Fifa Ballon d'or voting method

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Introduction

Football is the most popular sport in the world. Every year, out of thousands of players the best player in the world is chosen, and rewarded with the FIFA Ballon d'or. This award is considered to be the most prestigious individual award in football. Every year there is a debate between fans, players, coaches and journalists who should win the award, and if the previous winner deserved to win the award. This is an important debate in football, because the goal of this annual election is, to choose a winner who meets all of the criteria set by the FIFA to win this award. The persons who are entitled to vote are: the coaches, the captain of each registered country and a group of journalists.
There is a lot of commotion around the election as to whether this is the voting system which gives the best results. It is very interesting to test whether the voting systems fulfills some basic, normatively desirable criteria. In Social choice theory, the Impossibility theorem tells us that paradoxical results are expected to ensue for almost any voting method.
So the question that this thesis will answer and investigate is:

Does the voting system for the FIFA Ballon d'or satisfy the discussed axioms of voting?

These specific axioms are chosen because these axioms are universally accepted and are the most common, when it comes to testing a certain voting method. Every axiom will be discussed one at the time and will be tested against the FIFA voting system. The outcome of the test will be determined by using examples to illustrate whether a voting system violates an axiom. Using representative examples of scenarios that could occur in the real election will do this. These tests will help to find a complete and sufficient answer to the research question. After the subject is introduced and the possible problems are discussed the theoretical framework will be elaborated. In this part, the axioms used for this test will be introduced and discussed. Moreover it will contain all of the criteria to win this award, set by the FIFA. Theories and explanations regarding numerous social choice paradoxes and axioms will be explained. This part will also clarify difficult or unclear terms, which are going to be used in the rest of the thesis. For each axiom a hypothesis will be formulated. These hypotheses will be either accepted or rejected by testing if the axioms are satisfied. Then the data will be used, to find supporting and empirical evidence for any outcome in the test. This will help make more acceptable conclusions. With these conclusions, a clear overview will be made showing the outcome of each hypothesis.

Of course the influence of this research should not be overstated, and so conclusions and other relationships must be drawn with caution. This thesis will only test the FIFA voting system against 5 criteria, while there are many more criteria to test a voting system. This is done due to the limited amount of time and resources.

Theoretical framework

The first thing that has to be clarified are the rules and criteria FIFA sets for winning the Ballon d'or award. Each player gets judged over his performance and behaviour, as well on as off the pitch. As mentioned earlier, the people who are entitled to vote are divided into three categories: the coaches of the national teams, the captain of each registered country and a group of journalists (limited to one per country). Each of the three categories has the same electoral weight, notwithstanding the actual sizes of the classes the voters represent *(FIFA, 2015)*. Except for one, there are no restrictions put on whom an eligible voter may vote. This one restriction is that if a nominated player is also eligible to vote, he may not vote for himself *(FIFA, 2015)*.

Out of thousands professional football players, FIFA picks 23 players, of whom they think are the best 23 players in the world. After this is done, this shortlist with these 23 players is presented to the eligible voters and made public. The eligible voters have to pick a top 3 out of this shortlist in order of preference. The distribution of points is as followed: 5 points for your number 1, three points for the number 2, and 1 point for your third choice. Note that it has a lot of similarities with Borda count, but they aren't identical. With the Borda method points are assigned to all possible candidates, and also all the candidates are ranked. Where at the FIFA method only the top 3 gets points and is ranked.

The voting system FIFA uses is simple, namely that the player who receives the most points is awarded with the Ballon d'or. An important side note is, that in case of a draw, the person with the most number 1 votes gets the award.

A simple example will illustrate this. Let say that out of the 23 players named on the shortlist, Messi receives 35%, Ronaldo receives 30% and Neymar receives 20%. The rest of the votes are divided amongst the remaining 20 players. In this scenario the winner will be Messi, because he has the highest percentage of votes. This voting system has a few disadvantages compared to other systems. One of the drawbacks of this method is that there are a lot of wasted votes. These are votes that are not helping to pick winner in an election. These are the votes that a winner receives, which don't contribute to the win.

Now that all the rules are explained and FIFA voting system is clarified, the different voting system criteria will be elucidated.

There are desirable features and criteria, which a perfect voting system must meet. Arrow explained the paretian property in his book using two definitions.
- Here he stated that if you want a voting method to deliver a full ranking of alternatives, then the property will say that if everybody in a society prefers X over Y, then X should be ranked higher than Y by the society as a whole. (Arrow,1963)
- If you want a voting method to designate winners only (and you don't care about rankings), then the property says that if everybody thinks X is better than Y, Y can't win the election. (Arrow,1963)
As said before this thesis is going to test which of these criteria the FIFA voting system meets, to subsequently find empirical evidence to these findings. This thesis is limited to only test for only 5 of the main criteria a system must meet, according to Arrow. These 5 criteria will now be discussed:

1) *The first criteria is the Majority criterion (MC), this criteria state if a candidate is favored by more than half of voters, it is guaranteed to win. (Electology, 2016)*
2) *The second one is the Condorcet winner/ loser criterion (CC). It states that if a candidate would win/lose every head-to- head comparison, it should also win/lose the competition. (Black. D, 1958)*
3) *The third criteria is the independence of irrelevant alternatives (IIA). This is defined as; the social ranking of two alternatives should only depend on the individual rankings over those same two alternatives. (Arrow, 1963)*
4) *The Plurality criterion (PC) is the fourth criteria that will be tested. This one states that if the number of ballots ranking A as the first preference is greater than the number of ballots on which another candidate B is given any preference, then A should win the election. (Electology, 2016)*
5) *The last criteria is the Monotonicity criteria (MOC). This states that if one set of preference ballots would lead to an overall ranking of alternative X above alternative Y, and if some preference ballots are changed in such a*

way that the only alternative that has a higher ranking on any preference ballots is X, the method should still rank X above Y. (Austen-Smith, D; Banks, J. 1991)

Data & Results

Here the thesis is going to test whether the FIFA voting system will meet all the criteria mentioned earlier. All 4 criteria will be tested one at the time, by using examples, and if possible use empirical data.

A total of 514 people (all the people who are entitled to cast a vote) will cast their vote. As mentioned earlier; these people can give 5 points, 3 points or 1 point to respectively their first, second or third most preferred player. In all examples the following players will be used: Lionel Messi (M), Cristiano Ronaldo (R), Neymar (N).

Note: It is often said that during the FIFA Ballon d'or election, people vote strategically. For example if someone wants Lionel Messi to win the election, he will purposely leave Cristiano Ronaldo out of his top 3. Since those two players are the main candidates to win the election.

Note: even though a similar scenario never occurred before, the illustrated example is still theoretically possible.

The first hypothesis that will be tested is:

1) ***The FIFA voting system violates the Plurality criterion (PC).***

   This one states that if the number of ballots ranking A as the first preference is greater than the number of ballots on which another candidate B is given any preference, then A should win the election.

The following example will illustrate the violation of the PC criterion:

	Points: 5 points = 1st place; 3 points = 2nd place; 1 point = 3rd place			
Player	*5 points*	*3 points*	*1 point*	*Total points*
Lionel Messi	258 votes	106 votes	150 votes	((258*5) +(106*3)+(150*1) = **1758**

Cristiano Ronaldo	200 votes	250 votes	64 votes	((200*5) +(250*3)+(64*1) =**1814**
Neymar	56 votes	264 votes	194 votes	((56*5) +(264*3)+(194*1) =**1034**

Here you can see that Messi received more 1st place votes than that Ronaldo, is given any other preference. Ronaldo is still the winner of this election, which shows a violation of the PC criterion.

The second hypothesis that is tested is:

2) ***The FIFA voting system violates the Majority criterion (MC).***

This criteria state that if a candidate is favored by more than half of voters, it is guaranteed to win.

With a simple illustration this paper will show that the FIFA voting system does not satisfy the MC.

	Points: 5 points = 1st place; 3 points = 2nd place; 1 point = 3rd place			
Player	*5 points*	*3 points*	*1 point*	*Total points*
Lionel Messi	258 votes	106 votes	150 votes	((258*5) +(106*3)+(150*1) = **1758**
Cristiano Ronaldo	200 votes	250 votes	64 votes	((200*5) +(250*3)+(64*1) =**1814**
Neymar	56 votes	264 votes	194 votes	((56*5) +(264*3)+(194*1) =**1034**

In the example illustrated in table above you can see that the FIFA voting system does not satisfy the MC. Though Lionel Messi is preferred by more than half of the voters (half is 514/2= 257 votes), he would still not win the election if the outcome were like the one illustrated above. Cristiano Ronaldo would win the election, even though the majority prefers Lionel Messi.
Note: The same example is used as the one in the PC case. This is because Voting methods who violate the PC will also violate the MC. Hence, voting methods which violate PC are a subset of the voting methods which violate MC.

The third hypothesis that is tested is:

3) ***The FIFA voting system violates the Condorcet winner/ loser criterion (CC).***
   It states that if a candidate would win/lose every head-to- head comparison, it should also win/lose the competition.

The following example will illustrate that the FIFA voting system does not satisfy the CC.

Preference	**Voters with this preference**
M ≻ R ≻ N	258
R ≻ N ≻ M	256
N ≻ M ≻ R	0

Here only three players are taken into account to illustrate this counterexample. The preference of the voters regarding the remaining 18 (21-3) players is irrelevant. Because with the CC winner it is about the head to head comparison, so we only need to look at three players to finish the counterexample.
There are again 514 voters; let’s say that 258 voters prefer M over R, and R over N. But that 256 voters prefer R over N, and N over M. The fact that M is preferred

over all of the alternatives by 258 voters, makes M the Condorcet winner. However from the 258 voters who prefer M, M receives 1290 points (258*5). And from the other 256 voters M receives 256 points (256*1). So M receives a total of 1546 points (1290+256).
From the voters who prefer R, R receives 1280 points (256*5). And from the other 258 voters R receives 774 points (258*3). So R receives a total of 2054 points, which will make R the winner according to the FIFA.

The fourth hypothesis is:

4) ***The FIFA voting system violates the independence of irrelevant alternatives (IIA).***

   This is defined as; the social ranking of two alternatives should only depend on the individual rankings over those same two alternatives.

The following example will illustrate the violation of this criteria using 4 alternatives instead of 3 (The 4th doesn't get any points):

Preference	**Number of votes**		
	300	**90**	**124**
1st place	Messi	Ronaldo	Lewandowski
2nd place	Ronaldo	Lewandowski	Neymar
3rd place	Neymar	Neymar	Ronaldo
4th place	Lewandowski	Messi	Messi

In this election Messi is the winner according to the voting method FIFA uses. The results will be as follow:

1st: Messi receives 1500 points ((300*5)+(90*0)+(124*0)).

2nd:Ronaldo receives 1474 points ((300*3)+(90*5)+(124*1)).

3rd: Lewandowski receives 880 points ((300*0)+(90*3)+(124*5))

4th: Neymar receives 762 points ((300*1)+(90*1)+(124*3))

Now if we move Lewandowski to the last place in every single voters preference, we'll get the following outcome

Preference	**Number of votes**		
	300	**90**	**124**
1st place	Messi	Ronaldo	Neymar
2nd place	Ronaldo	Neymar	Ronaldo
3rd place	Neymar	Messi	Messi
4th place	Lewandowski	Lewandowski	Lewandowski

The outcome will be:
1st: Ronaldo receives 1722 points ((300*3)+(90*5)+(124*3))
2nd: Messi receives 1714 points ((300*5)+(90*1)+(124*1))
3rd: Neymar receives 1190 points ((300*1)+(90*3)+(124*5)

So the consequence of Lewandowksi being moved to the last place for every voter, is that now Ronaldo will win the election. So the social ranking of the two relevant alternatives (Messi and Ronaldo) does not only depend on the individual rankings over those same two alternatives. In this example a third alternative (Lewandowski) is moved to another place, which influences the outcome and thus results in a violation of the IIA.

The last hypothesis that is being tested is:

5) ***The last criterion is the Monotonicity criteria (MOC).***

   This states that if one set of preference ballots would lead to an overall ranking of alternative X above alternative Y, and if some preference ballots are changed in such a way that the only alternative that has a higher ranking on any preference ballots is X, the method should still rank X above Y.

The FIFA voting method fulfills the MOC, this will be illustrated by the following example:

Preference	**Number of votes**		
	300	**124**	**90**
1st place	Messi	Ronaldo	Neymar
2nd place	Ronaldo	Messi	Ronaldo
3rd place	Neymar	Neymar	Messi

In this scenario Messi wins the election, because he has 1962 points ((300*5)+(124*3)+(90*1)), which is the most of any of the candidates. It's obvious that if in a new scenario some voters vote Messi higher than they initially did, Messi would still win the election. So this voting method satisfies the MOC condition. This is demonstrated in the following table:

Preference	**Number of votes**		
	300	**124**	**90**
1st place	Messi	Ronaldo	Neymar
2nd place	Ronaldo	Messi	Messi
3rd place	Neymar	Neymar	Ronaldo

The only difference in this scenario is, that the 90 voters that initially voted Messi as third changed their preference. They now put Messi at the second spot, with all of the remaining preferences unchanged; it's obvious that Messi will also win this election.
We could also create a new scenario like this:

Preference	**Number of votes**		
	300	**124**	**90**
1st place	Messi	Ronaldo	Messi
2nd place	Ronaldo	Messi	Neymar
3rd place	Neymar	Neymar	Ronaldo

Which will give Messi even more points than he initially had. Here you see that it doesn't matter for the outcome how you change the preferences. As long as the change includes Messi moving up in the rankings compared to the other candidates, it will result in Messi wining the election.

What is observed here is that this criterion is a rather weak condition, so almost every voting method satisfies this condition. And as expected the FIFA voting method satisfies this condition. Every voting method where the assigned points are counted, and the candidate with the most points wins, satisfies this condition.

Conclusion

	Does the voting system for the FIFA Ballon d'or satisfy the discussed axioms of voting?	
Voting criteria	*Yes*	*No*
Majority criterion (MC)		X
Condercet winner/loser criterion (CC)		X
Independence of irrelevant alternatives (IIA)		X
Plurality criteria (PC)		X
Monotonicity criteria (MOC)	*X*	

In the table above the findings of this thesis are summarized. As you can see the only criterion that is satisfied is the Monotonicity criterion.
We can learn that the FIFA voting method violates a lot criterion, which does not automatically mean that it isn't a good method to use. I think that there isn't a clear alternative, which the FIFA could use. So this could be seen as a desirable method
However a possible change that the FIFA could implement is that all the 21 players on the shortlist receive points. So that every voter has to give their top 21, instead of how it is now where only the top 3 receives points.
Borda count would include this change, because there all the 21 candidates would receive points and would be ranked. Which is not the case at the current method where the players outside the top 3 are ranked as the same.

A recommendation for future research on this subject is, to test the FIFA voting system for more criteria. In this paper only 5 criteria were tested, this because of the limited amount of time and recourses available.

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