,10	0,52	0,36	0,02	0,05	0,22	0,39	0,31	0,37	0,25
ARA11	0,15	0,38	0,38	0,09	0,08	0,37	0,50	0,06	0,07	0,35	0,50	0,07	0,00	0,54	0,78	0,26	0,66	0,22
ASM10	0,34	0,31	0,31	0,00	0,26	0,29	0,44	0,00	0,24	0,32	0,45	0,00	0,32	0,11	0,22	0,47	0,25	0,11
ASM11	0,32	0,29	0,32	0,06	0,25	0,33	0,35	0,08	0,25	0,37	0,35	0,03	0,33	0,22	0,26	0,51	0,40	0,13
ASM14	0,38	0,24	0,24	0,14	0,33	0,18	0,32	0,17	0,33	0,26	0,37	0,03	0,14	0,30	0,23	0,64	0,57	0,07
ASM15	0,44	0,22	0,26	0,07	0,46	0,10	0,34	0,10	0,25	0,14	0,59	0,02	0,17	0,13	0,16	0,50	0,16	0,18
ASM17	0,52	0,24	0,17	0,07	0,37	0,31	0,29	0,03	0,37	0,31	0,30	0,01	0,15	0,21	0,07	0,47	0,21	0,00
ASNL10	0,21	0,41	0,28	0,00	0,13	0,51	0,36	0,00	0,13	0,41	0,47	0,00	0,35	0,24	0,15	0,31	0,24	0,04
ASNL11	0,26	0,33	0,37	0,00	0,12	0,34	0,55	0,00	0,07	0,36	0,57	0,00	0,33	0,04	0,25	0,29	0,08	0,04
ASNL12	0,17	0,47	0,33	0,03	0,16	0,52	0,30	0,02	0,07	0,48	0,42	0,03	0,09	0,32	0,20	0,32	0,47	0,23
ASNL13	0,38	0,38	0,14	0,07	0,21	0,46	0,23	0,10	0,16	0,60	0,18	0,06	0,08	0,22	0,29	0,19	0,33	0,04
ASNL17	0,30	0,19	0,41	0,11	0,22	0,19	0,48	0,12	0,33	0,13	0,49	0,04	0,32	0,05	0,51	0,41	0,31	0,09
ASSE10	0,29	0,46	0,21	0,04	0,16	0,61	0,19	0,04	0,10	0,66	0,20	0,04	0,32	0,22	0,06	0,41	0,34	0,12
ASSE11	0,31	0,38	0,19	0,12	0,19	0,43	0,23	0,16	0,12	0,55	0,21	0,12	0,32	0,30	0,19	0,17	0,30	0,02

ASSE12	0,33	0,37	0,23	0,07	0,21	0,54	0,21	0,04	0,09	0,57	0,29	0,05	0,23	0,51	0,18	0,21	0,60	0,03
ASSE13	0,28	0,36	0,32	0,04	0,16	0,49	0,29	0,05	0,17	0,48	0,34	0,01	0,24	0,28	0,19	0,30	0,28	0,04
ASSE14	0,19	0,42	0,31	0,08	0,06	0,48	0,41	0,05	0,10	0,55	0,32	0,03	0,20	0,17	0,17	0,29	0,20	0,03
ASSE15	0,17	0,33	0,50	0,00	0,04	0,37	0,59	0,00	0,03	0,33	0,64	0,00	0,11	0,19	0,13	0,41	0,21	0,11
ASSE16	0,23	0,35	0,35	0,06	0,08	0,34	0,54	0,03	0,06	0,34	0,57	0,02	0,10	0,25	0,21	0,33	0,38	0,09
ASSE17	0,35	0,32	0,32	0,00	0,13	0,48	0,39	0,00	0,04	0,47	0,49	0,00	0,14	0,18	0,14	0,34	0,23	0,13
ASSE18	0,23	0,37	0,40	0,00	0,20	0,30	0,51	0,00	0,07	0,40	0,53	0,00	0,17	0,26	0,21	0,38	0,36	0,09
ASSE19	0,36	0,18	0,36	0,11	0,10	0,21	0,56	0,13	0,17	0,16	0,57	0,09	0,13	0,14	0,24	0,55	0,30	0,14
DFCO17	0,11	0,41	0,41	0,07	0,03	0,47	0,38	0,12	0,04	0,47	0,46	0,03	0,04	0,09	0,70	0,35	0,44	0,01
DFCO12	0,24	0,45	0,31	0,00	0,31	0,45	0,24	0,00	0,27	0,44	0,29	0,00	0,00	0,49	0,62	0,10	0,64	0,05
DFCO18	0,12	0,50	0,31	0,08	0,08	0,56	0,31	0,05	0,01	0,55	0,43	0,02	0,05	0,35	0,43	0,48	0,35	0,17
DFCO19	0,12	0,46	0,31	0,12	0,07	0,50	0,37	0,06	0,09	0,57	0,29	0,04	0,07	0,06	0,35	0,53	0,22	0,00
EAG14	0,28	0,48	0,08	0,08	0,07	0,34	0,53	0,05	0,04	0,42	0,51	0,03	0,12	0,23	0,61	0,27	0,23	0,05
EAG15	0,11	0,39	0,36	0,14	0,02	0,40	0,41	0,18	0,02	0,43	0,49	0,06	0,06	0,17	0,52	0,23	0,34	0,12
EAG16	0,18	0,36	0,25	0,21	0,10	0,34	0,37	0,19	0,06	0,43	0,42	0,09	0,02	0,14	0,57	0,31	0,22	0,06
EAG17	0,16	0,36	0,32	0,16	0,10	0,33	0,41	0,17	0,06	0,39	0,46	0,09	0,13	0,10	0,39	0,28	0,43	0,07
EAG18	0,18	0,32	0,36	0,14	0,18	0,27	0,44	0,11	0,17	0,40	0,39	0,05	0,09	0,06	0,44	0,42	0,26	0,00
EAG19	0,27	0,33	0,33	0,07	0,23	0,39	0,25	0,13	0,17	0,33	0,48	0,02	0,12	0,10	0,29	0,24	0,14	0,02
ESTAC13	0,32	0,28	0,24	0,16	0,18	0,35	0,23	0,23	0,26	0,31	0,30	0,13	0,07	0,31	0,76	0,23	0,42	0,13
ESTAC16	0,27	0,30	0,39	0,03	0,27	0,24	0,43	0,07	0,19	0,31	0,49	0,01	0,12	0,20	0,52	0,18	0,38	0,29
ESTAC18	0,16	0,48	0,20	0,16	0,09	0,58	0,20	0,14	0,10	0,63	0,20	0,08	0,09	0,25	0,68	0,29	0,33	0,11
ETG12	0,21	0,36	0,29	0,14	0,16	0,37	0,30	0,17	0,08	0,43	0,42	0,08	0,04	0,22	0,77	0,45	0,41	0,09
ETG13	0,21	0,48	0,14	0,17	0,10	0,52	0,14	0,23	0,04	0,66	0,21	0,09	0,07	0,21	0,58	0,45	0,14	0,19
ETG14	0,21	0,48	0,14	0,17	0,10	0,52	0,14	0,23	0,04	0,66	0,21	0,09	0,07	0,21	0,58	0,45	0,14	0,19
ETG15	0,17	0,40	0,30	0,13	0,17	0,36	0,35	0,13	0,08	0,49	0,40	0,03	0,05	0,16	0,29	0,50	0,34	0,19
FCGB10	0,17	0,42	0,29	0,13	0,03	0,49	0,45	0,03	0,02	0,51	0,42	0,05	0,33	0,26	0,05	0,52	0,26	0,00
FCGB11	0,26	0,39	0,32	0,03	0,05	0,44	0,51	0,00	0,07	0,45	0,48	0,01	0,21	0,12	0,09	0,53	0,14	0,02
FCGB12	0,19	0,46	0,35	0,00	0,04	0,52	0,44	0,00	0,05	0,45	0,50	0,00	0,25	0,19	0,23	0,48	0,24	0,00
FCGB13	0,19	0,35	0,46	0,00	0,10	0,41	0,49	0,00	0,06	0,41	0,54	0,00	0,33	0,05	0,19	0,50	0,08	0,00

FCGB14	0,28	0,25	0,41	0,06	0,09	0,37	0,54	0,01	0,10	0,30	0,58	0,02	0,28	0,07	0,28	0,51	0,16	0,00
FCGB15	0,37	0,40	0,13	0,10	0,21	0,42	0,20	0,17	0,19	0,46	0,23	0,11	0,24	0,17	0,09	0,47	0,29	0,03
FCGB16	0,41	0,29	0,24	0,06	0,27	0,39	0,24	0,10	0,18	0,38	0,40	0,04	0,30	0,02	0,10	0,45	0,11	0,04
FCGB17	0,37	0,37	0,15	0,11	0,29	0,34	0,17	0,19	0,34	0,37	0,21	0,08	0,21	0,26	0,08	0,43	0,34	0,09
FCGB18	0,35	0,42	0,13	0,10	0,25	0,50	0,15	0,09	0,24	0,55	0,16	0,04	0,20	0,29	0,14	0,39	0,50	0,06
FCGB19	0,39	0,33	0,15	0,12	0,25	0,42	0,22	0,12	0,24	0,46	0,23	0,06	0,20	0,18	0,16	0,42	0,26	0,11
FCL10	0,04	0,54	0,38	0,04	0,00	0,59	0,39	0,02	0,00	0,55	0,40	0,05	0,08	0,37	0,49	0,10	0,43	0,06
FCL11	0,41	0,33	0,15	0,11	0,24	0,56	0,12	0,09	0,21	0,58	0,11	0,10	0,10	0,30	0,37	0,30	0,22	0,09
FCL12	0,21	0,48	0,21	0,09	0,13	0,48	0,28	0,10	0,08	0,57	0,23	0,13	0,04	0,28	0,42	0,25	0,36	0,04
FCL13	0,23	0,40	0,27	0,10	0,09	0,45	0,34	0,12	0,09	0,52	0,33	0,07	0,04	0,14	0,42	0,18	0,13	0,01
FCL14	0,29	0,43	0,25	0,04	0,22	0,45	0,28	0,05	0,16	0,60	0,21	0,04	0,06	0,21	0,36	0,28	0,18	0,03
FCL15	0,19	0,59	0,19	0,03	0,15	0,62	0,23	0,00	0,10	0,73	0,15	0,01	0,11	0,13	0,22	0,30	0,42	0,02
FCL16	0,31	0,47	0,22	0,00	0,20	0,56	0,24	0,00	0,23	0,55	0,22	0,00	0,10	0,11	0,24	0,39	0,24	0,03
FCL17	0,17	0,47	0,30	0,07	0,12	0,45	0,36	0,07	0,03	0,61	0,32	0,04	0,09	0,12	0,27	0,27	0,38	0,00
FCM15	0,23	0,55	0,13	0,10	0,07	0,62	0,21	0,10	0,15	0,58	0,20	0,07	0,35	0,08	0,50	0,33	0,39	0,05
FCM17	0,35	0,26	0,26	0,13	0,23	0,29	0,33	0,14	0,15	0,26	0,44	0,15	0,22	0,30	0,69	0,34	0,56	0,09
FCM18	0,33	0,31	0,22	0,14	0,18	0,21	0,39	0,21	0,15	0,38	0,38	0,10	0,15	0,21	0,46	0,32	0,43	0,15
FCN14	0,32	0,29	0,36	0,04	0,20	0,44	0,35	0,00	0,20	0,41	0,38	0,01	0,13	0,05	0,52	0,61	0,18	0,06
FCN15	0,30	0,33	0,37	0,00	0,17	0,37	0,47	0,00	0,19	0,43	0,38	0,00	0,20	0,03	0,51	0,44	0,05	0,00
FCN16	0,31	0,41	0,28	0,00	0,19	0,45	0,36	0,00	0,12	0,47	0,41	0,00	0,18	0,20	0,30	0,42	0,44	0,14
FCN17	0,22	0,59	0,11	0,07	0,24	0,55	0,08	0,13	0,11	0,65	0,16	0,07	0,36	0,00	0,14	0,29	0,28	0,02
FCN18	0,10	0,69	0,17	0,03	0,05	0,72	0,22	0,00	0,04	0,66	0,28	0,02	0,33	0,19	0,09	0,25	0,32	0,08
FCN19	0,24	0,58	0,15	0,03	0,11	0,66	0,17	0,06	0,01	0,70	0,24	0,04	0,26	0,13	0,04	0,35	0,30	0,16
FCSM10	0,46	0,39	0,11	0,04	0,27	0,46	0,19	0,07	0,19	0,48	0,25	0,09	0,25	0,05	0,06	0,40	0,14	0,05
FCSM11	0,32	0,52	0,12	0,04	0,24	0,58	0,15	0,03	0,22	0,51	0,20	0,08	0,40	0,22	0,05	0,41	0,22	0,00
FCSM12	0,48	0,32	0,16	0,03	0,38	0,35	0,20	0,07	0,29	0,46	0,22	0,03	0,52	0,15	0,07	0,28	0,16	0,02
FCSM13	0,33	0,41	0,15	0,11	0,33	0,36	0,19	0,11	0,23	0,57	0,12	0,08	0,46	0,09	0,21	0,22	0,25	0,03
FCSM14	0,28	0,50	0,14	0,08	0,19	0,46	0,24	0,10	0,16	0,69	0,10	0,04	0,30	0,16	0,22	0,18	0,24	0,11
GFCA16	0,09	0,43	0,26	0,22	0,08	0,41	0,23	0,29	0,11	0,45	0,32	0,11	0,00	0,32	0,71	0,40	0,43	0,13

GRE10	0,28	0,31	0,25	0,16	0,05	0,32	0,40	0,23	0,14	0,30	0,39	0,17	0,04	0,39	0,58	0,40	0,36	0,05
LOSC10	0,17	0,57	0,26	0,00	0,09	0,67	0,24	0,00	0,07	0,64	0,29	0,00	0,24	0,19	0,25	0,44	0,18	0,01
LOSC11	0,24	0,48	0,29	0,00	0,10	0,64	0,26	0,00	0,16	0,61	0,23	0,00	0,26	0,10	0,32	0,62	0,07	0,03
LOSC12	0,25	0,29	0,42	0,04	0,17	0,29	0,45	0,09	0,21	0,38	0,37	0,05	0,24	0,26	0,25	0,66	0,30	0,06
LOSC13	0,20	0,32	0,32	0,16	0,11	0,40	0,38	0,12	0,07	0,45	0,39	0,09	0,17	0,24	0,25	0,57	0,24	0,00
LOSC14	0,27	0,32	0,32	0,09	0,10	0,40	0,41	0,10	0,08	0,44	0,44	0,04	0,21	0,08	0,29	0,65	0,11	0,00
LOSC15	0,33	0,37	0,22	0,07	0,26	0,35	0,30	0,09	0,18	0,47	0,33	0,02	0,10	0,16	0,27	0,54	0,22	0,10
LOSC16	0,41	0,25	0,19	0,16	0,17	0,32	0,27	0,23	0,33	0,21	0,33	0,13	0,08	0,28	0,25	0,44	0,44	0,07
MHSC10	0,30	0,30	0,17	0,22	0,26	0,41	0,19	0,14	0,21	0,30	0,33	0,16	0,36	0,18	0,47	0,22	0,24	0,02
MHSC11	0,28	0,20	0,36	0,16	0,27	0,25	0,34	0,14	0,26	0,20	0,39	0,15	0,38	0,16	0,33	0,32	0,26	0,00
MHSC12	0,22	0,30	0,35	0,13	0,14	0,41	0,35	0,10	0,19	0,44	0,29	0,08	0,39	0,17	0,17	0,42	0,17	0,00
MHSC13	0,14	0,48	0,24	0,10	0,07	0,47	0,35	0,10	0,04	0,64	0,30	0,02	0,44	0,15	0,11	0,43	0,19	0,00
MHSC14	0,23	0,46	0,27	0,04	0,19	0,39	0,36	0,07	0,16	0,55	0,28	0,01	0,45	0,23	0,19	0,26	0,23	0,05
MHSC15	0,19	0,44	0,26	0,11	0,08	0,47	0,32	0,13	0,07	0,54	0,34	0,05	0,39	0,10	0,18	0,27	0,17	0,06
MHSC16	0,23	0,43	0,20	0,13	0,08	0,52	0,19	0,21	0,17	0,41	0,39	0,03	0,35	0,09	0,17	0,25	0,28	0,07
MHSC17	0,34	0,28	0,22	0,16	0,30	0,31	0,16	0,24	0,24	0,41	0,24	0,11	0,29	0,05	0,22	0,32	0,23	0,07
MHSC18	0,30	0,35	0,17	0,17	0,22	0,43	0,17	0,19	0,14	0,49	0,29	0,08	0,10	0,25	0,25	0,17	0,39	0,09
MHSC19	0,24	0,32	0,32	0,12	0,06	0,41	0,36	0,18	0,08	0,52	0,37	0,02	0,11	0,23	0,35	0,19	0,37	0,08
MUC10	0,39	0,36	0,21	0,03	0,35	0,44	0,17	0,04	0,23	0,43	0,28	0,07	0,43	0,11	0,16	0,30	0,22	0,03
NO19	0,23	0,59	0,05	0,14	0,24	0,70	0,00	0,06	0,30	0,63	0,02	0,05	0,37	0,29	0,24	0,12	0,41	0,24
OGCN10	0,23	0,50	0,15	0,12	0,20	0,54	0,16	0,10	0,15	0,63	0,19	0,04	0,06	0,25	0,20	0,58	0,23	0,06
OGCN11	0,19	0,53	0,22	0,06	0,09	0,66	0,22	0,03	0,08	0,62	0,26	0,03	0,03	0,23	0,16	0,65	0,28	0,10
OGCN12	0,16	0,58	0,23	0,03	0,03	0,62	0,33	0,02	0,00	0,65	0,32	0,03	0,03	0,26	0,31	0,54	0,36	0,02
OGCN13	0,31	0,56	0,06	0,06	0,20	0,58	0,14	0,08	0,07	0,79	0,10	0,04	0,09	0,35	0,43	0,30	0,39	0,05
OGCN14	0,48	0,41	0,07	0,03	0,37	0,46	0,13	0,04	0,29	0,56	0,14	0,01	0,12	0,15	0,42	0,21	0,15	0,06
OGCN15	0,45	0,38	0,14	0,03	0,32	0,55	0,10	0,03	0,14	0,59	0,26	0,01	0,22	0,09	0,33	0,20	0,23	0,06
OGCN16	0,52	0,33	0,12	0,03	0,32	0,47	0,17	0,04	0,22	0,56	0,20	0,02	0,13	0,15	0,23	0,14	0,47	0,23
OGCN17	0,41	0,44	0,04	0,11	0,24	0,61	0,05	0,10	0,24	0,68	0,02	0,06	0,14	0,19	0,08	0,20	0,48	0,13
OGCN18	0,47	0,37	0,07	0,10	0,27	0,54	0,07	0,12	0,30	0,58	0,04	0,09	0,11	0,25	0,17	0,18	0,33	0,08

OGCN19	0,48	0,38	0,07	0,07	0,31	0,55	0,03	0,11	0,39	0,40	0,20	0,02	0,15	0,10	0,16	0,21	0,21	0,00
OM10	0,17	0,22	0,52	0,09	0,05	0,29	0,64	0,01	0,03	0,31	0,60	0,06	0,01	0,27	0,07	0,60	0,40	0,00
OM11	0,17	0,42	0,29	0,13	0,12	0,44	0,30	0,14	0,06	0,49	0,39	0,07	0,09	0,18	0,05	0,77	0,18	0,00
OM12	0,33	0,33	0,29	0,04	0,24	0,37	0,34	0,05	0,15	0,52	0,31	0,02	0,10	0,29	0,08	0,70	0,29	0,00
OM13	0,16	0,36	0,44	0,04	0,12	0,32	0,54	0,02	0,04	0,51	0,44	0,01	0,15	0,09	0,04	0,79	0,18	0,05
OM14	0,29	0,29	0,33	0,08	0,17	0,33	0,41	0,09	0,13	0,41	0,44	0,02	0,07	0,22	0,00	0,68	0,26	0,00
OM15	0,52	0,24	0,20	0,04	0,32	0,23	0,39	0,06	0,33	0,36	0,30	0,01	0,08	0,05	0,00	0,58	0,08	0,01
OM16	0,37	0,30	0,30	0,04	0,36	0,34	0,30	0,00	0,27	0,46	0,26	0,00	0,01	0,40	0,07	0,65	0,54	0,27
OM17	0,33	0,22	0,30	0,15	0,23	0,27	0,30	0,21	0,15	0,30	0,52	0,03	0,06	0,44	0,36	0,55	0,62	0,26
OM18	0,12	0,28	0,44	0,16	0,11	0,32	0,46	0,10	0,04	0,35	0,54	0,06	0,04	0,40	0,16	0,65	0,49	0,07
OM19	0,17	0,29	0,33	0,21	0,16	0,35	0,33	0,15	0,08	0,44	0,43	0,04	0,06	0,08	0,11	0,54	0,19	0,00
PSG10	0,23	0,36	0,23	0,18	0,15	0,38	0,26	0,21	0,12	0,45	0,25	0,19	0,15	0,17	0,12	0,51	0,18	0,00
PSG11	0,20	0,32	0,32	0,16	0,09	0,38	0,35	0,17	0,10	0,47	0,37	0,06	0,16	0,19	0,13	0,50	0,19	0,00
PSG12	0,08	0,38	0,50	0,04	0,05	0,42	0,48	0,04	0,08	0,43	0,48	0,01	0,07	0,54	0,00	0,62	0,56	0,00
PSG13	0,19	0,26	0,42	0,13	0,08	0,44	0,45	0,03	0,14	0,33	0,52	0,01	0,10	0,19	0,02	0,72	0,30	0,00
PSG14	0,30	0,26	0,35	0,09	0,22	0,34	0,43	0,01	0,25	0,38	0,37	0,00	0,04	0,16	0,00	0,82	0,16	0,00
PSG15	0,35	0,13	0,35	0,17	0,28	0,13	0,46	0,14	0,27	0,08	0,57	0,08	0,05	0,09	0,01	0,76	0,09	0,03
PSG16	0,22	0,33	0,30	0,15	0,13	0,32	0,35	0,19	0,09	0,32	0,54	0,05	0,08	0,26	0,00	0,68	0,26	0,00
PSG17	0,29	0,39	0,25	0,07	0,12	0,47	0,31	0,10	0,09	0,49	0,42	0,01	0,15	0,07	0,02	0,70	0,12	0,00
PSG18	0,29	0,39	0,18	0,14	0,19	0,44	0,21	0,16	0,13	0,57	0,26	0,04	0,23	0,20	0,07	0,70	0,22	0,06
PSG19	0,33	0,40	0,13	0,13	0,23	0,50	0,13	0,14	0,18	0,66	0,13	0,02	0,22	0,22	0,13	0,79	0,26	0,00
RCL15	0,37	0,30	0,26	0,07	0,29	0,24	0,34	0,14	0,27	0,34	0,35	0,05	0,28	0,00	0,58	0,21	0,00	0,00
RCS18	0,13	0,33	0,42	0,13	0,11	0,34	0,48	0,08	0,07	0,40	0,49	0,05	0,00	0,32	0,46	0,21	0,51	0,14
RCS19	0,24	0,32	0,36	0,08	0,18	0,36	0,42	0,03	0,08	0,50	0,41	0,01	0,06	0,24	0,24	0,27	0,53	0,09
SB11	0,16	0,48	0,28	0,08	0,05	0,39	0,49	0,07	0,08	0,47	0,39	0,06	0,00	0,21	0,50	0,43	0,25	0,05
SB12	0,23	0,32	0,29	0,16	0,15	0,27	0,45	0,14	0,11	0,42	0,35	0,11	0,00	0,18	0,53	0,28	0,28	0,06
SB13	0,27	0,36	0,33	0,03	0,10	0,38	0,51	0,00	0,15	0,35	0,49	0,01	0,02	0,35	0,37	0,41	0,31	0,15
SCB13	0,21	0,25	0,39	0,14	0,12	0,25	0,40	0,22	0,09	0,32	0,30	0,28	0,23	0,27	0,76	0,29	0,45	0,13
SCB14	0,22	0,26	0,30	0,22	0,08	0,28	0,34	0,31	0,05	0,40	0,38	0,17	0,31	0,19	0,75	0,58	0,59	0,14

SCB15	0,35	0,19	0,29	0,16	0,20	0,26	0,38	0,16	0,16	0,33	0,37	0,14	0,22	0,25	0,68	0,47	0,50	0,26
SCB16	0,31	0,21	0,24	0,14	0,20	0,17	0,37	0,26	0,20	0,40	0,31	0,09	0,40	0,13	0,68	0,26	0,19	0,06
SCO 16	0,11	0,39	0,39	0,11	0,04	0,50	0,38	0,09	0,09	0,37	0,46	0,08	0,07	0,16	0,83	0,35	0,63	0,03
SCO 17	0,14	0,38	0,45	0,03	0,14	0,36	0,49	0,01	0,06	0,37	0,54	0,03	0,11	0,11	0,54	0,34	0,41	0,03
SCO 18	0,15	0,33	0,48	0,04	0,08	0,32	0,56	0,04	0,09	0,40	0,49	0,02	0,08	0,10	0,48	0,27	0,20	0,04
SCO 19	0,21	0,29	0,42	0,08	0,13	0,25	0,46	0,15	0,16	0,35	0,42	0,07	0,07	0,10	0,46	0,28	0,25	0,07
SMC11	0,27	0,46	0,19	0,08	0,25	0,46	0,19	0,10	0,26	0,43	0,23	0,08	0,34	0,06	0,31	0,10	0,27	0,06
SMC12	0,26	0,39	0,22	0,13	0,14	0,47	0,28	0,10	0,05	0,50	0,36	0,08	0,25	0,22	0,39	0,08	0,28	0,08
SMC15	0,09	0,52	0,17	0,22	0,08	0,55	0,17	0,20	0,06	0,51	0,26	0,17	0,09	0,23	0,71	0,19	0,54	0,06
SMC16	0,13	0,50	0,21	0,17	0,03	0,46	0,21	0,30	0,09	0,62	0,22	0,07	0,03	0,22	0,64	0,26	0,40	0,09
SMC17	0,26	0,22	0,33	0,19	0,16	0,14	0,43	0,27	0,17	0,27	0,48	0,08	0,13	0,20	0,48	0,24	0,27	0,05
SMC18	0,23	0,38	0,31	0,08	0,12	0,35	0,36	0,16	0,10	0,37	0,50	0,03	0,10	0,21	0,30	0,24	0,38	0,07
SMC19	0,23	0,50	0,27	0,00	0,12	0,57	0,32	0,00	0,03	0,72	0,25	0,00	0,13	0,43	0,24	0,43	0,60	0,21
SR10	0,21	0,42	0,25	0,13	0,10	0,49	0,26	0,15	0,02	0,57	0,29	0,11	0,36	0,01	0,21	0,55	0,10	0,00
SR11	0,41	0,41	0,15	0,04	0,36	0,34	0,25	0,05	0,19	0,53	0,26	0,01	0,40	0,20	0,05	0,22	0,27	0,00
SR12	0,44	0,37	0,15	0,04	0,39	0,43	0,18	0,00	0,36	0,35	0,25	0,03	0,36	0,21	0,09	0,37	0,32	0,00
SR13	0,42	0,35	0,23	0,00	0,23	0,58	0,19	0,00	0,11	0,68	0,21	0,00	0,26	0,13	0,11	0,41	0,19	0,08
SR14	0,38	0,44	0,16	0,03	0,23	0,50	0,20	0,07	0,11	0,66	0,21	0,02	0,28	0,25	0,18	0,44	0,39	0,11
SR15	0,18	0,55	0,23	0,05	0,19	0,48	0,24	0,09	0,17	0,56	0,25	0,01	0,22	0,14	0,21	0,45	0,34	0,00
SR16	0,23	0,48	0,26	0,03	0,12	0,51	0,29	0,08	0,05	0,55	0,38	0,01	0,24	0,23	0,37	0,52	0,33	0,05
SR17	0,29	0,35	0,32	0,03	0,18	0,29	0,53	0,00	0,11	0,38	0,50	0,01	0,27	0,07	0,40	0,61	0,12	0,01
SR18	0,29	0,46	0,21	0,04	0,27	0,59	0,12	0,02	0,12	0,52	0,35	0,02	0,27	0,15	0,15	0,54	0,39	0,05
SR19	0,32	0,39	0,29	0,00	0,15	0,49	0,36	0,00	0,20	0,48	0,31	0,00	0,14	0,25	0,25	0,59	0,34	0,05
STR13	0,15	0,42	0,35	0,08	0,08	0,52	0,32	0,08	0,09	0,46	0,40	0,04	0,07	0,13	0,69	0,46	0,42	0,06
STR14	0,12	0,60	0,20	0,08	0,12	0,57	0,15	0,16	0,10	0,66	0,18	0,06	0,08	0,06	0,63	0,52	0,22	0,02
STR15	0,20	0,43	0,27	0,10	0,08	0,52	0,23	0,17	0,02	0,60	0,33	0,05	0,08	0,13	0,70	0,46	0,25	0,04
STR16	0,23	0,42	0,26	0,10	0,09	0,47	0,32	0,12	0,07	0,57	0,33	0,03	0,13	0,10	0,45	0,41	0,25	0,05
STR19	0,22	0,44	0,30	0,04	0,16	0,43	0,32	0,08	0,12	0,59	0,28	0,02	0,08	0,09	0,47	0,44	0,48	0,12
TFC10	0,33	0,43	0,23	0,00	0,31	0,50	0,19	0,00	0,20	0,59	0,20	0,00	0,48	0,04	0,23	0,21	0,21	0,03

TFC11	0,46	0,31	0,23	0,00	0,45	0,35	0,21	0,00	0,40	0,44	0,16	0,00	0,45	0,01	0,14	0,16	0,12	0,12
TFC12	0,48	0,36	0,16	0,00	0,38	0,46	0,17	0,00	0,29	0,50	0,21	0,00	0,45	0,04	0,11	0,42	0,25	0,00
TFC13	0,38	0,38	0,17	0,08	0,36	0,40	0,19	0,05	0,14	0,70	0,14	0,02	0,45	0,07	0,12	0,42	0,13	0,07
TFC14	0,46	0,29	0,18	0,07	0,42	0,32	0,20	0,05	0,34	0,49	0,14	0,02	0,16	0,06	0,06	0,55	0,40	0,06
TFC15	0,39	0,39	0,18	0,04	0,23	0,55	0,20	0,02	0,24	0,54	0,21	0,01	0,22	0,07	0,05	0,44	0,26	0,04
TFC16	0,24	0,56	0,16	0,04	0,20	0,67	0,14	0,00	0,04	0,80	0,15	0,01	0,24	0,08	0,04	0,38	0,08	0,08
TFC17	0,40	0,33	0,23	0,03	0,39	0,40	0,21	0,00	0,26	0,47	0,27	0,01	0,23	0,20	0,00	0,38	0,28	0,06
TFC18	0,40	0,36	0,20	0,04	0,42	0,33	0,21	0,04	0,33	0,47	0,19	0,01	0,36	0,22	0,08	0,29	0,26	0,13
TFC19	0,38	0,34	0,21	0,07	0,31	0,29	0,35	0,05	0,22	0,41	0,30	0,07	0,08	0,31	0,09	0,45	0,43	0,05
USBO10	0,27	0,42	0,24	0,06	0,24	0,35	0,29	0,12	0,14	0,43	0,36	0,07	0,12	0,32	0,68	0,20	0,32	0,10
VAFC10	0,07	0,48	0,37	0,07	0,06	0,53	0,39	0,02	0,03	0,47	0,48	0,02	0,00	0,36	0,21	0,49	0,34	0,07
VAFC11	0,19	0,46	0,27	0,08	0,06	0,50	0,34	0,11	0,02	0,52	0,40	0,06	0,04	0,09	0,27	0,42	0,10	0,00
VAFC12	0,27	0,35	0,35	0,04	0,16	0,35	0,43	0,06	0,08	0,44	0,43	0,04	0,08	0,00	0,34	0,37	0,08	0,00
VAFC13	0,31	0,27	0,35	0,08	0,22	0,32	0,38	0,09	0,19	0,34	0,42	0,06	0,09	0,14	0,23	0,33	0,14	0,03
VAFC14	0,31	0,31	0,23	0,15	0,24	0,33	0,20	0,23	0,25	0,39	0,24	0,13	0,12	0,30	0,14	0,35	0,13	0,26