Is there a dividend of democracy?
An experimental foray

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• Let’s try to understand simple things first ...
Overview

A) Self-governance
   • **Given** policies are more efficient when democratically chosen then when imposed
     (provision of public goods)

B) Wisdom of the crowds?
   • Direct democracy may result in **better** policy choices. Determinants? (biases, cost of information)
Self-governance
Cooperation problems

- My cost > My benefit
  My cost < Social benefit
- free-rider incentive
- Inefficiency: under-provision of Public goods, i.e. little cooperation
- Standard solution: law that makes contributing an obligation and is backed by **formal** sanctions
- «Economic man» is only induced to do so if sanction «severe» (deterrent), not if «mild» (non-deterrent)
(when) “men live without a common power to keep them all in awe ... the life of man (is), **solitary, poor, nasty, brutish, and short.**”

(1651, Leviathan, Chap. XIII, §.8-9, p. 84).
Beneficial effects of voting?

• Alexis de Tocqueville (1838):
• “It is not always feasible to consult the whole people, either directly or indirectly, in the formation of the law; but it cannot be denied that when such a measure is possible, the authority of the law is very much augmented.”
• Voting may make laws more “legitimate” which in turn increases compliance. Particularly relevant when sanctions are non-deterrent
• We use linear public goods game
Tyran and Feld (SJE 2006)
Formal Sanctions

- One-shot linear public good (U St. Gallen)
- 20 Points to “Private account” or “Public account”
  \[ E_i = (20 - g_i) + 0.5 \cdot \sum_{j=1}^{3} g_j \]

**EXO**: impose sanction, severity varies
- Severe sanction \((s = 14)\) for \(i\) if \(g_j < 20\). Prediction: full contribution
- Mild sanction \((s = 4)\) points for \(i\) if \(g_j < 20\). Prediction: no contribution
- Control \((s = 0)\)
  Prediction: no contribution
Tyran and Feld (SJE 2006)
Does exogenous mild law work?

- Contribution rate is non-zero for No law
Tyran and Feld (SJE 2006)
Does exogenous mild law work?

- Exogenous Mild law is **not** more efficient than No Law
Tyran and Feld (SJE 2006)

Does exogenous mild law work?

- Severe law works, as expected
Experimental Design

• **ENDO**: Two-stage game

• **1st Stage**: majority vote on
  a) Severe law vs. no law
  b) Mild law vs. no law

• **2nd Stage**: play PG-game according law chosen

• **Predictions**
  In a): Accept severe law, full contribution
  In b): Reject mild law, no contribution
Tyran and Feld (SJE 2006)

ENDO: severe law

- Severe law is popular (accepted in 75% of groups)
- ... and works (given acceptance, 96% compliance)
Tyran and Feld (SJE 2006)
ENDO: mild law

- Mild law is
- ... surprisingly popular (accepted in 60% of the cases)
- ... and works remarkably well
- "Dividend of democracy": Mild law is more efficient when chosen than when imposed
Whether an individual contributes depends on whether the group accepted, not on how the individual voted.

Suggestive of a causal effect (see nice technique of Dal Bo, Foster and Putterman, AER 2010)

Interpretation: voting is a signal of intention to cooperate, conditional cooperation

<table>
<thead>
<tr>
<th>Contributions (% of E)</th>
<th>by Yes Voters</th>
<th>by No Voters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accepted</td>
<td>62%</td>
<td>68%</td>
</tr>
<tr>
<td>Rejected</td>
<td>17%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Tyran and Feld (SJE 2006)

Causality?
Tyran and Feld (SJE 2006)
Conditional Cooperation

![Graph showing conditional cooperation with own contribution on the y-axis and expected contribution of others on the x-axis. The graph includes various data points represented by different sized bubbles.]
Thöni, Tyran and Wengström (JPubE 2012)
Conditional cooperation in Denmark

- Virtual lab: Quasi-representative sample of about 1500 participants from all walks of life (18-80 years, all income and education levels), totally anonymous
Thöni, Tyran and Wengström (JPubE 2012)
Beliefs and Cooperation

- One-shot game (about €7)
- Clear positive relation, about 2/3 of subjects are conditional cooperators (strategy method)
Self-governance works: choose formal sanctions.
There is a dividend of self-governance ("democracy") and voters seem to anticipate it.

Caveats:
Self-governance task was trivial. Very simple experiment. What about robustness to:

- Repetition
- Comparison to plausible alternatives: formal vs. *informal* sanctions
- Costly law enforcement
- Cultural effects (subject pool)
Markussen, Putterman, Tyran (REStud 2014)
Voting on formal vs. informal sanctions

- \( n = 5 \) (partner), \( E = 20 \), \( a = 0.4 \), 335 participants from Copenhagen U
- Learning and alternatives: pair-wise majority vote between No sanction, formal sanction (FS), Informal sanction (IS).
- 2 cycles of voting, play 4 periods under chosen regime
- If IS: costly peer punishment
Markussen, Putterman, Tyran (REStud 2014)
Voting on formal vs. informal sanctions

- Treatments differ by characteristics of FS
- Fixed cost
  ("Cheap" \( c = 0.1E \), or
  "Expensive" \( c = 0.4E \)) and
- Deterrence
  (sanction per point kept on the private account: \( s = 0.8 \)
  or \( s = 0.2 \))

<table>
<thead>
<tr>
<th></th>
<th>Cheap</th>
<th>Expensive</th>
</tr>
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<tbody>
<tr>
<td><strong>Deterrent</strong></td>
<td>DC ((n = 70))</td>
<td>DE ((n = 60))</td>
</tr>
<tr>
<td><strong>Non-deterrent</strong></td>
<td>NC ((n = 70))</td>
<td>NE ((n = 60))</td>
</tr>
</tbody>
</table>

\[ \pi_i = (1 - s)(E - g_i) + a \sum_{j=1}^{n} g_j - c \]
• Complex experiment, rich set of results
• Control treatments with exogenous sanctions to test for the effect of voting
  • Impose same pattern as most popular pattern
• Dividend of democracy: Cooperation is higher when chosen in a vote than when imposed
• in NC by about 15%
  (in line with Tyran and Feld SJE 2006)
• in IS by about +25%
  (similar result in Sutter, Haigner and Kocher, REStud 2010)
Kamei, Putterman, Tyran (ExEc 2015) 
State OR nature?

• Similar setting as in previous study, extension:
  • voters also have to design formal sanctions, e.g. choose deterrence level
    (as in Putterman, Tyran and Kamei JPubE 2011)
• 305 undergrads, Brown U
• Rich set of results, in line with previous studies
In summary:
Evidence for a dividend of democracy with “mild” sanctions in CH and DK, with informal sanctions in DK and US.

Effects were obtained in simple one-shot and complex settings.
Wise crowds?
The basic idea
Condorcet Jury Theorem (1785)

“Committees” make better choices (through majority voting) than individuals in a common interest situation

Assumptions

- \( n > 2 \) voters, 2 alternatives
- All are uncertain, but have valuable information (\( p_i > 0.5 \))
- Sincere, independent and costless voting

“The bright side of the vote”: \( p_{jury} > p_i \)

Effect is strong if \( n \) large
Illustration of information aggregation

\[ n = 3, \ p_i = 70\% \]

\[ 0.7 \times 0.7 \times 0.7 = 34.3\% \]

\[ 0.7 \times 0.7 \times 0.3 = 14.7\% \]

\[ 0.7 \times 0.3 \times 0.3 = 6.3\% \]

\[ 0.3 \times 0.3 \times 0.3 = 2.7\% \]

\[ \text{times} \]

1 \[ \text{34.3\%} \]

3 \[ \text{44.1\%} \]

3 \[ \text{18.9\%} \]

1 \[ \text{2.7\%} \]

100 \[ \% \]

\[ 78.4\% > 70\% \]

\[ 21.6\% \]
Illustration \((n = 3)\)
Morton, Piovesan and Tyran (WP 2012) “Dark Side of the Vote”

Question

• Can we find evidence for a “wisdom of the crowds” when voters are competent and that voting is counterproductive when voters are biased?
• Design challenge: how to induce $p_i < 0.5$? Technique with two urns does not work
Design

- Majority voting on quiz questions. 2 possible answers, 1 is correct
- Common interest: each subject earns 10 DKK ($\approx 1.4$ Euro) for a correct committee ($n = 5$) decision
- We select (after pre-testing) 10 “hard” ($p_i < 0.5$), 20 “easy” ($p_i > 0.5$) questions
- No abstention, no communication, no cost, no feedback
- 125 participants (U Copenhagen)
Baseline treatment (BT):
“S-shape” as predicted

Information aggregation is
• positive for “easy” questions
• Negative for “hard” questions

Morton, Piovesan, Tyran (WP 2012)
Results: The “dark side” is real
Morton, Piovesan and Tyran (WP 2012) "Dark Side of the Vote"

• How does “social information” shape the quality of democratic decisions?
  • Simple forms of communication
• “Opinions” (OT): learn votes in other group
Opinions can cut either way

- “Opinions”
- **improve** efficiency when voters tend to get it right
- but **reduce** efficiency even further when they are biased
- voters seem to simply ignore their private signals and follow the public signal
Morton, Piovesan and Tyran (WP 2012)
“Dark Side of the Vote”

Upshot

• Evidence for information aggregation, but it cuts both ways. “Dark side”: Democratic choices are even more biased than voters’ individual biases

• Social information (“communication”) does not necessarily de-bias democratic choices (here amplification)
Mechtenberg and Tyran (WP Oct. 2016)
Rational ignorance

- Concern that direct democracy yields bad decisions because voters are not motivated to be informed & to turn out
- Consider a “difficult” common interest problem: voters a priori have $p_i = 0.5$. If they make an effort to acquire information: $p_i > 0.5$. Costly information acquisition is provision of public good
- If “everybody’s business is nobody’s business”, rational ignorance undermines information aggregation and delegation to an expert (“representative democracy”) may be optimal
Mechtenberg and Tyran (WP Oct. 2016)
Design

- Lab experiment with “naturalistic” labels to facilitate comprehension
- Voters choose which of two companies to hire for a particular construction project (stadium, bridge, hospital etc.)
- One of the companies is more qualified for the job than the other, and all citizens equally benefit if the right choice is made
Mechtenberg and Tyran (WP Oct. 2016)

Design

• How the choice between companies is made:
• Either “representative democracy”: mayor decides. Mayor is either experienced or not (has known $q > 0.5$). Computerized, no cost.
• Or “Direct democracy”: citizens vote. Citizens simultaneously and independently decide whether to gather info about the firms at cost $c$, get an (independent) signal, and decide about abstaining / participation
Mechtenberg and Tyran (WP Oct. 2016)
Treatments: Endo vs. Exo

- In **Endo**, representative democracy is the default, i.e. mayor decides.
- But majority of “citizens” can demand direct democracy by “**signing a petition**”
- If “petition” succeeds: citizens make choices among the firms by voting in the next “term”
- If “petition” fails: Mayor picks firms in next term (at no cost to citizens)
- In **Exo**: no petition. “direct democracy” vs. “representative democracy” (voting vs. delegation) is imposed
Mechtenberg and Tyran (WP Oct. 2016)
Treatments: Endo vs. Exo

- Intuition: knowing that (many other) citizens demand direct democracy fosters belief that others will acquire information. Conditional cooperation ...
- Complex experiment (6 “terms”), many interesting results (e.g. optimal delegation as function of experience of the mayor and cost of information)
- U Vienna, groups of 7, 168 subjects
Voters are more optimistic in ENDO

Mechtenberg and Tyran (WP Oct. 2016)

Optimism
More optimistic voters buy more information
Motivated voters

Mechtenberg and Tyran (WP Oct. 2016)
Overall summary

Two potential sources of a “dividend of democracy”

• Self-governance
  • Evidence: Given sanctions (mild formal and informal) are more efficient when chosen in a vote than when imposed
  • Interpretation: Compliance with a law is improved when law is seen as legitimate. A vote can bolster legitimacy

• Wisdom of the crowds
  • Ambivalent: Positive information aggregation when voters are informed. But “Dark side” when biased. Social information no sure cure
  • “Rational ignorance” is less pronounced than predicted. “Petition” improves voter motivation
Concluding remarks

- The road ahead: add layers of complexity
  - Size of electorate (e.g. Expressive voting, JPubE 2006)
  - Communication (e.g. Sausgruber and Tyran, JPubE 2011)
  - Conflict and Ideology (Morton and Tyran, JPET 2015)
  - Interplay with representative democracy (with A. Wagner)
  - Culture, Social capital
- Exiting research agenda, much remains to be done!