

Football player transfers analysis

Marco Weger - 2022

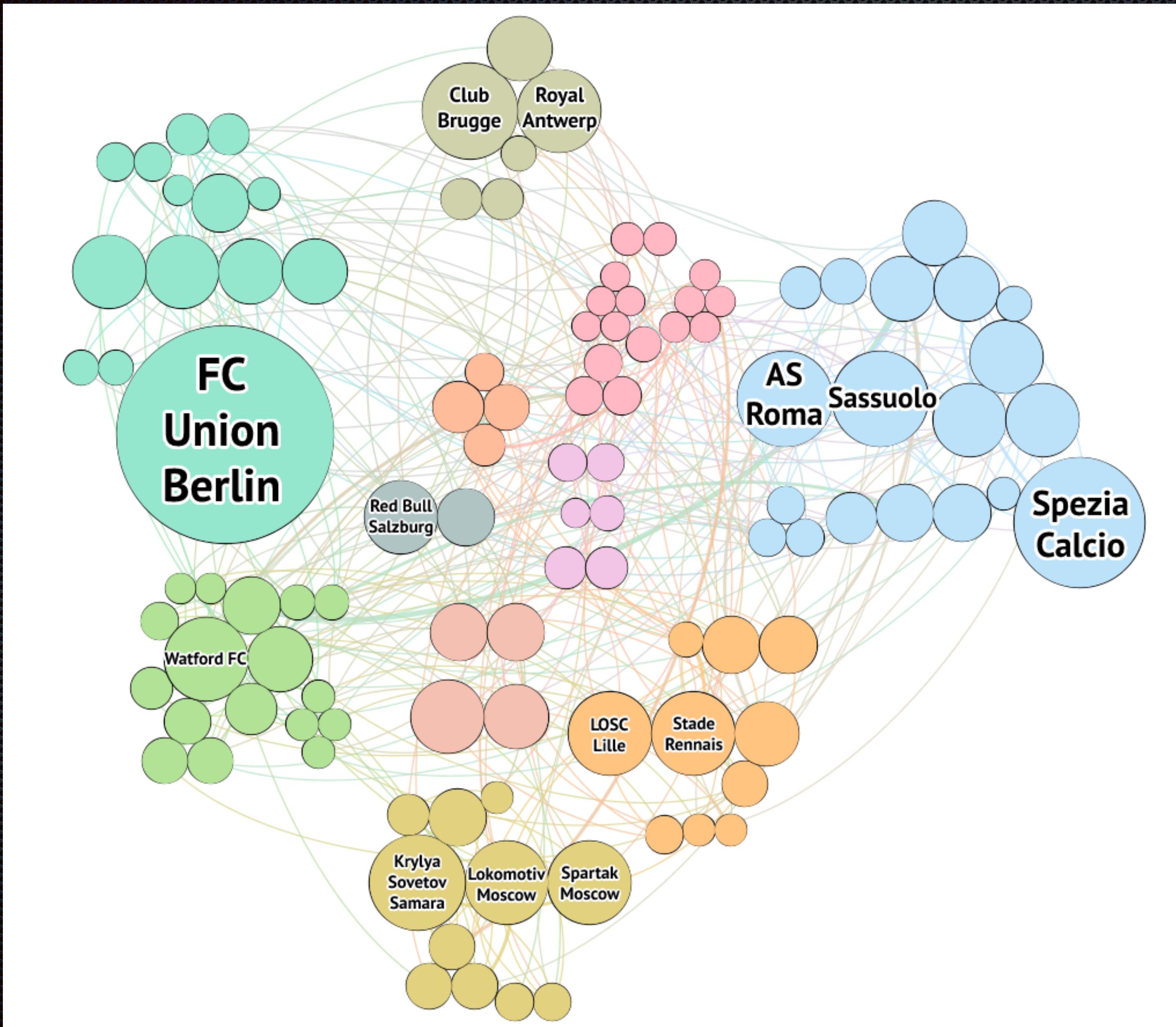


POLITECNICO
MILANO 1863

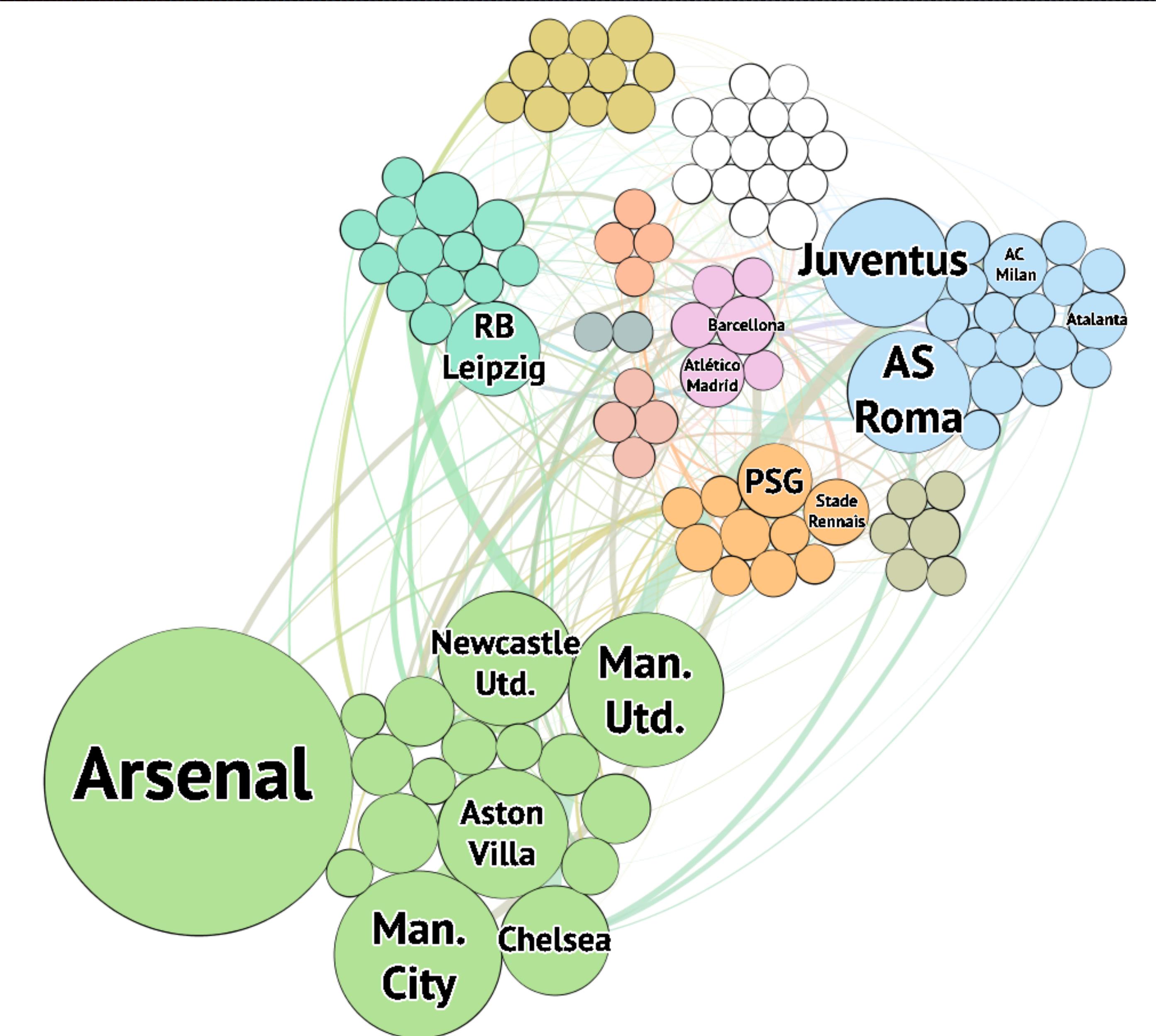
The dataset

- Season: data from 2010 to 2021. Summer and winter sessions are compressed in a unique entry, the label used is the year in which the season begun.
- League: data from the top 10 European leagues (GBR, ESP, ITA, DEU, FRA, PRT, NLD, RUS, BEL, AUT). Other involved teams are marked as “null”.
- Only the transfers with a certified amount of money are considered. The loans with redemption obligation are evaluated in the year of the redemption.
- The networks are directed and the edges go from the team who pay to the receiver

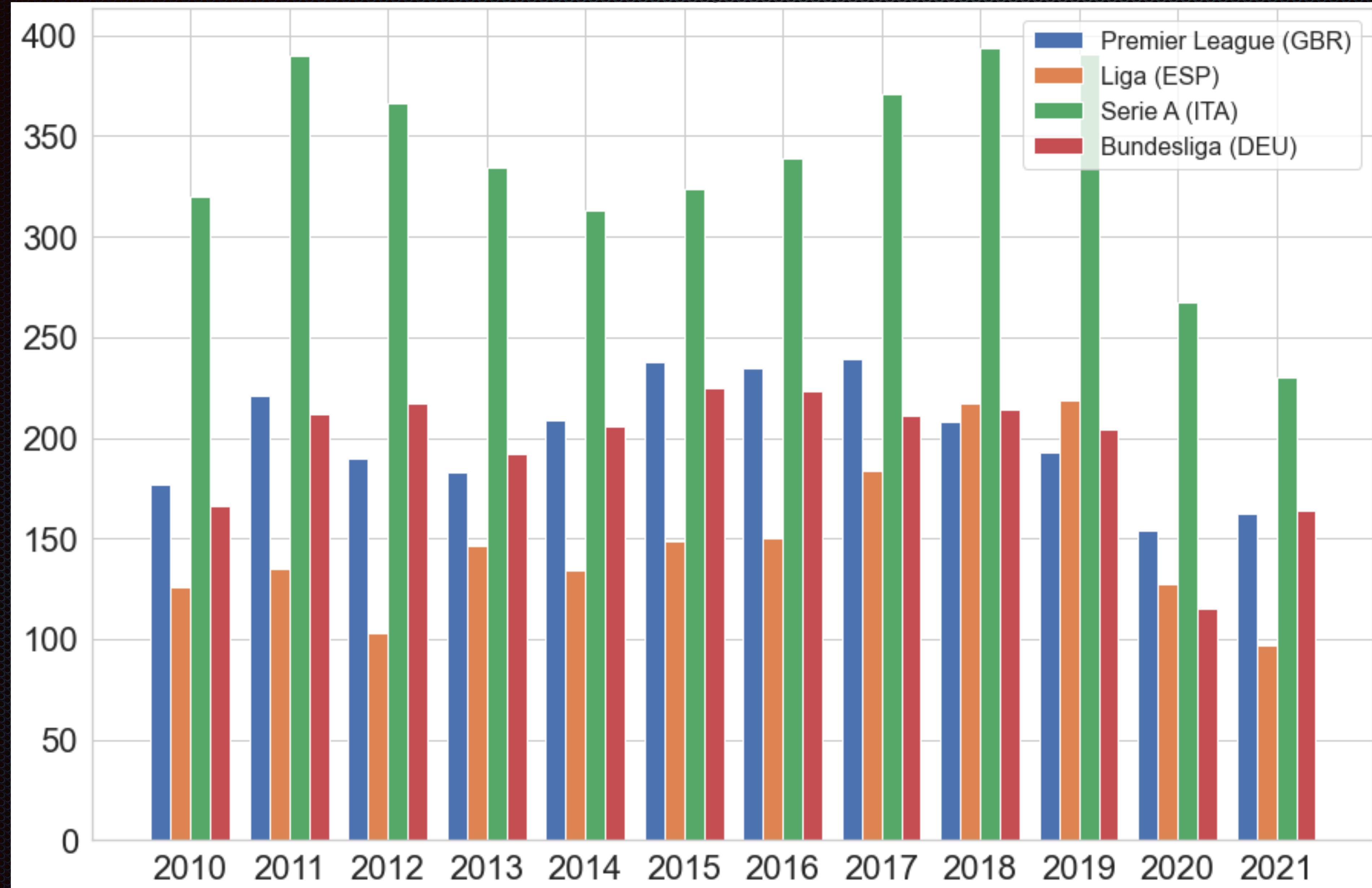
2021 - Number of operations



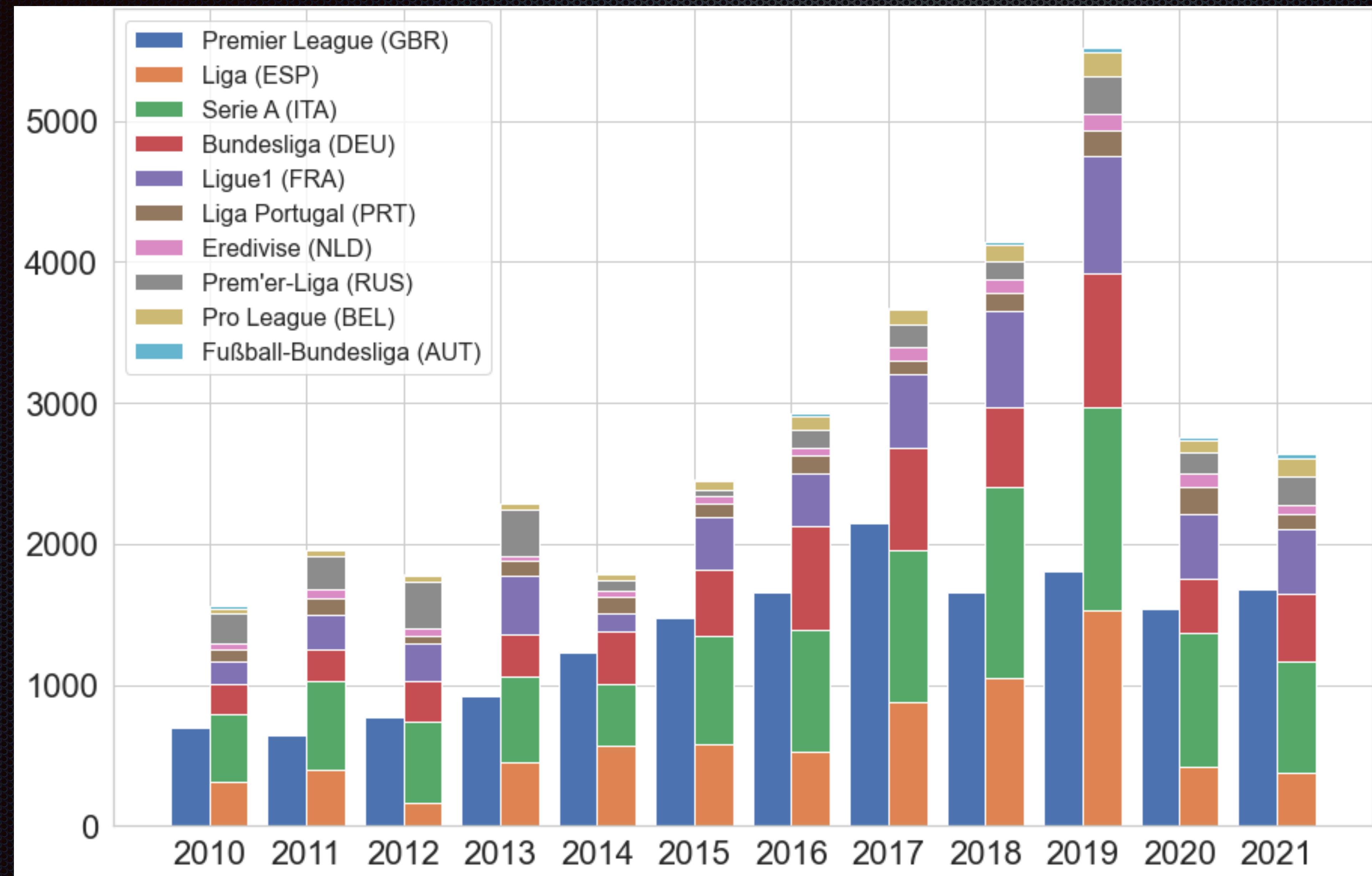
2021 - Amount of money (M€)



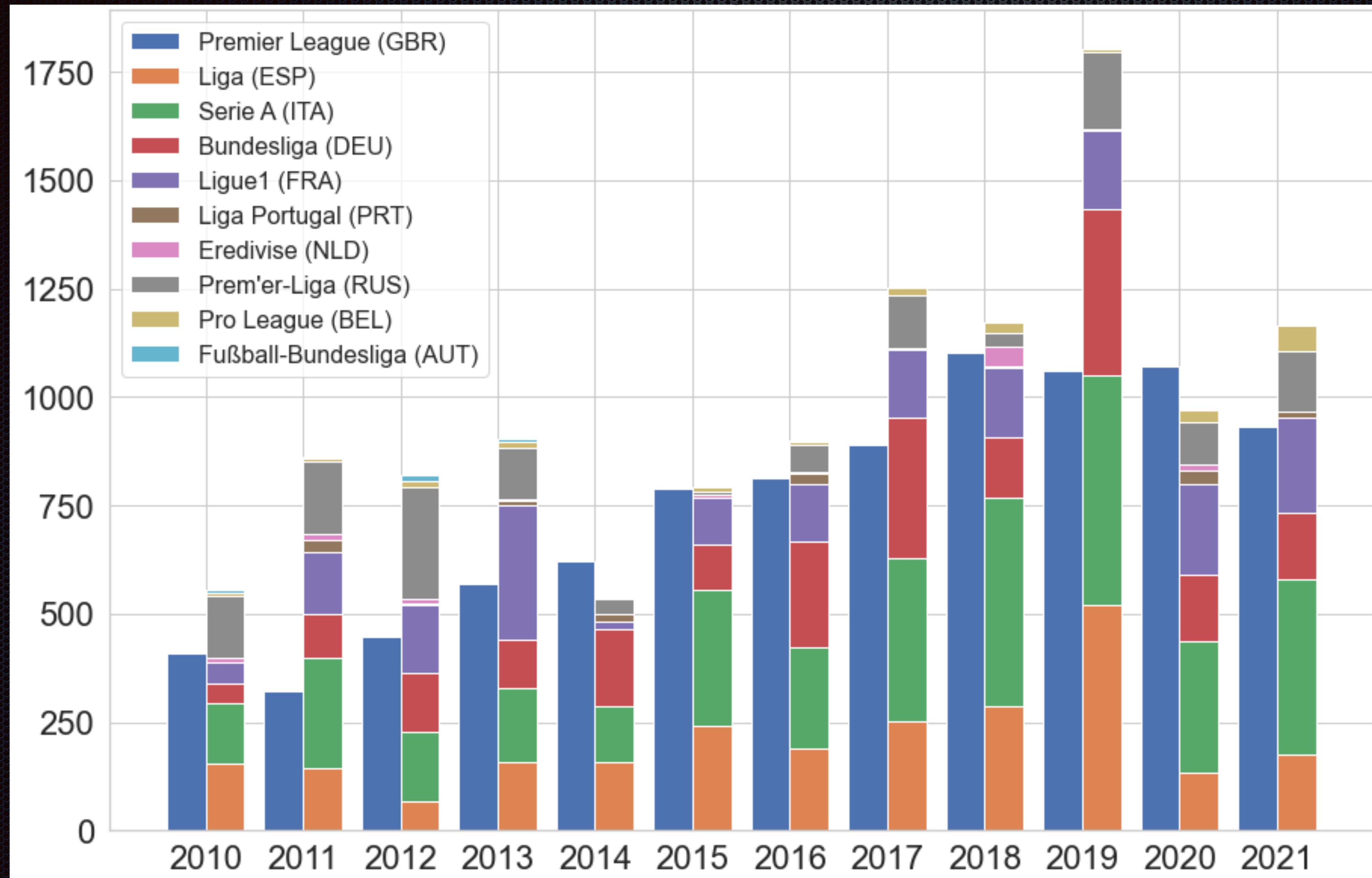
Total operations



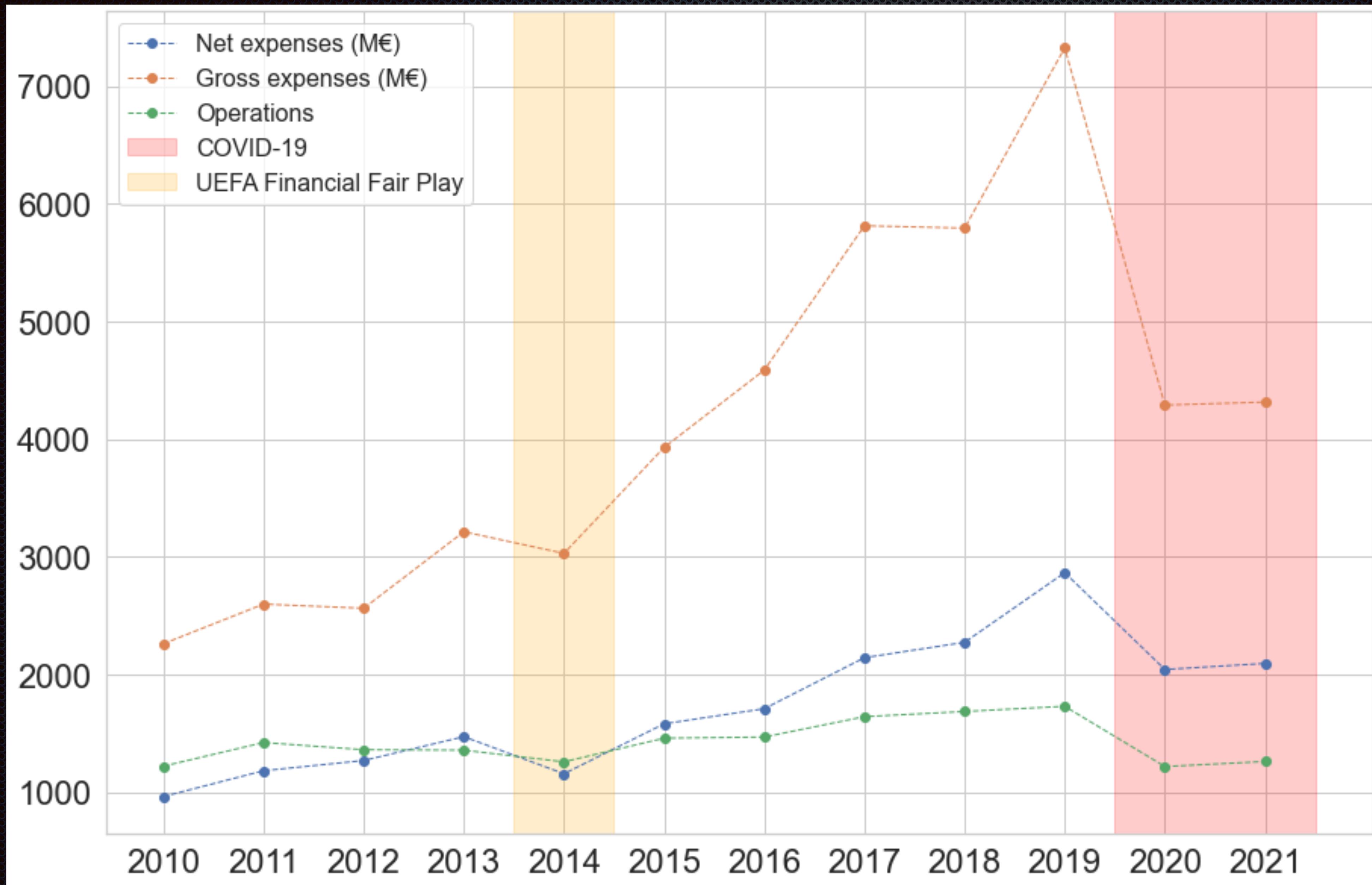
Total gross expenses (M€)



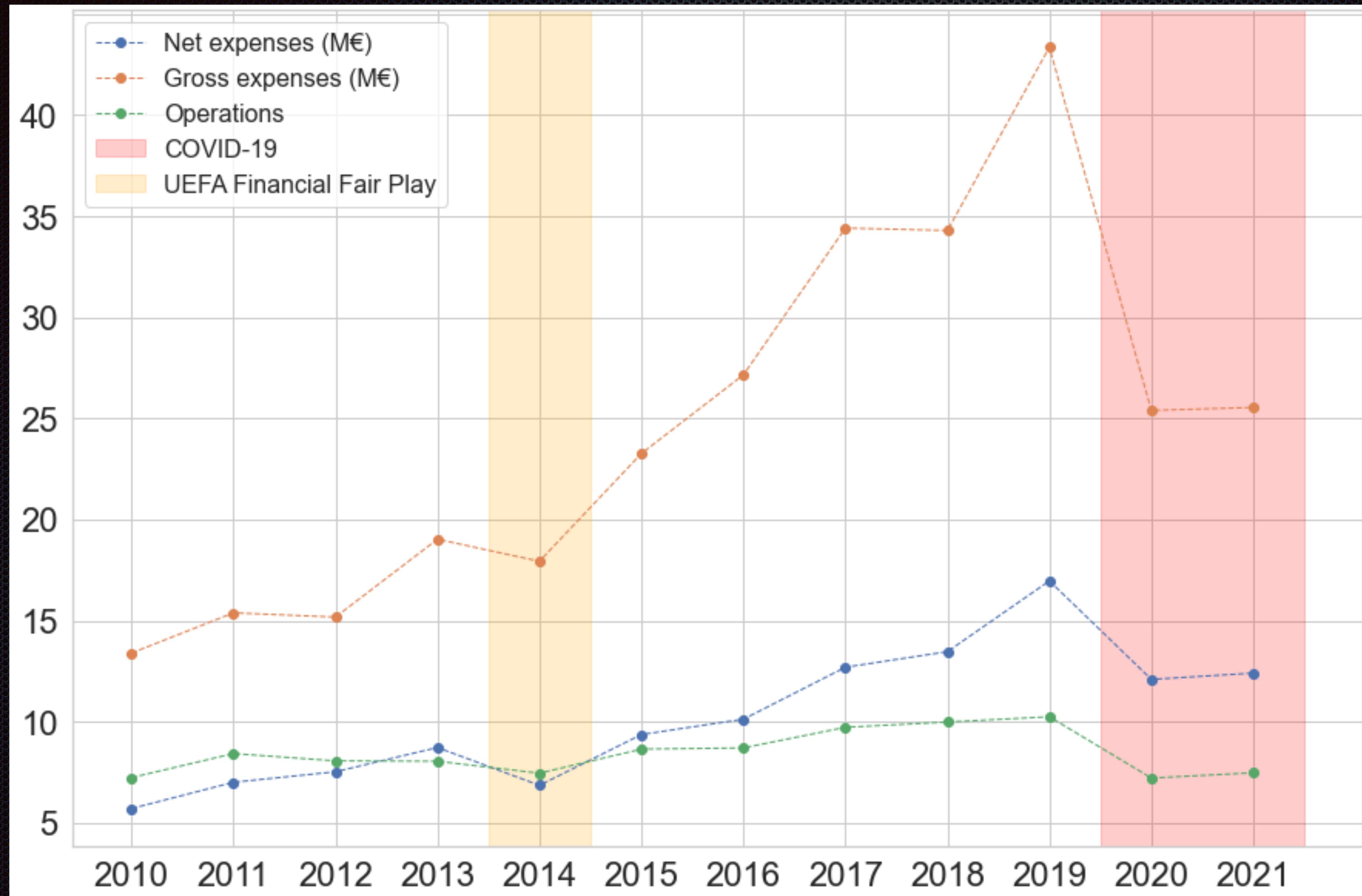
Total net expenses (M€)



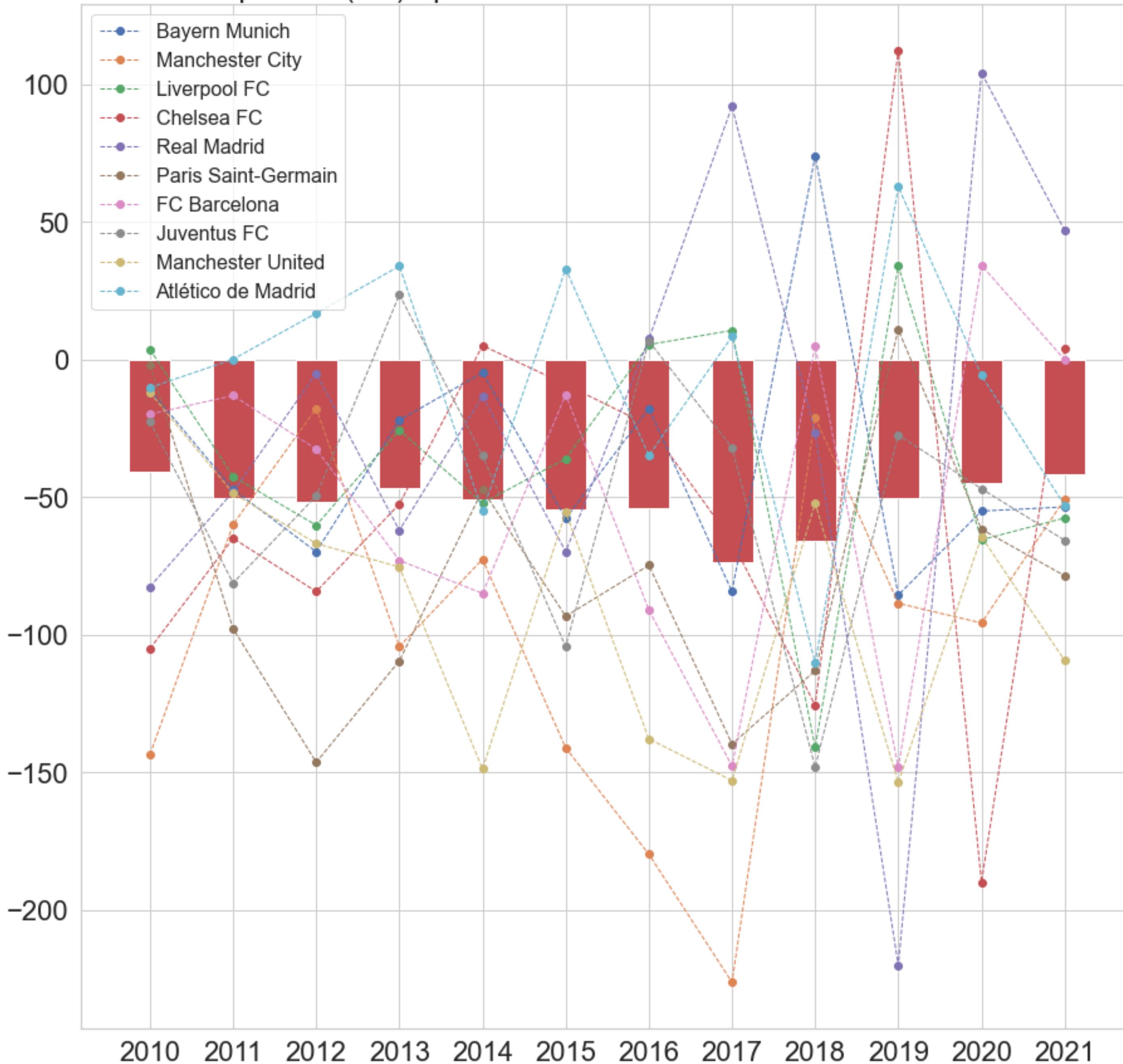
Recap - Total



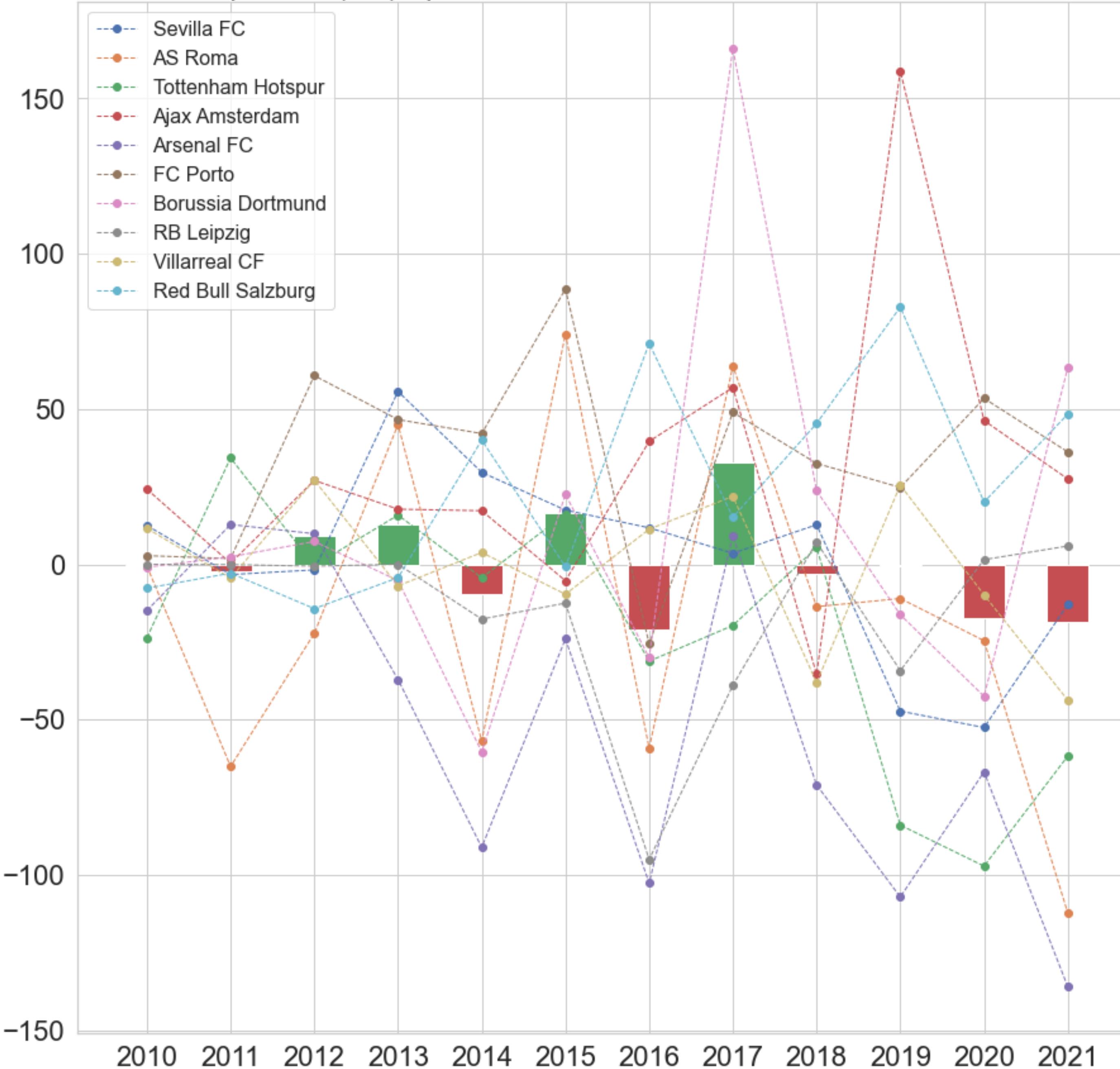
Recap - Average



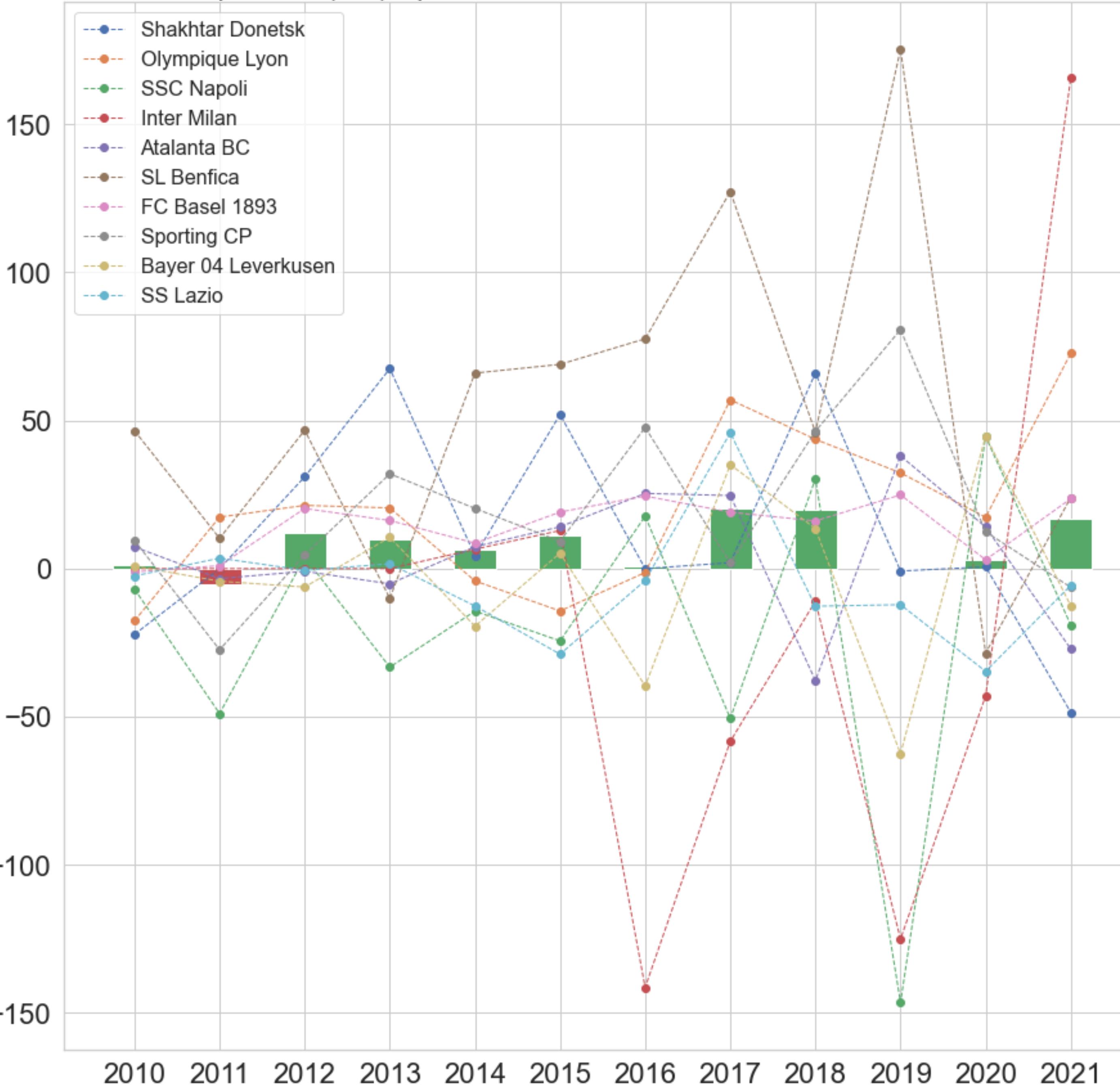
Net expenses (M€) - positions from 1 to 10 of UEFA club coefficients



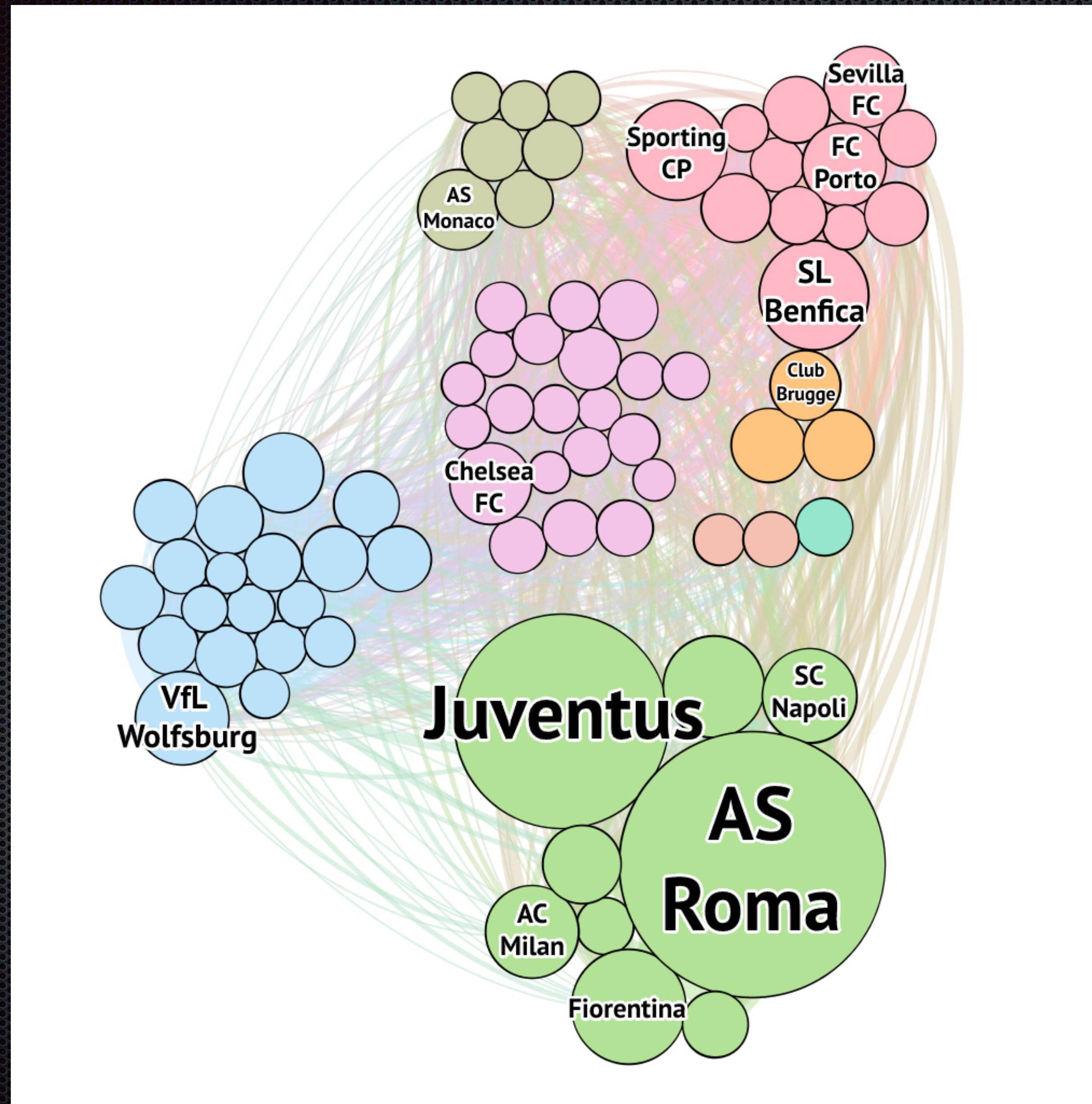
Net expenses (M€) - positions from 11 to 20 of UEFA club coefficients



Net expenses (M€) - positions from 21 to 30 of UEFA club coefficients

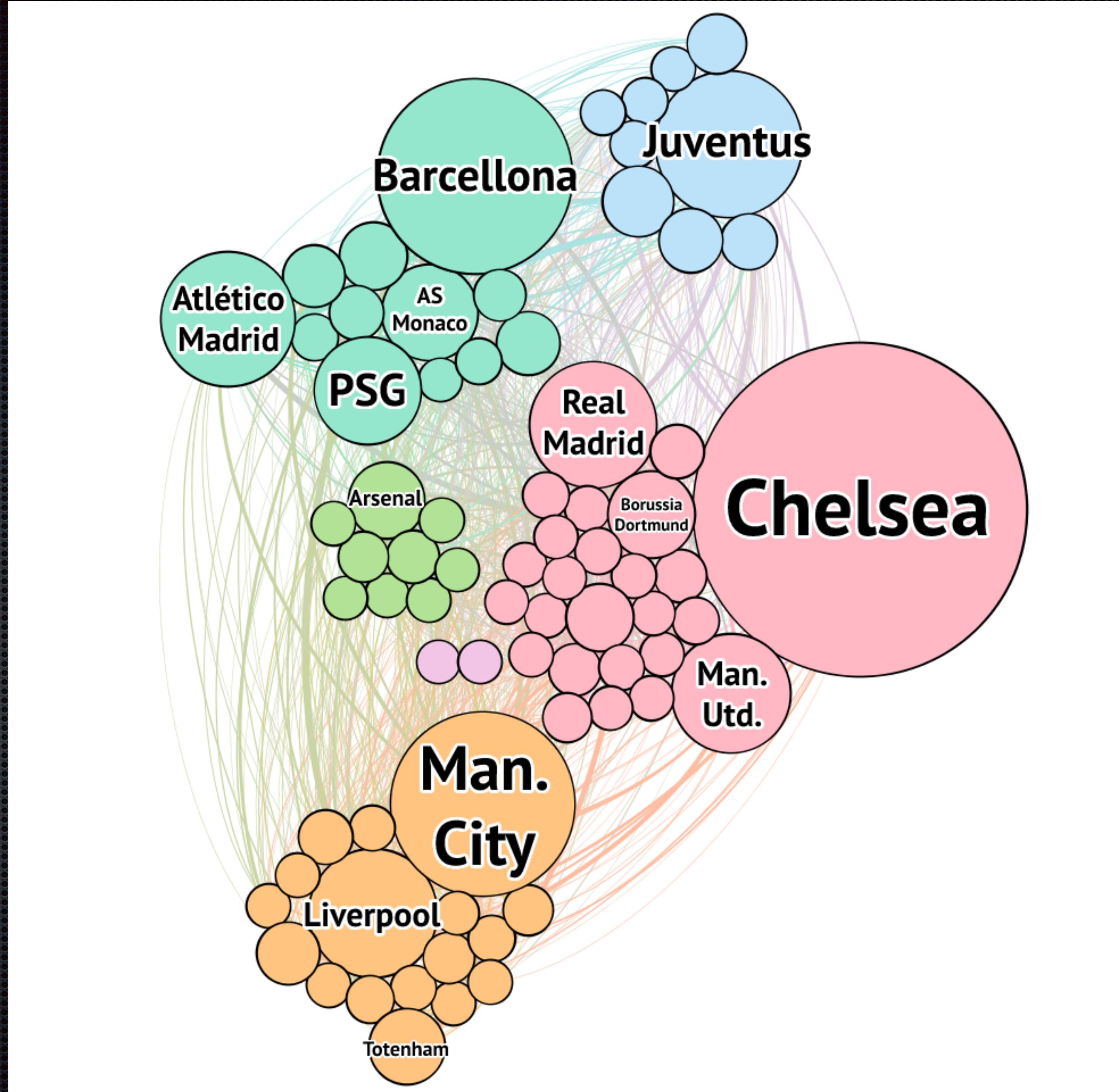


2010/2021 - Summary network* of operations



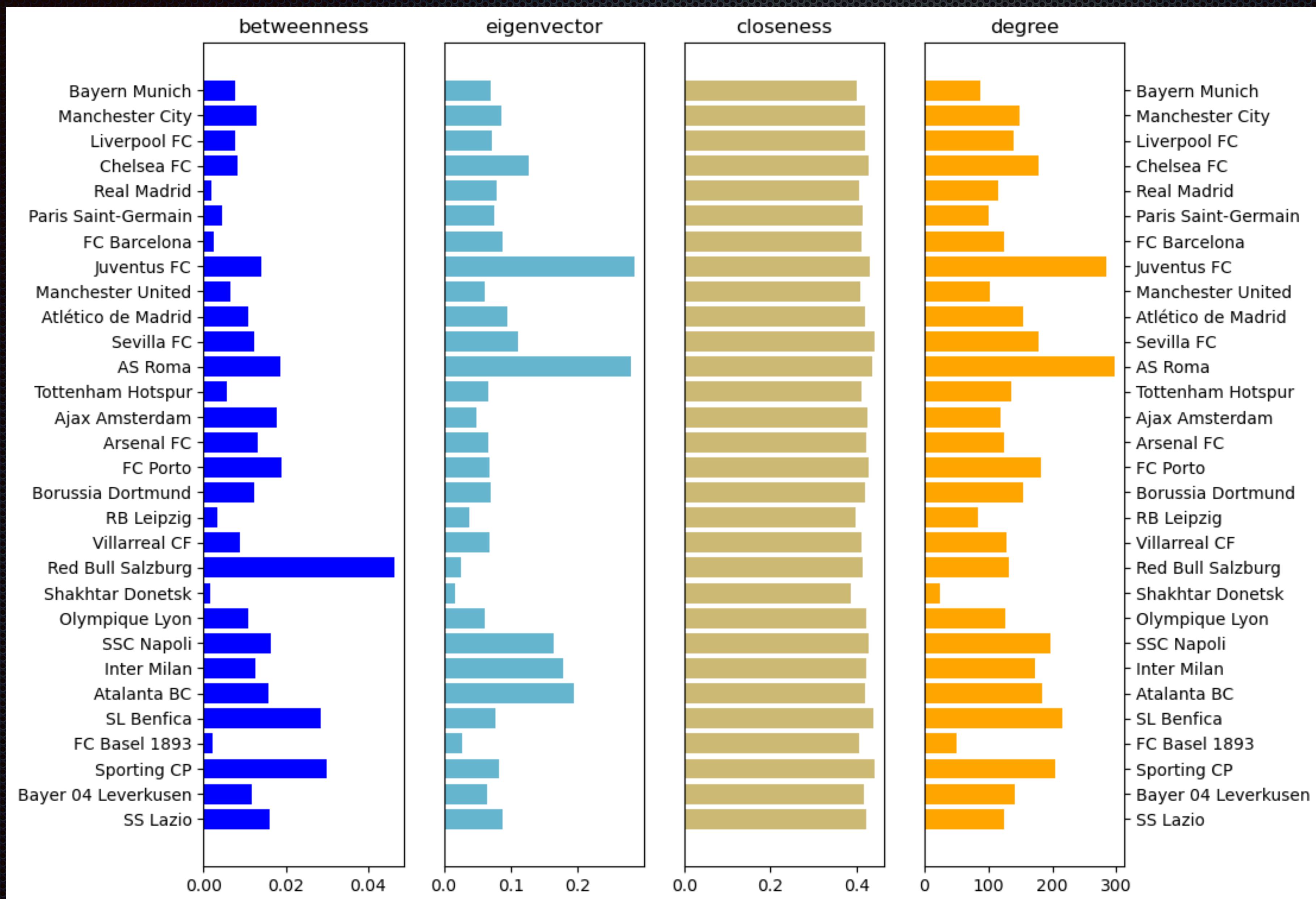
*k-core max, k=25

2010/2021 - Summary network* of money

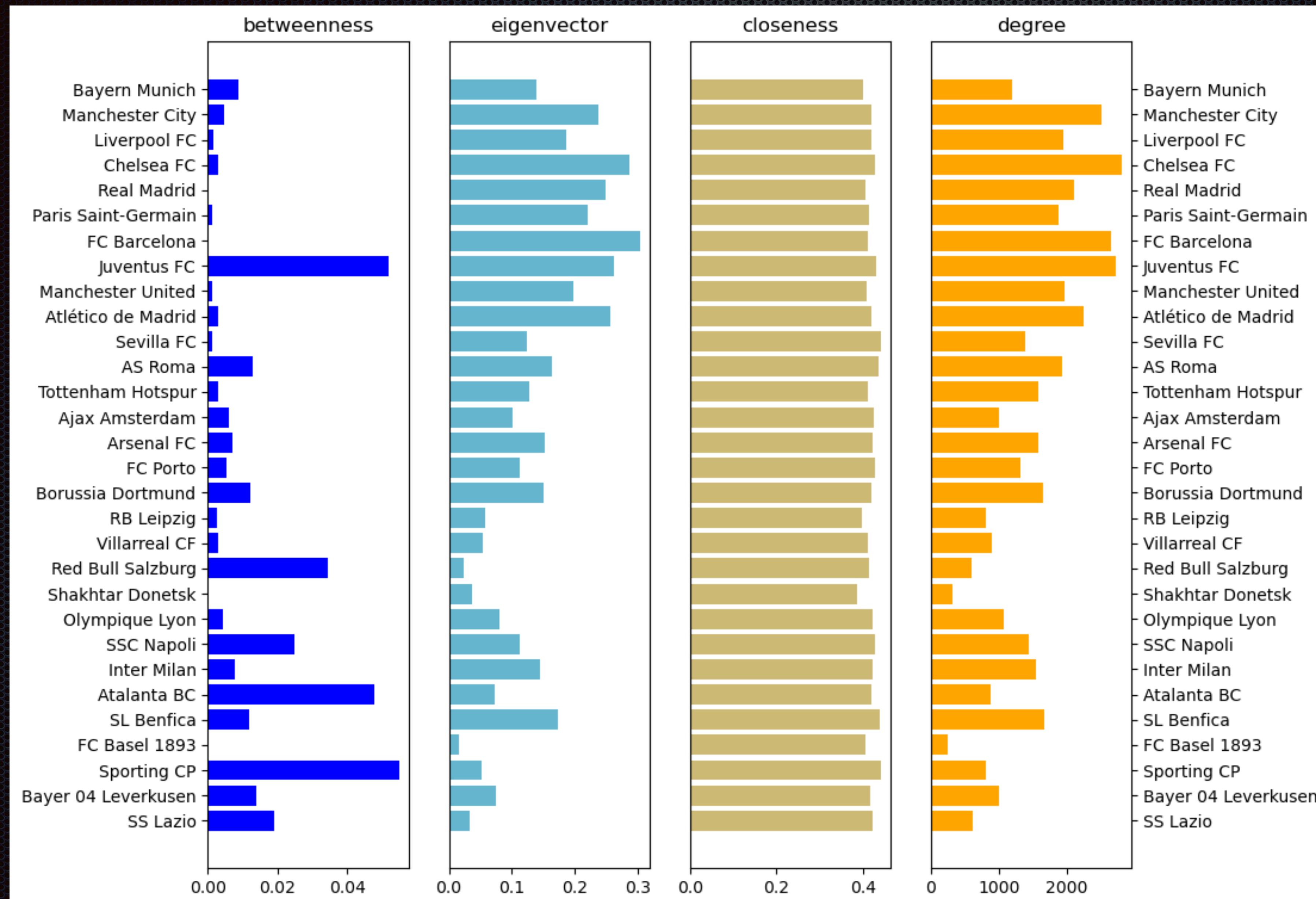


*k-core max, k=25

Centralities (operations)

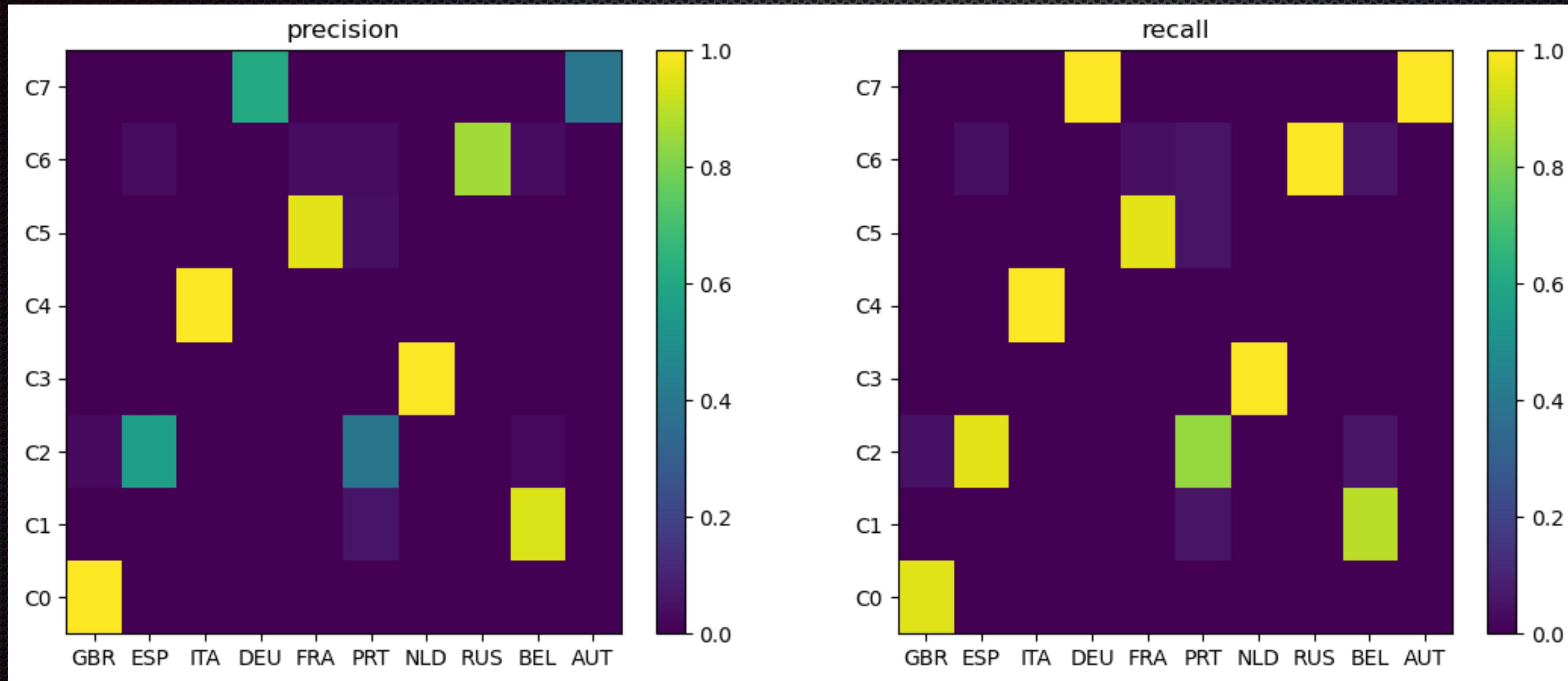


Centralities (money)



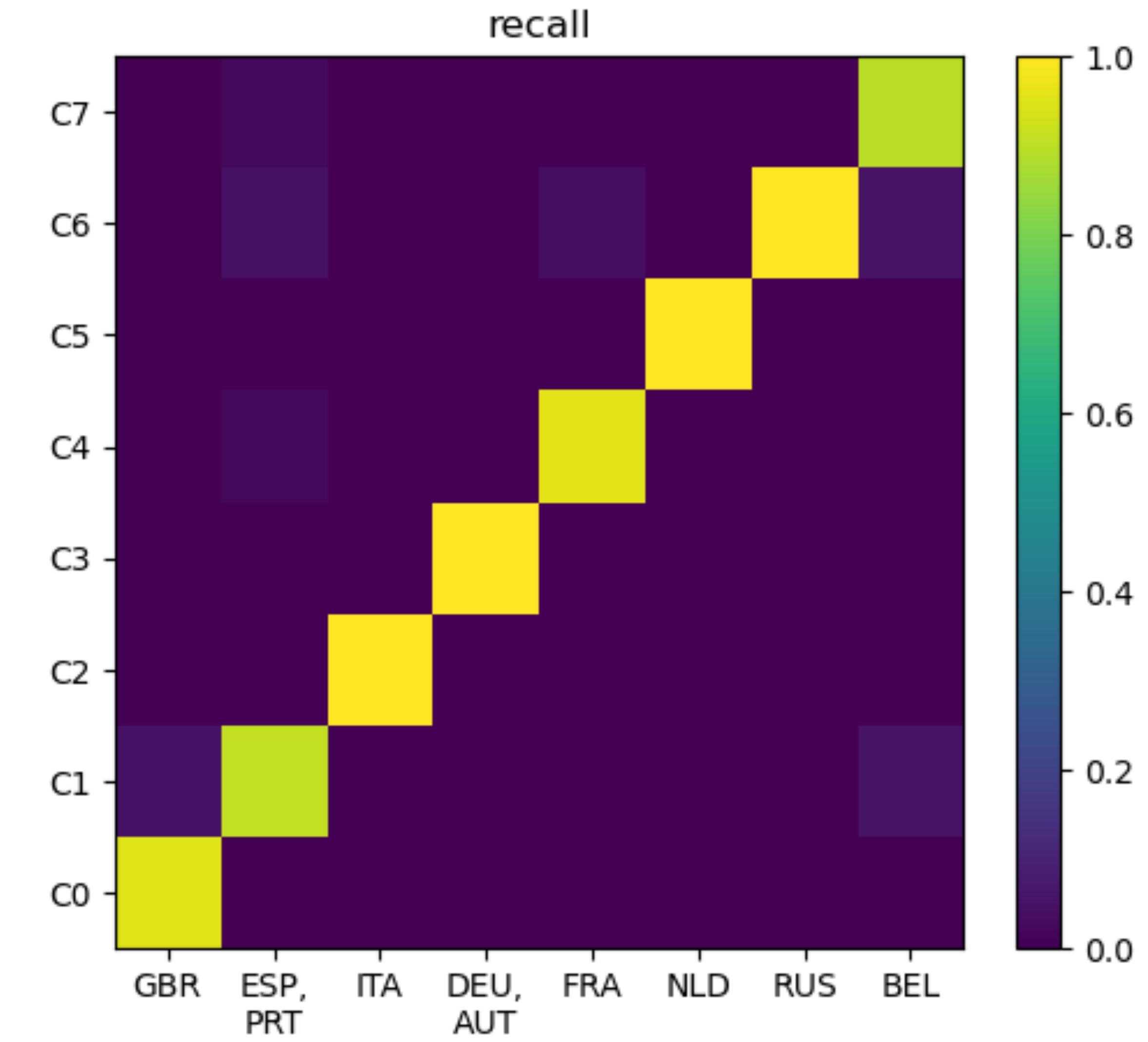
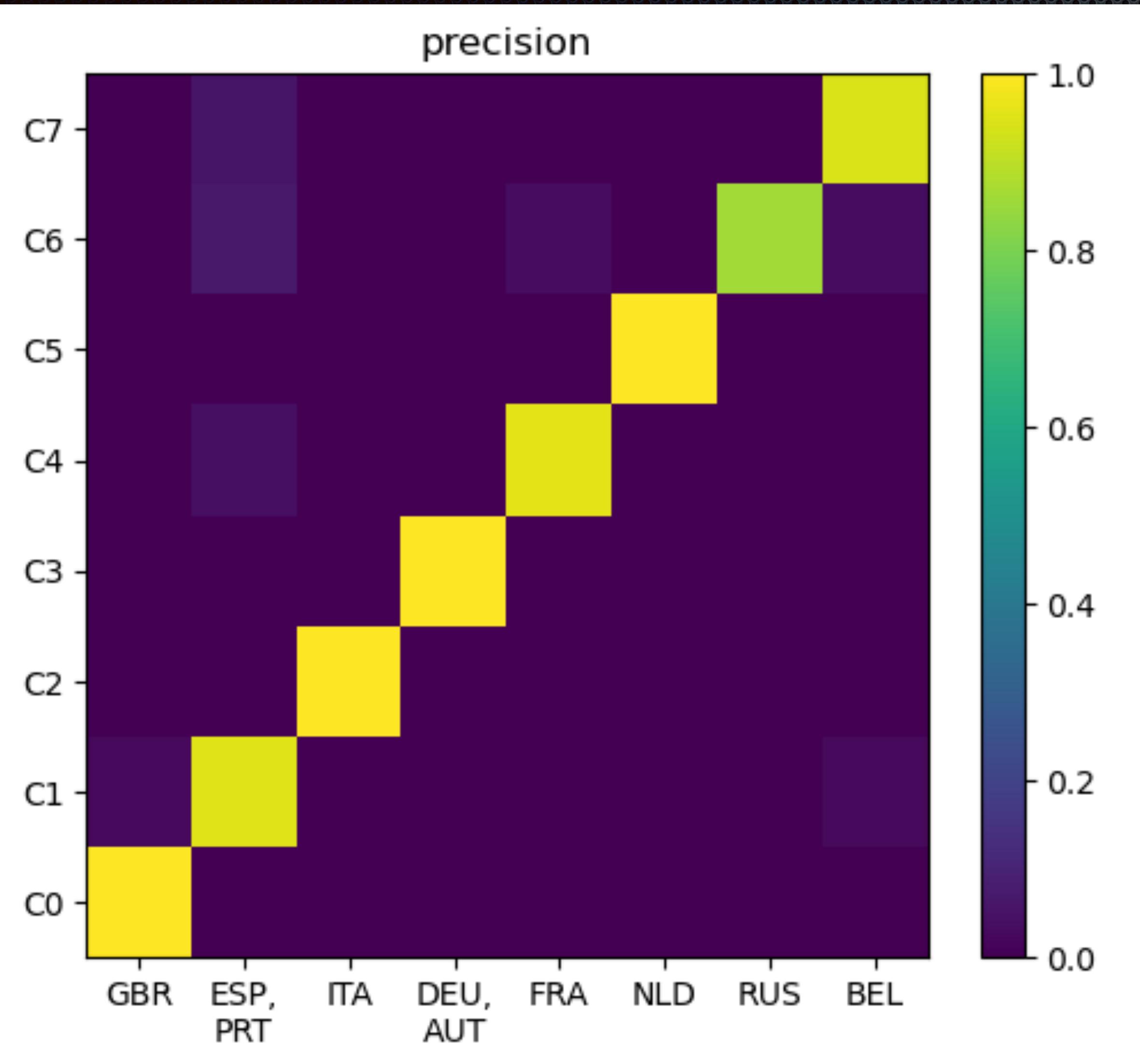
Community analysis: max-modularity* (operations)

$p_{hk} = \frac{m_{hk}}{|C_k|}$, $r_{hk} = \frac{m_{hk}}{|L_h|}$, m_{hk} = n. nodes in nation L_h and in community C_k .

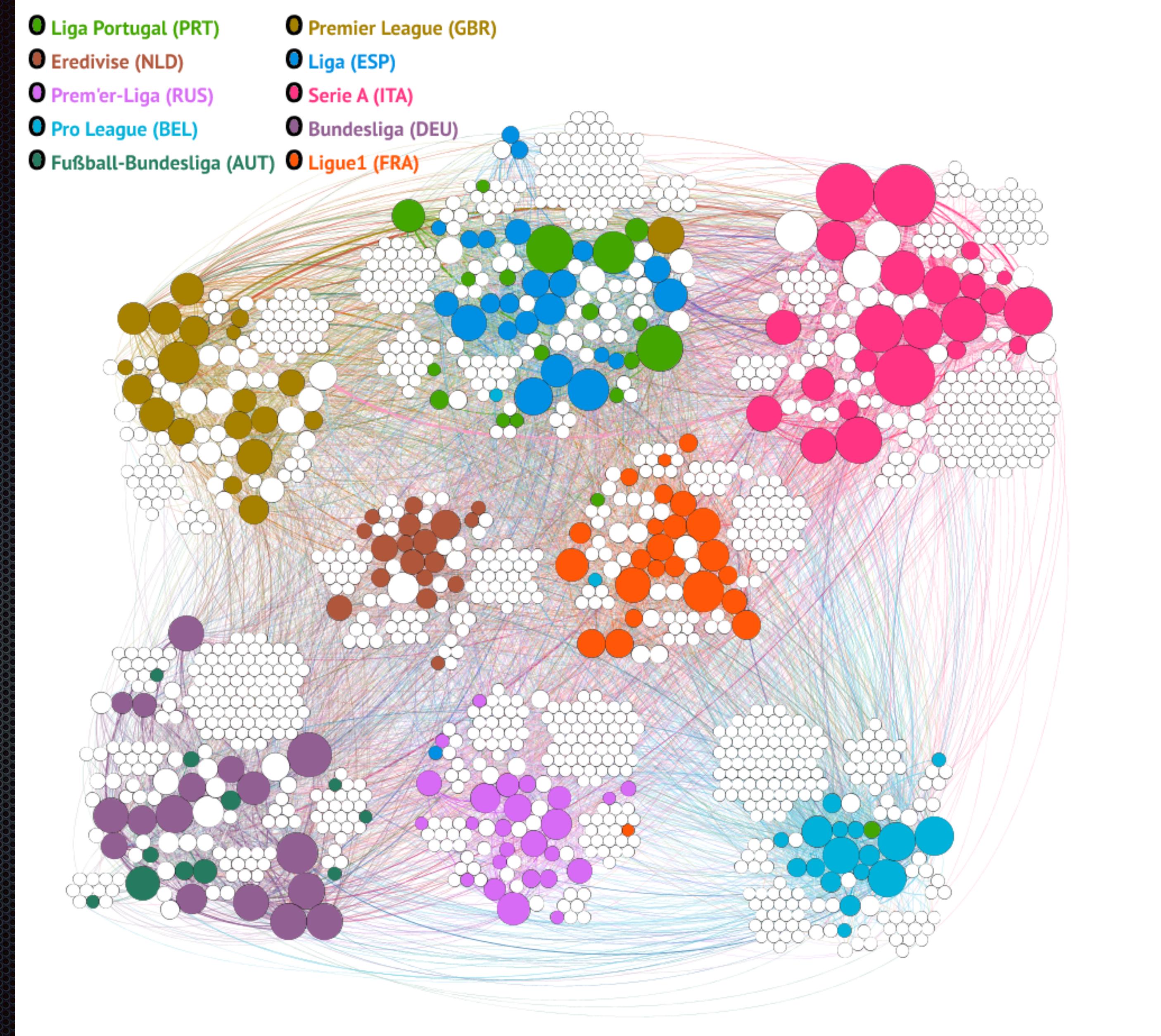


*algorithm: Louvain

Community analysis: results

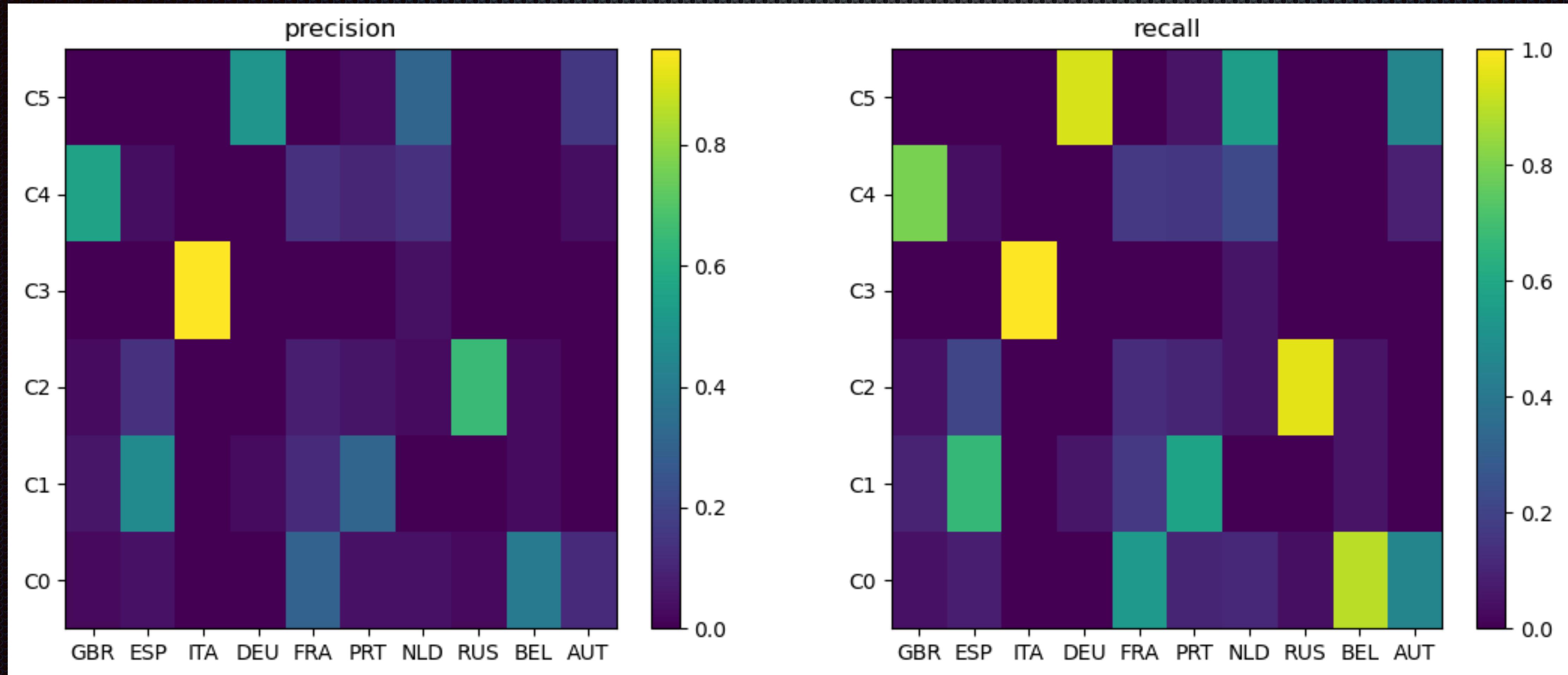


Community analysis: results



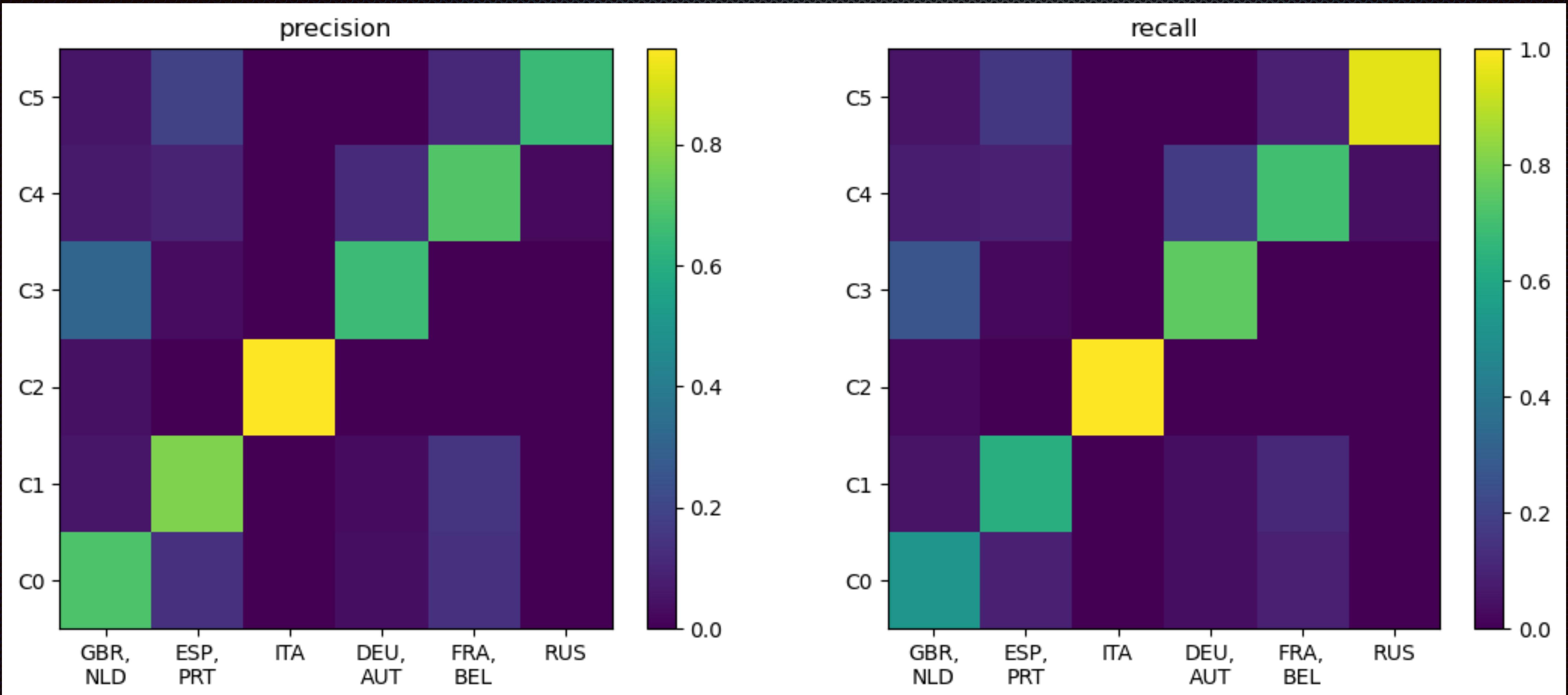
Community analysis: max-modularity* (money)

$p_{hk} = \frac{m_{hk}}{|C_k|}$, $r_{hk} = \frac{m_{hk}}{|L_h|}$, m_{hk} = n. nodes in nation L_h and in community C_k .

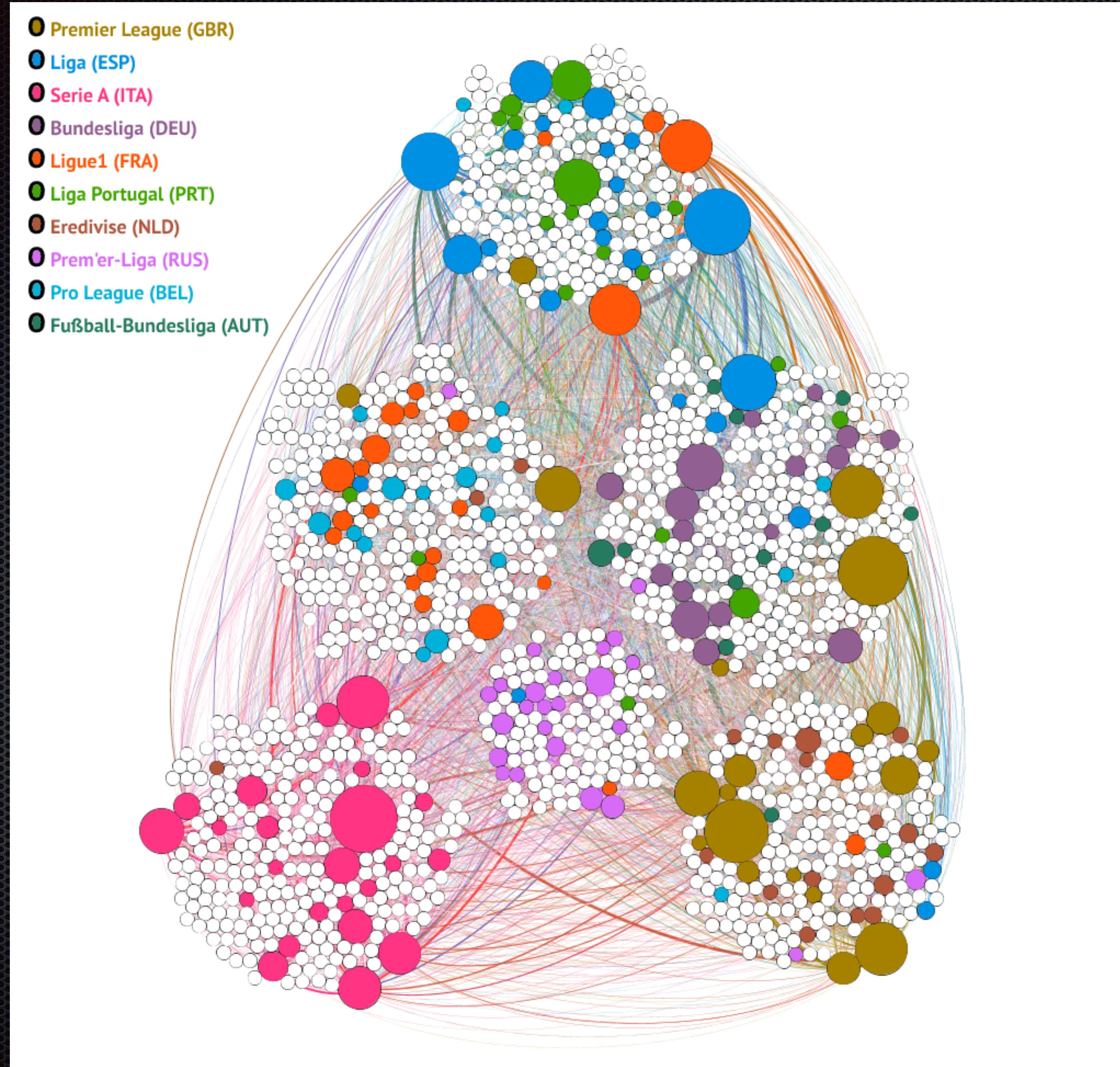


*algorithm: Louvain

Community analysis: results



Community analysis: results



How could the analysis be improved?

- ❖ Profits: a datasets with the majority incomes of teams (e.g. sponsorizations, media rights, stadiums, ...)
- ❖ Free transfers: how to evaluate this very frequent situation?
- ❖ Payroll: an analysis similar to this one but using player's salaries

Thanks for your time
Any questions?