

Option Luck versus Brute Luck: Dworkin is Right.

Lessons from a Lab Experiment

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Experimental social justice: Why?

- Experimental game (decision) theory
- Theorists have axiomatized solutions or found equilibrium which provides a prediction about the behaviour of the group.
- Experimentalists try to test whether the predictions are correct in a lab situation.
- Advantage: control every factor that can affect the result
- Drawback: not real life, artificial situations, students and not laymen

Experimental social justice: a branch of empirical social choice (Gaertner)

- Questionnaire or vignettes: Yaari&Bar Hillel (SCW1984); Schokkaert&Devooght (SCW(2003); Konow JEBO1996, Gaertner
- Specificity: people are not involved
- Good, because no self-serving bias a kind of requirement when speaking about justice
- Bad because, as economists, we are more interested in revealed than stated preferences
- Revealed preferences ask for experiments where people are observed when making hard choices
- But then to retrieve "ethical revealed preferences", we have to get rid of the self-serving bias component

Phases of social justice lab experiment

- Choose a theory to test
- Draw an experiment with two phases;
- a phase where people earn money like in Rustrom&Williams(2000), Konow(2000) Cappelen&al.(2007)
- a phase where people vote for or against redistribution like in Bolton&Ockenfels(2006), Beckman&al(2004), Ackert&al(2007)
- Their votes would be interpreted as revealing their revealed preferences which mix ethical preferences and self-interest (if a strategy-proof social choice is used)
- Retrieve the ethical revealed preferences by getting rid of the self-interest by econometric technics.

What do we know about opinions in EOP matter?

- According to Schokkaert, everyone is post-welfarist:
- Distinction between effort and circumstances
- Responsibility: principle of natural reward for effort variables (equal transfers for equal circumstances)
- Compensation: principle of compensation for circumstances (equal outcome for equal effort)
- We want to test something beyond

Two more distinctions

- Dworkin's distinction between
 - Brute luck (*Compensation*)
 - Option luck (*Natural reward*)
 - Is it true as John Rawls (1971) puts that "*If a number of persons engage in a series of fair bets, the distribution of cash after the last bet is fair, or at least not unfair, whatever this distribution is*"?
 - This position has been challenged e.g. by Legrand and Fleurbaey
- What about differences in skills (talent)
 - Poor skills: like handicap (bad brute luck component)
 - Dworkin argues in favour of compensation
 - Vallentyne argues against because it is embodied, self-ownership (Nozick argument)
 - According to Konow JEBO 1996, 2001, people seem to follow Vallentyne.

- To rank different luck factors in terms of compensation (degree)
 - ①
 - social background luck
 - genetic luck (talent)
 - brute luck
 - option luck
- Talent is associated with effort, and then we also have to introduce effort in the exp

How to proceed?

- Given focus on process, an EOP Experiment should consist of two phases
 - ① Subjects need to get money through different and *independent* channels
 - inherited money
 - earned money (attempt to introduce talent combined with effort)
 - windfall money
 - gamble money
 - ② Subjects should decide collectively about redistribution of money received through different channels.
 - Ultimatum game elicits preferences but at interpersonal level not at collective level
 - Majority voting between two alternatives is strategy proof

- Description of the experimental design
- Result of the votes
- Econometric Analysis (Simple at this stage) focusing on the main aim of the exp.
- Conclusion

An artefactual lab experiment (Harrison et List (2004) & Levitt et List (2009))

Four experimental sessions involving a treatment of about 100 subjects
They are told that they form a small society.

(A) baseline treatment, (B) talent treatment and (C) moral reflection treatment (D) commitment.

Each treatment involves:

- An economic phase where people got their income
- A redistribution phase determined by majority voting



Rules satisfied by the experiment

- ① Same outcome for each factor
- ② Additivity of the return process (except for the mix talent/effort)
- ③ Same proportion of winners for every factor
- ④ Same proportion of winners/losers for a given factor in each treatment
- ⑤ Treatment differ from the others by only one change

Experimental Design – (A) Baseline treatment

Monetary gains depend on a show-up fee (4 euros) and 4 factors (they are not named in the experiment):

- 1 Circumstances
 - 2 Effort
 - 3 Brute luck
 - 4 Option luck
- The discrepancy between success and failure is just 10€ for each factor

Experimental Design – (A) Baseline treatment

Factor 1: Circumstances

- Place of birth: typical variable used in empirical studies particularly for health and education outcome
- Subjects are asked if they are born in Marseille



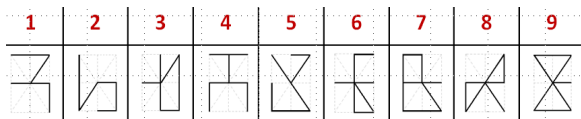
Payoff:

- Subjects born in Marseille earn 10 euros more.
- Subjects not born in Marseille 0 euros.
- People are told about these conditional payoffs after the end of the effort test

Experimental Design – (A) Baseline treatment

Factor 2: Effort

- 5 minutes Visuo-spatial attention task, modified longer version of Zazzo test used in the Wechsler Intelligence Scale for Children (*WISC-III, 3rd edition*).
- Test used to measure attention deficits of adults, e.g. of elderly people.



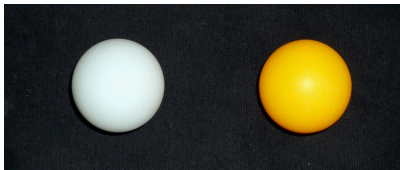
Payoff:

- Subjects with a score above the median session score earn 10 euros more.
- Subjects with a score below the median session score earn 0 euros.
- Score: number of good signs

Experimental Design – (A) Baseline treatment

Factor 3: Brute Luck

- Subjects randomly receive an envelope with either a white or a yellow paper inside
- A ball is drawn to determine which of the two colours wins



Payoff:

- Subjects with the colour paper matching the colour of the ball receive 10 euros more.
- Unlucky subjects receive 0 euros.

Experimental Design – (A) Baseline treatment

Factor 4: Option luck

- Subjects decide to bet 4€ on their seat number: even or odd.
- A number between 0 and 9 is drawn



Payoff:

- Bettors who win earn 6 euros.
- Bettors who loose suffer a 4 euros loss.
- Difference = 10 Euros
- Gains of non bettors are unchanged.

Redistribution phase:

- Subjects receive their payment sheet after the economic phase
- A sequence of votes on redistribution with respect to each of the 4 factors
- Subjects vote on two alternatives:
 - a. No = No redistribution
 - b. Yes = Partial redistribution: winners give up 2.5 euros which are given to losers

Abstention is allowed (Only 5% in average choose it) (In the results, absentee ballots are gathered with No)

Redistribution phase:

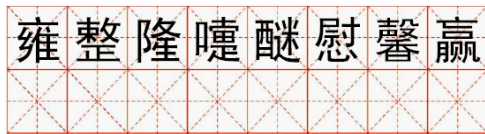
- The same sequence of votes (circumstances, effort, brute luck, option luck)
- The results of the votes are only disclosed at the end of the sequence
- The subjects are told that the result of the vote is effective
- In expectation, budget balance except for circumstances, 39% of winners but subjects don't know
- Interpretation: If people stick to the compensation principle they should vote yes (e.g for circumstances)
- Interpretation: If people stick to the natural reward principle, they should vote no (e.g for effort)

Experimental Design – (B) Talent treatment

Theory:

- Not clear that effort and talent should be treated in the same way
- Difficult to separate effort and talent
- Difficult to find talent not correlated with education which in turn is linked to social background

Modified visuo-spatial attention task: simple lines are replaced by Chinese characters that involve drawing talent.



Otherwise treatment identical to baseline treatment

Corrected by Chinese students. Correct if they are able to read the character

Subjects fill in a hypothetical questionnaire on equality of opportunity before implementing the baseline experiment:

- Vignettes: story of 2 sellers who earn a base salary and a bonus depending on sales
- Sales depend on 5 factors: effort, talent, circumstances, brute luck and option luck
- Subjects are asked if it is fair to compensate for inequalities in wages with regards to each of the above mentioned factor
- Otherwise, treatment identical to baseline treatment

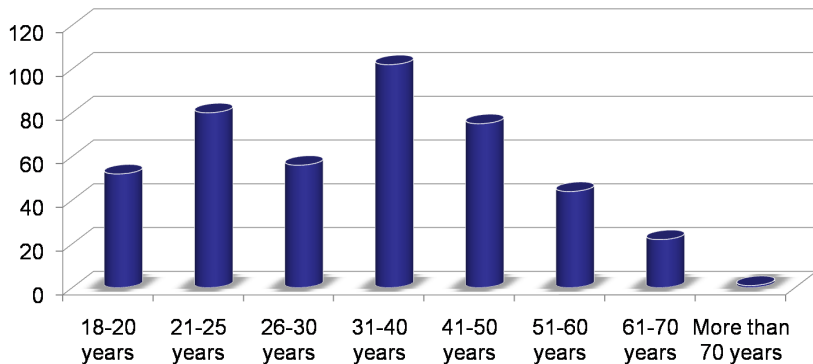
Before entering the room, a different treatment.

- Subjects are asked by students of psychology not participating in the exp. to sign a petition about anonymous vita when applying for internship.
- They are free to sign or not.
- No discrimination is a first requirement of EOP.
- Otherwise treatment identical to baseline treatment

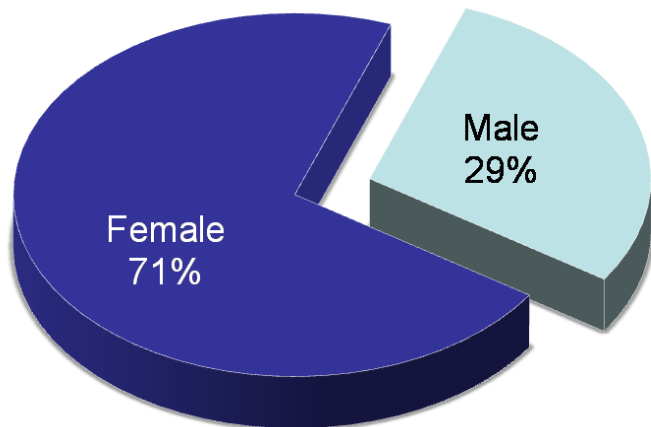
- Subjects are recruited through advertisements in local newspapers and regional TV news, flyers handed out in the street and faxes sent to 6000 companies: a survey entitled “*To succeed in Marseille*”
- Experiment conducted in the Regional Council voting room, equipped with an electronic voting system allowing to collect information in real time.
- Participants could register using the Public Economics Institute web site or a dedicated phone line
- The number of subjects in each session nearly balanced around 100

Vouchers attract...young

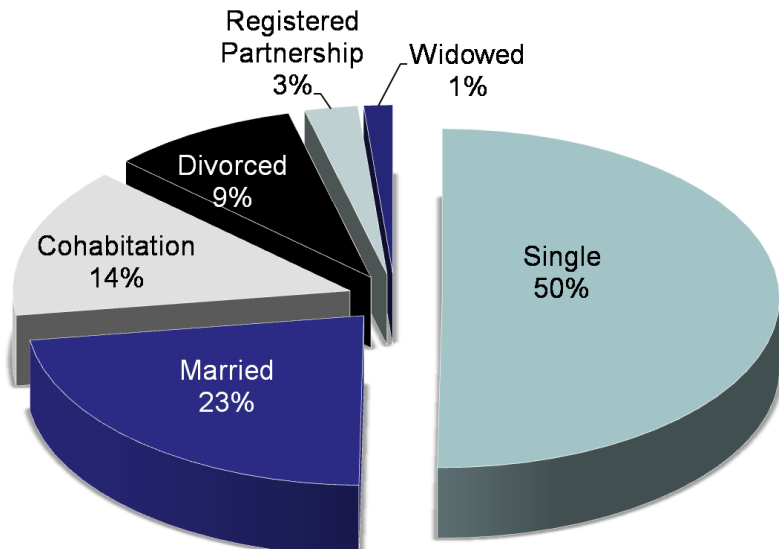
Age of participants



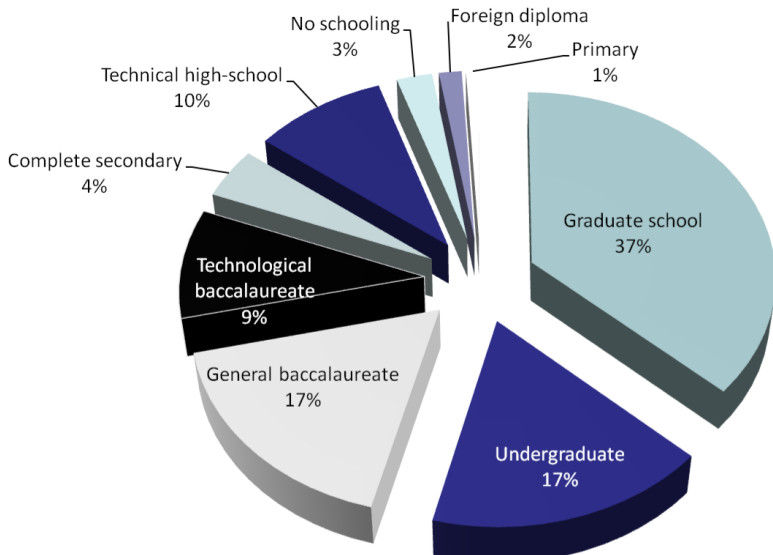
Gender of participants



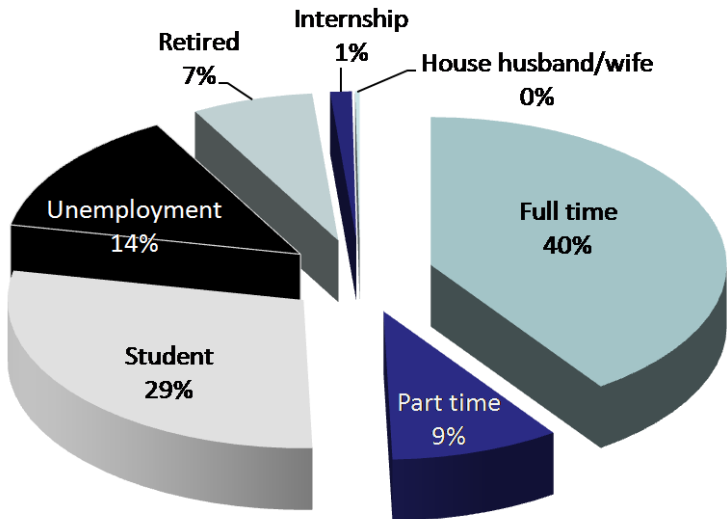
Marital status



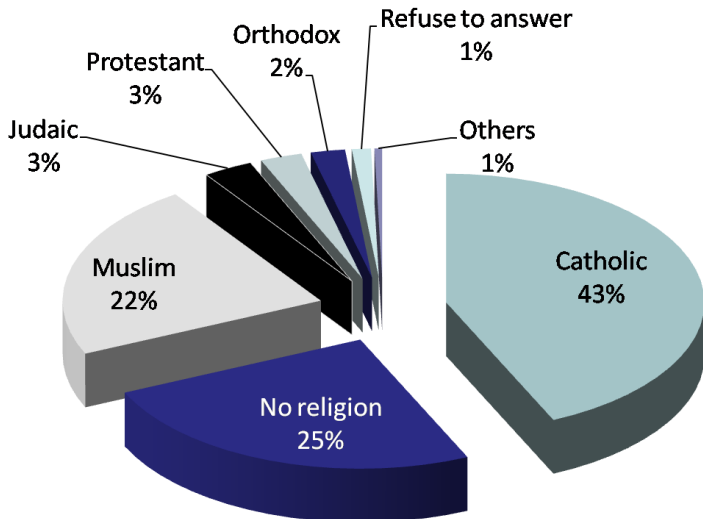
The highest diploma obtained



Professional situation of participants

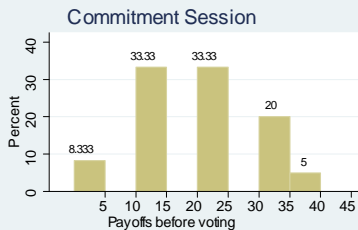
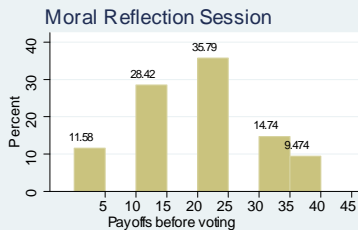
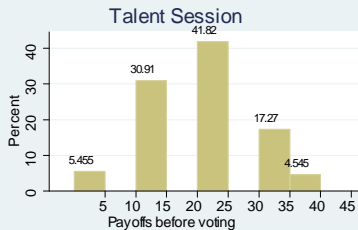
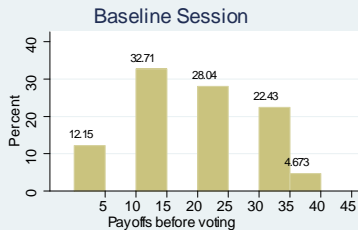


Religious environment of participants

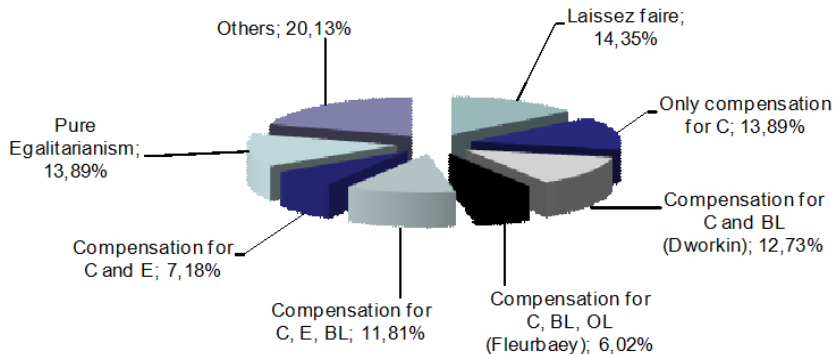


Laisser-faire income distributions

Payoffs before voting



Patterns of voting behaviour (n=432)



Do people stick to EOP principles?

- A majority agrees with the compensation principle, 52%
- In this subgroup, a majority agrees with the principle of natural reward (33% vs 19%)
- In the same subgroup, a majority agrees with the principle of compensation of brute luck (31% vs 21%)
- In the same subgroup, a very large majority agrees with the principle of respect of option luck (46% vs 6%)

Descriptive Statistics Result of the votes

Percentage of votes in favour of (partial) redistribution by treatment

	Circumstances	Effort	Brute luck	Option luck
Whole sample	303 (70.1%)	195 (45.1%)	246 (56.9%)	136 (31.5%)
Baseline	81 (75.7%)	44 (41.1%)	61 (57.0%)	33(30,8%)
Talent	80 (72.7%)	60 (54.5%)	68 (61.8%)	30(27,3%)
Moral reflection	62 (65.3%)	33 (34.7%)	55 (57.9%)	26 (27.3%)
Commitment	80 (66.7%)	58 (48.3%)	62 (51.7%)	47 (39.2%)

Evidence of a strong self-serving bias

	Baseline	Talent	Moral reflection	Commitment	<i>Av Gap</i>
Good Circumstances	66.7%	42.2%	43.2%	44.7%	
<i>Bad Circumstances</i>	80.3%	93.9%	79.3%	80.8%	35%
Good Effort	32.7%	28.8%	25.0%	38.1%	
<i>Bad Effort</i>	51.0%	84.3%	44.6%	59.7%	28.7%
Good brute luck	34.6%	43.4%	42.0%	39.0%	
<i>Bad brute luck</i>	78.2%	78.9%	75.5%	63.9%	34.2%
Option luck winner	17.1%	13.0%	18.4%	29.8%	
<i>Option luck loser</i>	50.0%	43.9%	50.0%	52.2%	29.3%
Non-bettor	20.8%	26.9%	8.7%	33.3%	

Conflict between self-interest and ethical values

	Fairness view	
	Compensation	Natural reward
Good situation	conflict	-
Bad situation	-	conflict

- When you vote for redistribution when you are in a good situation, you reveal that you strongly prefer Compensation
- When you vote for laissez-faire when you are in a bad situation, you reveal that you strongly prefer Natural Reward.
- For each factor and session compute *the ratio of conditional probability of voting yes when good on conditional probability of voting no when bad*.

- **The relative strenght of compensation vs natural reward**

	Circumstances	Effort	Brute Luck	Option luck
Whole sample (n=432)	2.942 (2.153 - 4.021)	0.682* (0.519 - 0.896)	1.519 (1.151 - 2.005)	0.388 (0.277 - 0.544)
Baseline (n=107)	3.381 (2.004 - 5.705)	0.669 (0.419 - 1.066)	1.587 (0.850 - 2.962)	0.341 (0.163 - 0.715)
Talent (n=110)	6.861 (2.501 - 18.819)	1.837** (0.866 - 3.897)	2.061 (1.143 - 3.716)	0.233 (0.105 - 0.514)
Moral Reflection (n=95)	2.090 (1.119 - 3.903)	0.452 (0.260 - 0.786)	1.718 (0.935 - 3.157)	0.368 (0.174 - 0.779)
Commitment (n=120)	2.330 (1.320 - 4.113)	0.944 (0.605 - 1.474)	1.081 (0.681 - 1.716)	0.623 (0.366 - 1.061)

- Ranking of the "luck factors" from the most compensated to the least compensated
- Circumstances > talent = Brute luck > option luck
- Effort > option luck
- Need to refine for control of observable and inobservable heterogeneity

Modeling choices

Self-serving Bias Compensation	YES		NO	
	Good	Bad	Good	Bad
YES	NO	YES	YES	YES
NO	NO	YES	NO	NO

- Entering into a self-serving bias means that when there is a conflict between your fairness view and your self-interest, you follow your self-interest.
- Here it is occurring in the configurations YES, YES, GOOD and NO YES BAD.
- These two situations allow to discriminate with the case where the individual only follows his fairness view.

A class of utility functions leading to the choices of the table

- Each variable is indexed by factor. Here the index is omitted.
- x the fairness view = 1 if for the compensation principle and -1 if for the natural reward principle.
- y the self-interest variable = 1 if the individual entering into a self-serving bias and 0 otherwise.
- z the income (\bar{z} the average income) after the laissez-faire stage.
 - If $\bar{z} - z > 0$: poor
 - If $\bar{z} - z < 0$: rich.
- Vote $v = 1$ if yes and 0 otherwise

A class of utility functions leading to the choices of the table

$$H(x, y, z) = ax + y(\text{sgn}(\bar{z} - z))$$

- with $0 < a < 1$
- The utility function reads

$$U = (v, x, y, z) = vH(x, y, z)$$

- Maximizing U with respect to v gives the decision rule

“Vote YES IFF $H > 0$ ”

- The same utility and the same decision rule whatever the redistributed amount.
- No assumption of decreasing marginal utility of income. Votes depends on whether it induces a loss/gain not of the magnitude of the loss/gain

Values of function H

Self-serving Bias Compensation	YES		NO	
	Good	Bad	Good	Bad
YES	$a-1$	$a+1$	a	a
NO	$-a-1$	$-a+1$	$-a$	$-a$

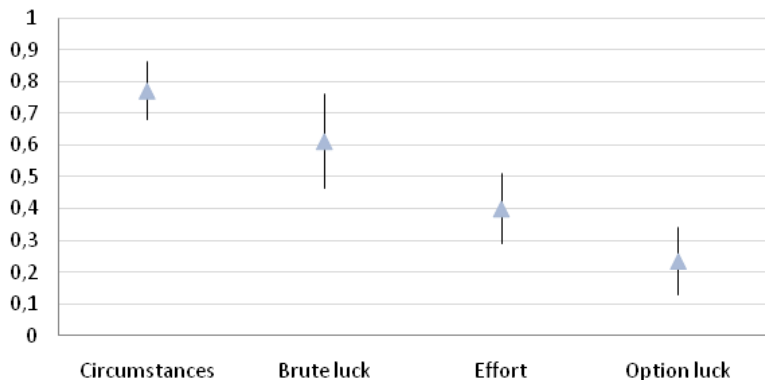
- Now suppose that X and Y are two random variables which are drawn from binomial laws of parameter q and p respectively supposed to be independent.

The writing of the loglikelihood

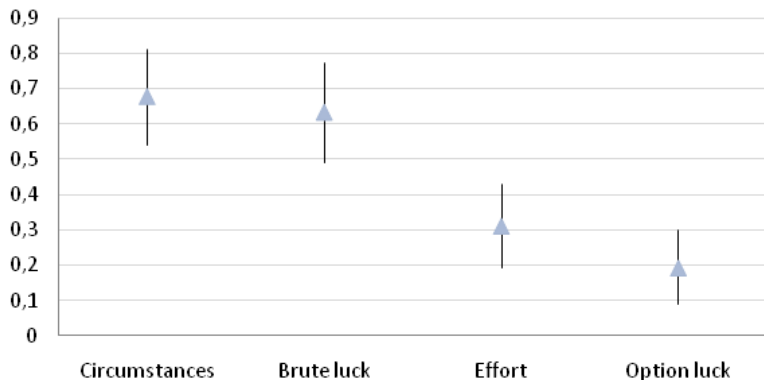
Self-serving Bias Compensation	YES (p)		NO ($1-p$)	
	Good	Bad	Good	Bad
YES (q)	NO N_{GN}	YES N_{BY}	YES N_{GY}	YES N_{BY}
NO ($1-q$)	Good	Bad	Good	Bad
	NO N_{GN}	YES N_{BY}	NO N_{GN}	NO N_{BN}

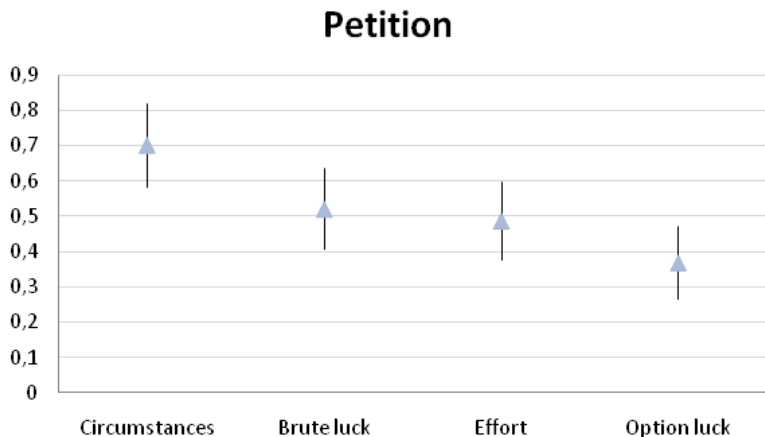
- $L = N_{GY} \log(q(1-p)) + N_{GN} \log((1-q) + pq) + N_{BY} \log(q + (1-q)p) + N_{BN} \log((1-q)(1-p))$
- For option luck, we add a term for non bettors for which only fairness view matters.

Baseline



Reflexion





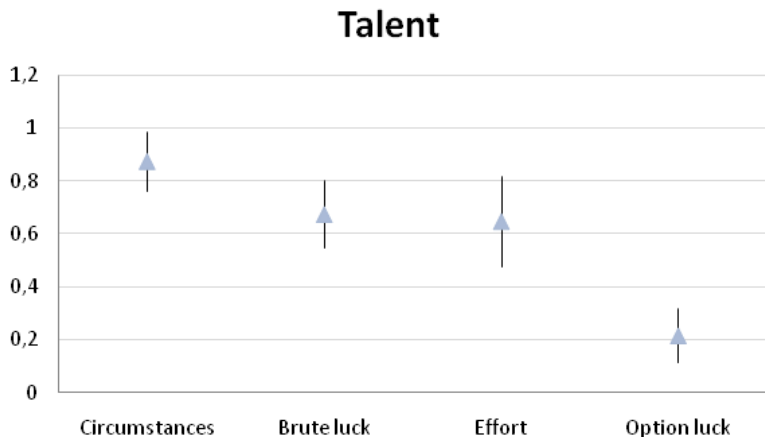
Is global Dworkin's position endorsed?

- *H0: Same fairness view q for circumstances and brute luck & same fairness view for effort and option luck*
- *Result of the LR test*

Baseline: $p = 0.02$;

Moral reflection : $p = 0.33$;

Commitment: $p = 0.04$



Test of Dworkin's position regarding talent

- *H0: Same fairness view q for circumstances and brute luck and talent in the TALENT treatment*

$$p = 0.051724$$

Test of the consistency of the model

- *The model is coarse; can we test that it is not too coarse?*
- *In the framework of the model, there is not reason why the self-serving-bias should not be the same across factors in a given session.*
- *H0: Same self-serving-bias p across factors in a given treatment: Not rejected at 5%*

Baseline: $p = 0.08$;

Talent: $p = 0.10$;

Reflection: $p = 0.60$;

Commitment: $p = 0.63$

Test of difference across treatment wrt baseline

(*** : Significantly \neq from baseline at 1%)

	Circumstances	
	\hat{p}	\hat{q}
Baseline	0.136 [-0.045; 0.315]	0.772 [0.680; 0.863]
Talent	0.516*** [0.361;0.671]	0.873 [0.761;0.984]
Reflection	0.361* [0.171; 0.550]	0.676 [0.540;0.812]
Commitment	0.362* [0.194,0.529]	0.700 [0.581,0.818]

	Effort	
	\hat{p}	\hat{q}
Baseline	0.183 [-0.001; 0.367]	0.4001 [0.289;0.512]
Talent	0.555*** [0.403;0.707]	0.647*** [0.477;0.818]
Reflection	0.197 [0.010;0.385]	0.311 [0.193;0.429]
Commitment	0.216 [0.042,0.390]	0.486 [0.375,0.596]

	Brute luck	
	\hat{p}	\hat{q}
Baseline	0.436 [0.267;0.604]	0.613 [0.466;0.761]
Talent	0.356 [0.186;0.525]	0.673 [0.544;0.802]
Reflection	0.336 [0.151;0.520]	0.632 [0.491;0.773]
Commitment	0.250 [0.078;0.422]	0.519 [0.405;0.634]

	Option luck	
	\hat{p}	\hat{q}
Baseline	0.335 [0.152;0.518]	0.236 [0.129;0.343]
Talent	0.301 [0.116;0.485]	0.215 [0.115;0.315]
Reflection	0.338 [0.150;0.527]	0.193 [0.089;0.298]
Commitment	0.228 [0.037;0.418]	0.367* [0.264;0.470]

Provisional lessons from the experiment

- How money is earned matters for social justice.
- A substantial part of altruism for a large group of subjects who aren't in a face to face relation.
- In the aggregate, the “average” voter votes as Dworkin would do with respect to brute and option luck
- There are contexts where talent (non-meritorious) and effort seem important to be distinguished.
- Further research to refine the econometric results to take into account heterogeneity (observable and non observable)
- Did the rescue of the banking system follow the majority opinion about compensation for bad option luck?