# Risk Preferences in Professional Sport Leagues: an Agent-based model

*Francesco Bertolotti, LIUC University, Castellanza, Italy*

1 - Real-world System

- **Analysis** of a **dataset of soccer clubs** from the main 5 European championships

- Decision-making in signing players is affected by **risk preferences**

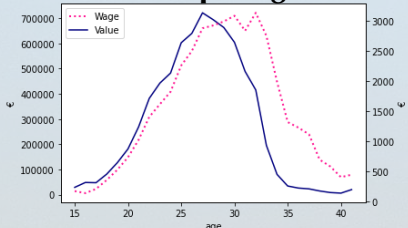- Possibility to hire **young** players (cheaper, but with uncertain future) or **mature** player

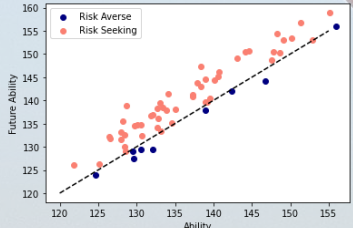### % players' current ability on potential ability per age
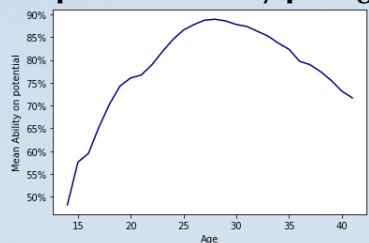
Players' wage per current ability
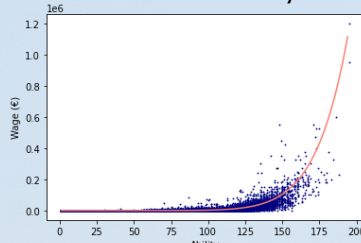
Players' wage and value per age

Attitudes toward risk of clubs

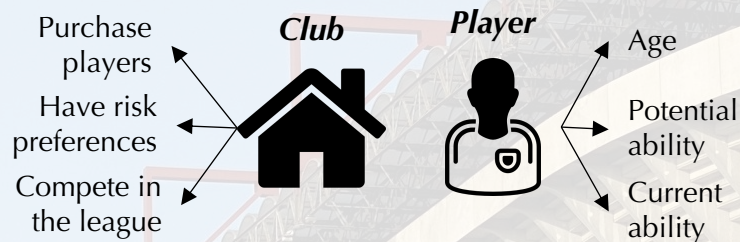## 2 - Simulation model

Settings

League of **20 randomly-generated teams** (parameters sampled from real distributions)

The league is simulated for **10 seasons** (2 playing and 2 training moments)

Agents

Club
- Purchase players
- Have risk preferences
- Compete in the league

Player
- Age
- Potential ability
- Current ability

Behaviour under risk

A risk-seeking club rather players with high difference with current ability and potential ability (youngsters)

A risk-seeking club rather players with low difference with current ability and potential ability (mature players)
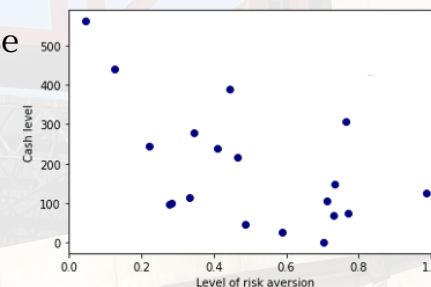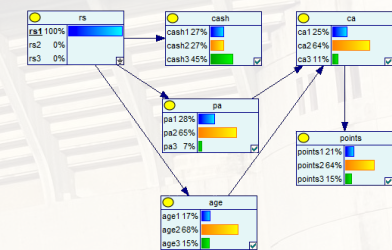
Methodology

The agent-based model is developed in pure Python, with no specific framework

3 - Results

The more risk-averse is an agent, the lower its expected economic result at the end of the simulation

A Bayesian Network is developed to appraise the causal relationships between simulation variables

4 - Future developments

Extend the model (leagues interaction)

Calibration with European leagues

Find policies for teams' managers

Find policies for divisions' managers