

Minority games and financial markets as beauty contests

“... professional investment may be likened to those newspaper competitions in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole; so that each competitor has to pick, not those faces which he himself finds prettiest, but those which he thinks likeliest to catch the fancy of the other competitors, all of whom are looking at the problem from the same point of view. It is not a case of choosing those which, to the best of one's judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practise the fourth, fifth and higher degrees.”

John Maynard Keynes (1936): The general theory of employment, interest and money, p. 156 (chapter 12)

“In his 1936 book Keynes compared the equilibrium in the stock market to that of a popular newspaper competition of his time. Competitors were asked to pick the six prettiest faces from a hundred photographs. The prize was awarded to the competitor whose choices came closest to the average preferences of all of the competitors as a group. Of course, to win such a competition one should not pick the faces one thinks are prettiest. Instead one should pick the faces that one thinks others are likely to think the prettiest. But even that strategy is not the best, for certainly others are employing it too. It would be better yet to pick the faces that one thinks others are most likely to think that others think are the prettiest. Or maybe one should even go a step or two further in this thinking. Investing in stocks is often like that: just as in the beauty contest, in the short run one does not win by picking the company most likely to succeed in the long run, but by picking the company most likely to have high market value in the short run.”

George A. Akerlof · Robert J. Shiller (2009): Animal spirits: how human psychology drives the economy, and why it matters for global capitalism, p. 133

Rules of the game

- Everyone must pick a face on the basis of a certain preestablished criterion (beauty, for instance).
- For a face x , let $N(x)$ designate the number of persons that have chosen face x .
- A face x is a winning face if, for each face y , $N(x) \geq N(y)$.
- A face x is a non-winning face if, for some face y , $N(x) < N(y)$.
- Every person who has chosen a non-winning face must pay 1 EUR.
- Let R denote the number of euros paid by all the persons who have selected a non-winning face.
- The amount R is equally distributed among all the persons who have chosen a winning face.
- The above game is repeated n times.
- The winner of the game is the person (or persons) who have collected more money after having played the game the n times.

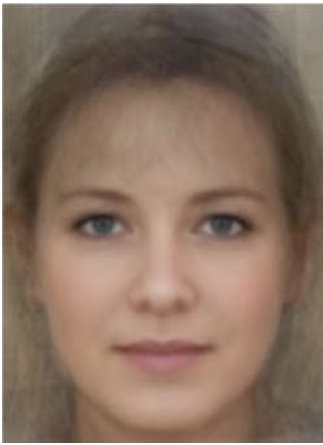
Game 1

<https://leadingpersonality.files.wordpress.com/2013/09/averageface.jpg>

<http://thehive.com/2015/09/13/heres-what-the-average-person-looks-like-in-each-country-11-photos/>

<http://justsomething.co/curious-study-calculates-the-average-female-face-for-each-country/>

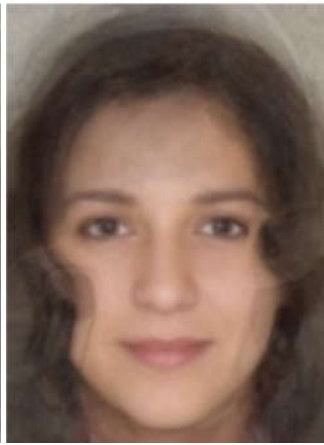
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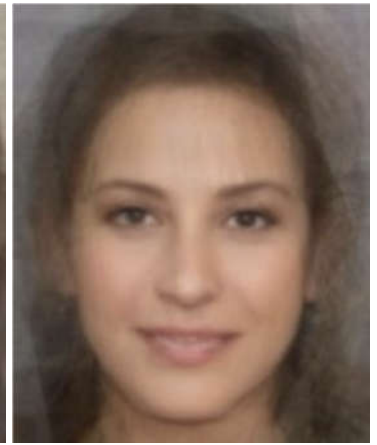
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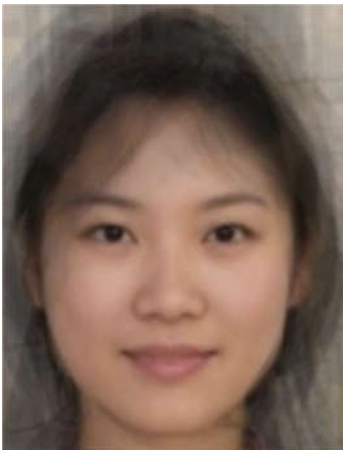
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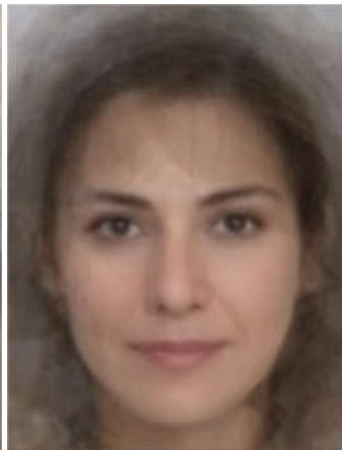
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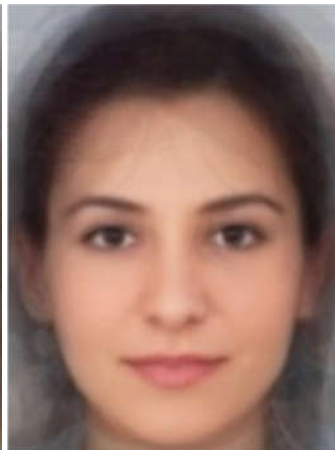
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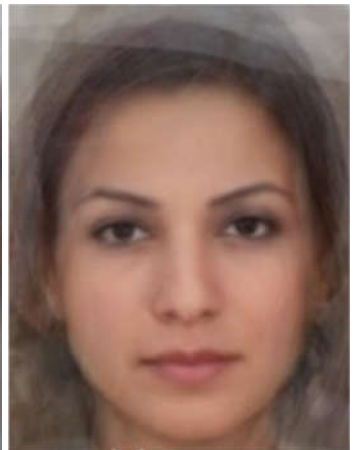
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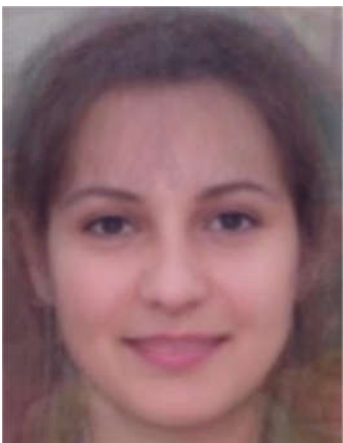
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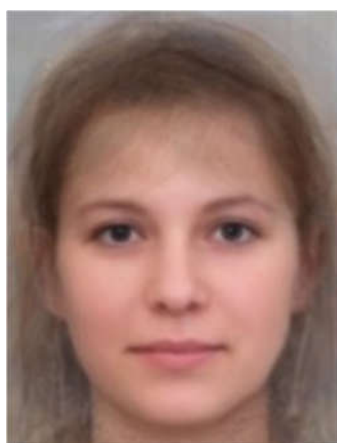
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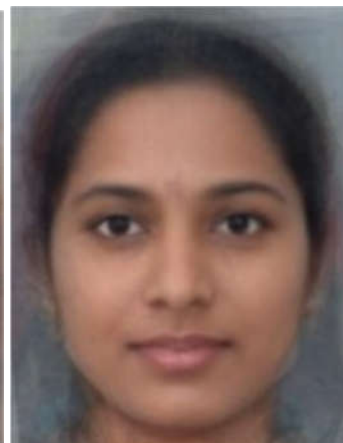
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The above faces correspond to averages of the following countries or geographic areas.

- | | | | | | |
|------------|------------|--------------|--------------------|-----------------|-----------|
| 1. Germany | 2. Mexico | 3. Argentina | 4. Israel | 5. China | 6. Spain |
| 7. Turkey | 8. Lebanon | 9. Romania | 10. Czech Republic | 11. South India | 12. India |

Game 2

http://webdysseum.com/wp-content/uploads/2012/05/average_faces_01.jpg (dead link)

http://2.bp.blogspot.com/-Bh39OVYPa7E/TW_q0i9uiPI/AAAAAAAAACP8/o8Ybl-guyno/s1600/average_faces_of_men-741954.jpg



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Rules of the game

- Everyone must pick a face on the basis of a certain preestablished criterion (attractiveness, for instance).
- For a face x , let $N(x)$ designate the number of persons that have chosen face x .
- A face x is a winning face if, for each face y , $N(x) \geq N(y)$.
- A face x is a non-winning face if, for some face y , $N(x) < N(y)$.
- Every person who has chosen a non-winning face must pay 1 EUR.
- Let R denote the number of euros paid by all the persons who have selected a non-winning face.
- The amount R is equally distributed among all the persons who have chosen a winning face.
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- The winner of the game is the person (or persons) who have collected more money after having played the game the n times.

The above faces correspond to averages from

0. Saudi Arabia

1. Hungary

2. Germany

3. Argentina

4. India

5. Mexico

6. Spain

7. China

8. Czech Republic

9. South India.