

# Experiments and Legislative Bargaining

Rebecca B. Morton

New York University

EITM UCLA

# Experiments and Legislative Bargaining

## Plan for the Talk

- The research questions this literature address

# Experiments and Legislative Bargaining

## Plan for the Talk

- The research questions this literature address
- How experiments have been used to address these questions

# Experiments and Legislative Bargaining

## Plan for the Talk

- The research questions this literature address
- How experiments have been used to address these questions
- An idea that comes from this research that should be of interest to ALL political scientists (regardless of whether they are experimentalists or study legislative bargaining)

# Experiments and Legislative Bargaining

## Plan for the Talk

- The research questions this literature address
- How experiments have been used to address these questions
- An idea that comes from this research that should be of interest to ALL political scientists (regardless of whether they are experimentalists or study legislative bargaining)
- How I got involved in this literature & research & the choices I made in doing research

# Experiments and Legislative Bargaining

## Background for this Talk

- Morton, “Why the Centipede Game Experiment Is Important for Political Science,”

# Experiments and Legislative Bargaining

## Background for this Talk

- Morton, “Why the Centipede Game Experiment Is Important for Political Science,”
- Frechette, Kagel, & Morelli, “Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers,”

# Experiments and Legislative Bargaining

## Background for this Talk

- Morton, "Why the Centipede Game Experiment Is Important for Political Science,"
- Frechette, Kagel, & Morelli, "Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers,"
- Morton & Diermeier, "Proportionality versus Perfectness,"

# “Why the Centipede Game Experiment is Important for Political Science”

What is the Centipede Game?

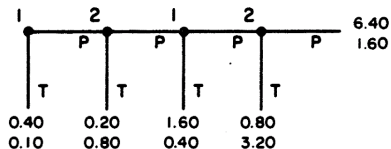


FIGURE 1.—The four move centipede game.

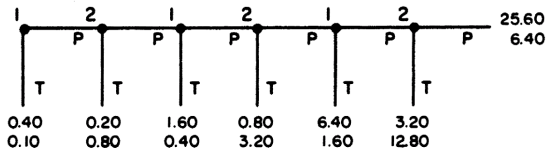


FIGURE 2.—The six move centipede game.

# “Why the Centipede Game Experiment is Important for Political Science”

Forthcoming in *A Positive Change in Political Science: The Legacy of Richard D. McKelvey's Most Influential Writings*. Edited by James Alt and Arthur Lupia, University of Michigan Press

- Available on my web page

# “Why the Centipede Game Experiment is Important for Political Science”

Forthcoming in *A Positive Change in Political Science: The Legacy of Richard D. McKelvey's Most Influential Writings*. Edited by James Alt and Arthur Lupia, University of Michigan Press

- Available on my web page
- Paper puts the centipede game experiments in context of a research agenda in political science studying how legislatures make decisions

# “Why the Centipede Game Experiment is Important for Political Science”

Forthcoming in *A Positive Change in Political Science: The Legacy of Richard D. McKelvey's Most Influential Writings*. Edited by James Alt and Arthur Lupia, University of Michigan Press

- Available on my web page
- Paper puts the centipede game experiments in context of a research agenda in political science studying how legislatures make decisions
- **Argument:**

# “Why the Centipede Game Experiment is Important for Political Science”

Forthcoming in *A Positive Change in Political Science: The Legacy of Richard D. McKelvey's Most Influential Writings*. Edited by James Alt and Arthur Lupia, University of Michigan Press

- Available on my web page
- Paper puts the centipede game experiments in context of a research agenda in political science studying how legislatures make decisions
- Argument:
  - An experiment on an unreal game can be an important & consequential piece in a general literature that studies a highly applied, political science mainstream substantive question.

# “Why the Centipede Game Experiment is Important for Political Science”

Forthcoming in *A Positive Change in Political Science: The Legacy of Richard D. McKelvey's Most Influential Writings*. Edited by James Alt and Arthur Lupia, University of Michigan Press

- Available on my web page
- Paper puts the centipede game experiments in context of a research agenda in political science studying how legislatures make decisions
- Argument:
  - An experiment on an unreal game can be an important & consequential piece in a general literature that studies a highly applied, political science mainstream substantive question.
  - It is a mistake to evaluate the experiments & the game in isolation not recognizing these ties.

# “Why the Centipede Game Experiment is Important for Political Science”

The Problem with an Initial Solution to Understanding Legislative Bargaining

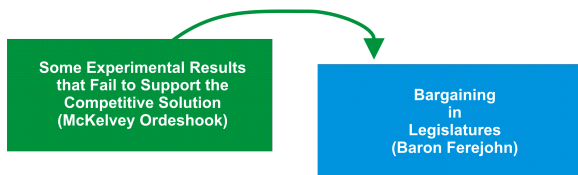
## Putting the Centipede Game Experiments in Context

Some Experimental Results  
that Fail to Support the  
Competitive Solution  
(McKelvey Ordeshook)

# “Why the Centipede Game Experiment is Important for Political Science”

A Possible Theoretical Solution

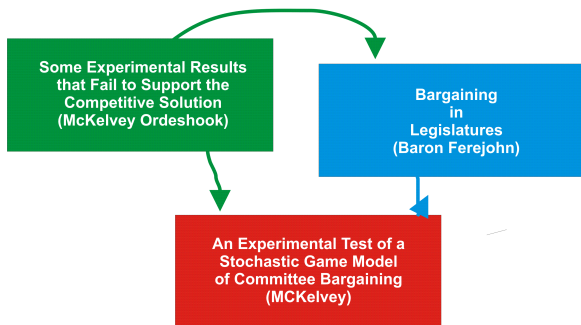
## Putting the Centipede Game Experiments in Context



# “Why the Centipede Game Experiment is Important for Political Science”

An Experimental Test

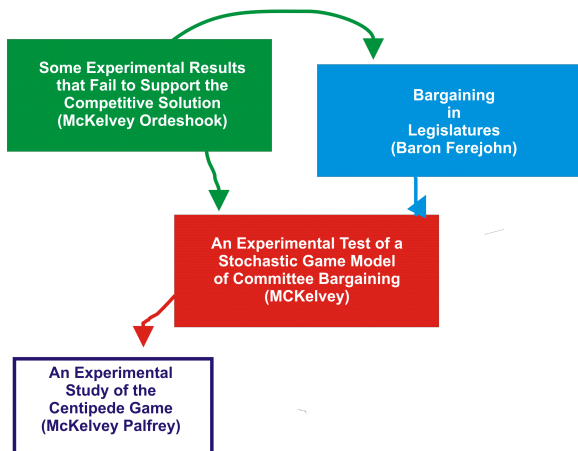
## Putting the Centipede Game Experiments in Context



# “Why the Centipede Game Experiment is Important for Political Science”

Focusing on the Source of Problems in the Theory: Subgame Perfection & Credibility of Beliefs

## Putting the Centipede Game Experiments in Context



# My Personal Contribution Comes in Here ...

“Proportionality versus Perfectness,”

- in *Social Choice and Strategic Behavior: Essays in Honor of Jeffrey Banks*, edited by Timothy Feddersen and David Austen-Smith, 2005, Springer-Verlag, co-authored with Daniel Diermeier

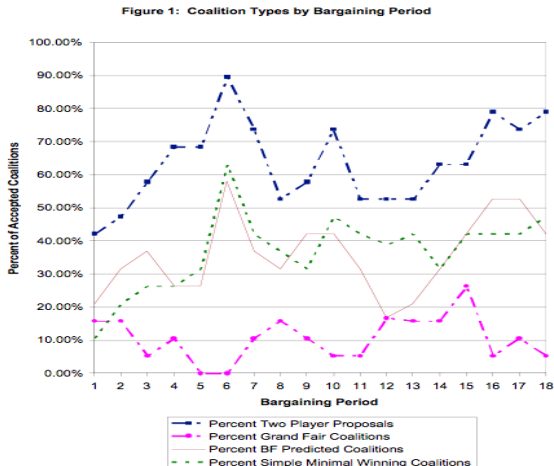
# My Personal Contribution Comes in Here ...

“Proportionality versus Perfectness,”

- in *Social Choice and Strategic Behavior: Essays in Honor of Jeffrey Banks*, edited by Timothy Feddersen and David Austen-Smith, 2005, Springer-Verlag, co-authored with Daniel Diermeier
- available on my web page

# My Personal Contribution Comes in here ...

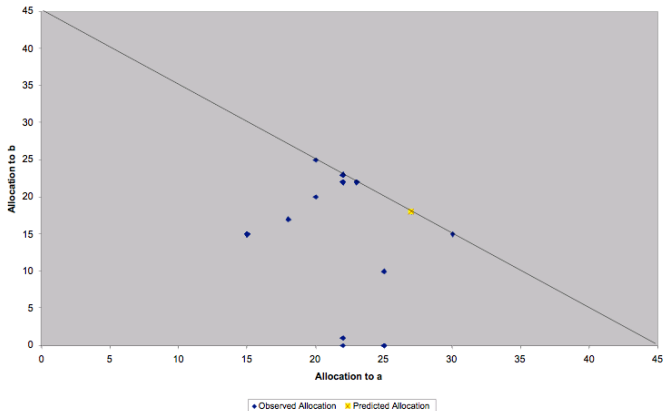
“Proportionality versus Perfectness,”



# My Personal Contribution Comes in here ...

“Proportionality versus Perfectness,”

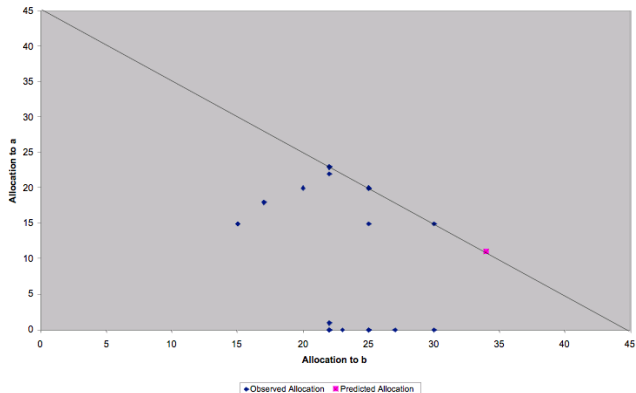
Figure 2: Treatment 1 - Proposer a



# My Personal Contribution Comes in here ...

“Proportionality versus Perfectness,”

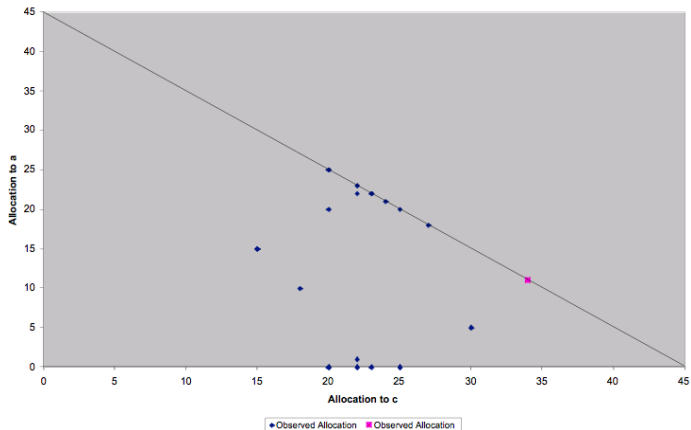
Figure 3: Treatment 1 - Proposer b



# My Personal Contribution Comes in here ...

“Proportionality versus Perfectness,”

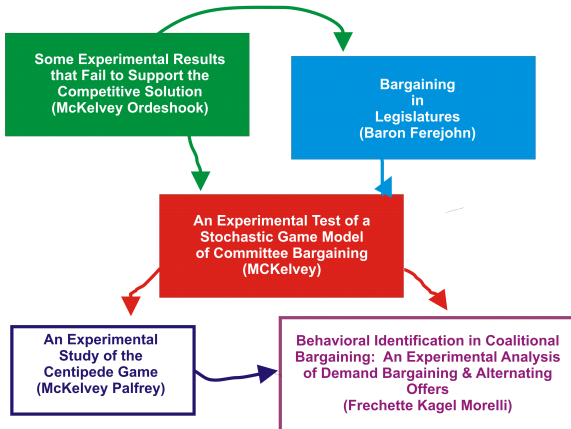
Figure 4: Treatment 1 - Proposer c



# “Why the Centipede Game Experiment is Important for Political Science”

Using Experiments as a Methodological Testbed

## Putting the Centipede Game Experiments in Context



# “Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers,”

Frechette, Guillaume, John Kagel, and Massimo Morelli, *Econometrica*, vol. 73, no. 6 (November 2005), pages 1893-1937

- Many empirical studies try to infer rules of game in government coalition formation

# “Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers,”

Frechette, Guillaume, John Kagel, and Massimo Morelli, *Econometrica*, vol. 73, no. 6 (November 2005), pages 1893-1937

- Many empirical studies try to infer rules of game in government coalition formation
- Estimate regressions on final allocations for which different models of multilateral bargaining make specific predictions about coefficient estimates.

# “Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers,”

Frechette, Guillaume, John Kagel, and Massimo Morelli, *Econometrica*, vol. 73, no. 6 (November 2005), pages 1893-1937

- Many empirical studies try to infer rules of game in government coalition formation
- Estimate regressions on final allocations for which different models of multilateral bargaining make specific predictions about coefficient estimates.
- In lab control rules of game & thus study behavior in different games.

# “Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers,”

Frechette, Guillaume, John Kagel, and Massimo Morelli, *Econometrica*, vol. 73, no. 6 (November 2005), pages 1893-1937

- Many empirical studies try to infer rules of game in government coalition formation
- Estimate regressions on final allocations for which different models of multilateral bargaining make specific predictions about coefficient estimates.
- In lab control rules of game & thus study behavior in different games.
- Use experiments to test estimation strategy used on field data.

# “Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers,”

Purpose of the Theories

- A lot of what legislatures do is divide fixed resources (pork barrel politics, portfolios) using majority rule

# “Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers,”

Purpose of the Theories

- A lot of what legislatures do is divide fixed resources (pork barrel politics, portfolios) using majority rule
- However, core is empty

# “Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers,”

Purpose of the Theories

- A lot of what legislatures do is divide fixed resources (pork barrel politics, portfolios) using majority rule
- However, core is empty
- Non-cooperative legislative bargaining models assume process follows specific structure

# “Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers,”

Purpose of the Theories

- A lot of what legislatures do is divide fixed resources (pork barrel politics, portfolios) using majority rule
- However, core is empty
- Non-cooperative legislative bargaining models assume process follows specific structure
- Can derive equilibrium predictions

# “Behavioral Identification in Coalitional Bargaining”

## Problems with the Theories

- Predictions very sensitive to variations in rules of game

# “Behavioral Identification in Coalitional Bargaining”

## Problems with the Theories

- Predictions very sensitive to variations in rules of game
- Equilibrium solution(s) may require unrealistic degree of rationality on parts of agents

# “Behavioral Identification in Coalitional Bargaining”

## Problems with the Theories

- Predictions very sensitive to variations in rules of game
- Equilibrium solution(s) may require unrealistic degree of rationality on parts of agents
- Is actual behavior as sensitive to rules of game as theory predicts?

# “Behavioral Identification in Coalitional Bargaining”

## Problems with the Theories

- Predictions very sensitive to variations in rules of game
- Equilibrium solution(s) may require unrealistic degree of rationality on parts of agents
- Is actual behavior as sensitive to rules of game as theory predicts?
- Especially given evidence from experiments such as centipede game

# “Behavioral Identification in Coalitional Bargaining”

## Problems with the Theories

- Predictions very sensitive to variations in rules of game
- Equilibrium solution(s) may require unrealistic degree of rationality on parts of agents
- Is actual behavior as sensitive to rules of game as theory predicts?
- Especially given evidence from experiments such as centipede game
- Paper presents experiment analyzing 2 very different games & use lab data to test methods used on field data

# “Behavioral Identification in Coalitional Bargaining”

Offers vs. Demands

- In classic Rubinstein bargaining model, first mover can be thought of as making:

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demands

- In classic Rubinstein bargaining model, first mover can be thought of as making:
  - An offer to agent, or

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demands

- In classic Rubinstein bargaining model, first mover can be thought of as making:
  - An offer to agent, or
  - As making a demand of a share, leaving choice between accepting the residual or disagreeing

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demands

- In classic Rubinstein bargaining model, first mover can be thought of as making:
  - An offer to agent, or
  - As making a demand of a share, leaving choice between accepting the residual or disagreeing
- As soon as there is a group with at least 3 members, offers & demands no longer equivalent

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demands

- In classic Rubinstein bargaining model, first mover can be thought of as making:
  - An offer to agent, or
  - As making a demand of a share, leaving choice between accepting the residual or disagreeing
- As soon as there is a group with at least 3 members, offers & demands no longer equivalent
  - If proposer makes a distributive offer, others basically face a voting decision

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demands

- In classic Rubinstein bargaining model, first mover can be thought of as making:
  - An offer to agent, or
  - As making a demand of a share, leaving choice between accepting the residual or disagreeing
- As soon as there is a group with at least 3 members, offers & demands no longer equivalent
  - If proposer makes a distributive offer, others basically face a voting decision
  - If first mover only makes her own demand, subsequent movers also have to decide what demand to make, reducing asymmetry between movers

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demand (II)

- Number of empirical studies employing field data to infer rules of game in legislative bargaining settings

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demand (II)

- Number of empirical studies employing field data to infer rules of game in legislative bargaining settings
- **The most recent empirical studies**

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demand (II)

- Number of empirical studies employing field data to infer rules of game in legislative bargaining settings
- The most recent empirical studies
  - Warwick & Druckman 2001

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demand (II)

- Number of empirical studies employing field data to infer rules of game in legislative bargaining settings
- The most recent empirical studies
  - Warwick & Druckman 2001
  - Ansolabehere, Snyder, Strauss, and Ting 2003

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demand (II)

- Number of empirical studies employing field data to infer rules of game in legislative bargaining settings
- The most recent empirical studies
  - Warwick & Druckman 2001
  - Ansolabehere, Snyder, Strauss, and Ting 2003
  - Compare offers & demand models

# “Behavioral Identification in Coalitional Bargaining”

## Offers vs. Demand (II)

- Number of empirical studies employing field data to infer rules of game in legislative bargaining settings
- The most recent empirical studies
  - Warwick & Druckman 2001
  - Ansolabehere, Snyder, Strauss, and Ting 2003
  - Compare offers & demand models
- Paper first experiment to compare legislative bargaining models

# “Behavioral Identification in Coalitional Bargaining”

Baron-Ferejohn (Alternating Offer): Example

- 3 players:  $A, B,$  &  $C$  :

# “Behavioral Identification in Coalitional Bargaining”

Baron-Ferejohn (Alternating Offer): Example

- 3 players:  $A$ ,  $B$ , &  $C$  :
- $A$  is selected first (randomly), she proposes  $(0.8, 0.1, 0.1)$

# “Behavioral Identification in Coalitional Bargaining”

Baron-Ferejohn (Alternating Offer): Example

- 3 players:  $A$ ,  $B$ , &  $C$  :
- ①  $A$  is selected first (randomly), she proposes  $(0.8, 0.1, 0.1)$
- ②  $B$  &  $C$  reject

# “Behavioral Identification in Coalitional Bargaining”

Baron-Ferejohn (Alternating Offer): Example

- 3 players:  $A$ ,  $B$ , &  $C$  :
- ①  $A$  is selected first (randomly), she proposes  $(0.8, 0.1, 0.1)$
- ②  $B$  &  $C$  reject
- ③  $B$  is selected second, he proposes  $(0, 0.66, 0.34)$

# “Behavioral Identification in Coalitional Bargaining”

Baron-Ferejohn (Alternating Offer): Example

- 3 players:  $A, B,$  &  $C$  :
- ①  $A$  is selected first (randomly), she proposes  $(0.8, 0.1, 0.1)$
- ②  $B$  &  $C$  reject
- ③  $B$  is selected second, he proposes  $(0, 0.66, 0.34)$
- ④  $A$  rejects,  $B$  &  $C$  accept, final payoffs  $(0, 0.66, 0.34)$

# “Behavioral Identification in Coalitional Bargaining”

Baron-Ferejohn (Alternating Offer): Example

- 3 players:  $A, B,$  &  $C$  :
- ①  $A$  is selected first (randomly), she proposes  $(0.8, 0.1, 0.1)$
- ②  $B$  &  $C$  reject
- ③  $B$  is selected second, he proposes  $(0, 0.66, 0.34)$
- ④  $A$  rejects,  $B$  &  $C$  accept, final payoffs  $(0, 0.66, 0.34)$
- Focus on Stationary Subgame Perfect Equilibria

# “Behavioral Identification in Coalitional Bargaining”

## Demand Bargaining: Example

- 1 A is selected first, she requests 0.8

# “Behavioral Identification in Coalitional Bargaining”

## Demand Bargaining: Example

- 1  $A$  is selected first, she requests 0.8
- 2  $B$  is selected, he requests 0.7

# “Behavioral Identification in Coalitional Bargaining”

## Demand Bargaining: Example

- 1  $A$  is selected first, she requests 0.8
- 2  $B$  is selected, he requests 0.7
- 3  $C$  is selected, she requests 0.6

# “Behavioral Identification in Coalitional Bargaining”

## Demand Bargaining: Example

- 1  $A$  is selected first, she requests 0.8
- 2  $B$  is selected, he requests 0.7
- 3  $C$  is selected, she requests 0.6
- 4 No possible coalition formed, all requests erased.

# “Behavioral Identification in Coalitional Bargaining”

## Demand Bargaining: Example

- 1  $A$  is selected first, she requests 0.8
- 2  $B$  is selected, he requests 0.7
- 3  $C$  is selected, she requests 0.6
- 4 No possible coalition formed, all requests erased.
- 5  $B$  is selected first in 2nd stage, he requests 0.5

# “Behavioral Identification in Coalitional Bargaining”

## Demand Bargaining: Example

- 1  $A$  is selected first, she requests 0.8
- 2  $B$  is selected, he requests 0.7
- 3  $C$  is selected, she requests 0.6
- 4 No possible coalition formed, all requests erased.
- 5  $B$  is selected first in 2nd stage, he requests 0.5
- 6  $C$  is selected, she requests 0.5

# “Behavioral Identification in Coalitional Bargaining”

## Demand Bargaining: Example

- 1  $A$  is selected first, she requests 0.8
- 2  $B$  is selected, he requests 0.7
- 3  $C$  is selected, she requests 0.6
- 4 No possible coalition formed, all requests erased.
- 5  $B$  is selected first in 2nd stage, he requests 0.5
- 6  $C$  is selected, she requests 0.5
- 7 The coalition is closed, final payoffs are  $(0, 0.5, 0.5)$

# “Behavioral Identification in Coalitional Bargaining”

## Demand Bargaining: Example

- 1  $A$  is selected first, she requests 0.8
  - 2  $B$  is selected, he requests 0.7
  - 3  $C$  is selected, she requests 0.6
  - 4 No possible coalition formed, all requests erased.
  - 5  $B$  is selected first in 2nd stage, he requests 0.5
  - 6  $C$  is selected, she requests 0.5
  - 7 The coalition is closed, final payoffs are  $(0, 0.5, 0.5)$
- Only requires Subgame Perfection

# “Behavioral Identification in Coalitional Bargaining”

## Experiments

- All games involve:

# “Behavioral Identification in Coalitional Bargaining”

## Experiments

- All games involve:
  - Groups of five subjects

# “Behavioral Identification in Coalitional Bargaining”

## Experiments

- All games involve:
  - Groups of five subjects
  - Majority rule

# “Behavioral Identification in Coalitional Bargaining”

## Experiments

- All games involve:
  - Groups of five subjects
  - Majority rule
  - No shrinking of pie

# “Behavioral Identification in Coalitional Bargaining”

## Experiments

- All games involve:
  - Groups of five subjects
  - Majority rule
  - No shrinking of pie
- Test comparative static predictions within model by varying bargaining power.

# “Behavioral Identification in Coalitional Bargaining”

## Experiments

- All games involve:
  - Groups of five subjects
  - Majority rule
  - No shrinking of pie
- Test comparative static predictions within model by varying bargaining power.
- Also compare:

# “Behavioral Identification in Coalitional Bargaining”

## Experiments

- All games involve:
  - Groups of five subjects
  - Majority rule
  - No shrinking of pie
- Test comparative static predictions within model by varying bargaining power.
- Also compare:
  - All players have equal voting power (equal weight game)

# “Behavioral Identification in Coalitional Bargaining”

## Experiments

- All games involve:
  - Groups of five subjects
  - Majority rule
  - No shrinking of pie
- Test comparative static predictions within model by varying bargaining power.
- Also compare:
  - All players have equal voting power (equal weight game)
  - One player controls 3 votes while others one vote each (Apex game)

# “Behavioral Identification in Coalitional Bargaining”

## Results from Experiments

- Important behavioral regularities make treatments more similar in outcomes than predicted by theory

# “Behavioral Identification in Coalitional Bargaining”

## Results from Experiments

- Important behavioral regularities make treatments more similar in outcomes than predicted by theory
  - One-vote (base) players receive a small extra benefit from moving first (formateur power)

# “Behavioral Identification in Coalitional Bargaining”

## Results from Experiments

- Important behavioral regularities make treatments more similar in outcomes than predicted by theory
  - One-vote (base) players receive a small extra benefit from moving first (formateur power)
  - Whereas Apex formateur is typically at or below DB prediction

# “Behavioral Identification in Coalitional Bargaining”

## Results from Experiments

- Important behavioral regularities make treatments more similar in outcomes than predicted by theory
  - One-vote (base) players receive a small extra benefit from moving first (formateur power)
  - Whereas Apex formateur is typically at or below DB prediction
- To verify lack of formateur power for Apex players derives from an equity consideration effect, add third treatment:

# “Behavioral Identification in Coalitional Bargaining”

## Results from Experiments

- Important behavioral regularities make treatments more similar in outcomes than predicted by theory
  - One-vote (base) players receive a small extra benefit from moving first (formateur power)
  - Whereas Apex formateur is typically at or below DB prediction
- To verify lack of formateur power for Apex players derives from an equity consideration effect, add third treatment:
  - Apex<sub>1/3</sub> like Apex treatment except Apex player only paid  $\frac{1}{3}$  of his earnings

# “Behavioral Identification in Coalitional Bargaining”

## Results from Experiments

- Important behavioral regularities make treatments more similar in outcomes than predicted by theory
  - One-vote (base) players receive a small extra benefit from moving first (formateur power)
  - Whereas Apex formateur is typically at or below DB prediction
- To verify lack of formateur power for Apex players derives from an equity consideration effect, add third treatment:
  - Apex<sub>1/3</sub> like Apex treatment except Apex player only paid  $\frac{1}{3}$  of his earnings
  - Apex player in this treatment exhibits some power

# “Behavioral Identification in Coalitional Bargaining”

## Comparison with Field Data Analysis

- Estimate regressions like ones performed with field data

# “Behavioral Identification in Coalitional Bargaining”

## Comparison with Field Data Analysis

- Estimate regressions like ones performed with field data
- Find:

# “Behavioral Identification in Coalitional Bargaining”

## Comparison with Field Data Analysis

- Estimate regressions like ones performed with field data
- Find:
  - Number of remarkable similarities between experimental & field data

# “Behavioral Identification in Coalitional Bargaining”

## Comparison with Field Data Analysis

- Estimate regressions like ones performed with field data
- Find:
  - Number of remarkable similarities between experimental & field data
  - Impossible looking at experimental data to distinguish 2 games using criteria employed in field

# “Behavioral Identification in Coalitional Bargaining”

## Comparison with Field Data Analysis

- Estimate regressions like ones performed with field data
- Find:
  - Number of remarkable similarities between experimental & field data
  - Impossible looking at experimental data to distinguish 2 games using criteria employed in field
- Impossible to distinguish between 2 bargaining models solely on the basis of payoff data means ...

# “Behavioral Identification in Coalitional Bargaining”

## Comparison with Field Data Analysis

- Estimate regressions like ones performed with field data
- Find:
  - Number of remarkable similarities between experimental & field data
  - Impossible looking at experimental data to distinguish 2 games using criteria employed in field
- Impossible to distinguish between 2 bargaining models solely on the basis of payoff data means ...
- *Behavioral Identification Problem* in field analysis!

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Field Data Analysis of coalition governments (ministries vs. seats)

- Warwick and Druckman 2001

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Field Data Analysis of coalition governments (ministries vs. seats)

- Warwick and Druckman 2001
  - find proportional relation except with weighted portfolios (portfolio salience)

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Field Data Analysis of coalition governments (ministries vs. seats)

- Warwick and Druckman 2001
  - find proportional relation except with weighted portfolios (portfolio salience)
- Ansolabehere, Snyder, Strauss, & Ting 2003

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Field Data Analysis of coalition governments (ministries vs. seats)

- Warwick and Druckman 2001
  - find proportional relation except with weighted portfolios (portfolio salience)
- Ansolabehere, Snyder, Strauss, & Ting 2003
  - proposer power even w/o controlling for portfolio salience

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Field Data Analysis of coalition governments (ministries vs. seats)

- Warwick and Druckman 2001
  - find proportional relation except with weighted portfolios (portfolio salience)
- Ansolabehere, Snyder, Strauss, & Ting 2003
  - proposer power even w/o controlling for portfolio salience
  - real weights vs. seat shares

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Experiments

- Baron Ferejohn:

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Experiments

- Baron Ferejohn:
  - McKelvey 1991

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Experiments

- Baron Ferejohn:
  - McKelvey 1991
  - Diermeier & Morton 2000

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Experiments

- Baron Ferejohn:
  - McKelvey 1991
  - Diermeier & Morton 2000
  - Frechette, Kagel, Lehrer 2003

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Experiments

- Baron Ferejohn:
  - McKelvey 1991
  - Diermeier & Morton 2000
  - Frechette, Kagel, Lehrer 2003
  - Frechette, Kagel, Morelli 2003

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Experiments

- Baron Ferejohn:
  - McKelvey 1991
  - Diermeier & Morton 2000
  - Frechette, Kagel, Lehrer 2003
  - Frechette, Kagel, Morelli 2003
- No experiment of Demand Bargaining Model

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Experiments

- Baron Ferejohn:
  - McKelvey 1991
  - Diermeier & Morton 2000
  - Frechette, Kagel, Lehrer 2003
  - Frechette, Kagel, Morelli 2003
- No experiment of Demand Bargaining Model
- Apex game tested within framework of cooperative game theory (i.e. loose rules on subject play):

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Experiments

- Baron Ferejohn:
  - McKelvey 1991
  - Diermeier & Morton 2000
  - Frechette, Kagel, Lehrer 2003
  - Frechette, Kagel, Morelli 2003
- No experiment of Demand Bargaining Model
- Apex game tested within framework of cooperative game theory (i.e. loose rules on subject play):
  - **Selten & Schuster 1968**

# “Behavioral Identification in Coalitional Bargaining”

Related Literature: Experiments

- Baron Ferejohn:
  - McKelvey 1991
  - Diermeier & Morton 2000
  - Frechette, Kagel, Lehrer 2003
  - Frechette, Kagel, Morelli 2003
- No experiment of Demand Bargaining Model
- Apex game tested within framework of cooperative game theory (i.e. loose rules on subject play):
  - Selten & Schuster 1968
  - Horowitz & Rapoport 1974

# “Behavioral Identification in Coalitional Bargaining”

Experimental Design for Both Games

- 5 subjects per group (10 to 15 in lab)

# “Behavioral Identification in Coalitional Bargaining”

## Experimental Design for Both Games

- 5 subjects per group (10 to 15 in lab)
- Divide \$60 between 5 voting blocks, with one subject representing each voting block

# “Behavioral Identification in Coalitional Bargaining”

## Experimental Design for Both Games

- 5 subjects per group (10 to 15 in lab)
- Divide \$60 between 5 voting blocks, with one subject representing each voting block
- 11 bargaining rounds (including 1 dry-run)

# “Behavioral Identification in Coalitional Bargaining”

## Experimental Design for Both Games

- 5 subjects per group (10 to 15 in lab)
- Divide \$60 between 5 voting blocks, with one subject representing each voting block
- 11 bargaining rounds (including 1 dry-run)
- 1 bargaining round selected at random for payment

# “Behavioral Identification in Coalitional Bargaining”

## Experimental Design for Both Games

- 5 subjects per group (10 to 15 in lab)
- Divide \$60 between 5 voting blocks, with one subject representing each voting block
- 11 bargaining rounds (including 1 dry-run)
- 1 bargaining round selected at random for payment
- \$8 show-up fee

# “Behavioral Identification in Coalitional Bargaining”

## Experimental Design for Both Games

- 5 subjects per group (10 to 15 in lab)
- Divide \$60 between 5 voting blocks, with one subject representing each voting block
- 11 bargaining rounds (including 1 dry-run)
- 1 bargaining round selected at random for payment
- \$8 show-up fee
- Every treatment has 2 inexperienced & 1 experienced sessions

# “Behavioral Identification in Coalitional Bargaining”

In Baron Ferejohn Treatments:

- All subjects enter a proposal allocating \$60

# “Behavioral Identification in Coalitional Bargaining”

In Baron Ferejohn Treatments:

- All subjects enter a proposal allocating \$60
- One proposal randomly selected as standing proposal

# “Behavioral Identification in Coalitional Bargaining”

In Baron Ferejohn Treatments:

- All subjects enter a proposal allocating \$60
- One proposal randomly selected as standing proposal
- Posted on subjects' screens giving amounts allocated to each voting block, by subject number, along with number of votes controlled by subject

# “Behavioral Identification in Coalitional Bargaining”

In Baron Ferejohn Treatments:

- All subjects enter a proposal allocating \$60
- One proposal randomly selected as standing proposal
- Posted on subjects' screens giving amounts allocated to each voting block, by subject number, along with number of votes controlled by subject
- **Proposals are voted up or down**

# “Behavioral Identification in Coalitional Bargaining”

In Baron Ferejohn Treatments:

- All subjects enter a proposal allocating \$60
- One proposal randomly selected as standing proposal
- Posted on subjects' screens giving amounts allocated to each voting block, by subject number, along with number of votes controlled by subject
- Proposals are voted up or down
- If simple majority accepts proposal, payoffs implemented & bargaining round ends

# “Behavioral Identification in Coalitional Bargaining”

In Baron Ferejohn Treatments:

- All subjects enter a proposal allocating \$60
- One proposal randomly selected as standing proposal
- Posted on subjects' screens giving amounts allocated to each voting block, by subject number, along with number of votes controlled by subject
- Proposals are voted up or down
- If simple majority accepts proposal, payoffs implemented & bargaining round ends
- If proposal rejected, process repeats itself

# “Behavioral Identification in Coalitional Bargaining”

In Demand Bargaining Treatments:

- All subjects enter a demand between 0 and 60

# “Behavioral Identification in Coalitional Bargaining”

In Demand Bargaining Treatments:

- All subjects enter a demand between 0 and 60
- One request is randomly selected & that request is posted on the screens of the other subjects in that group

# “Behavioral Identification in Coalitional Bargaining”

In Demand Bargaining Treatments:

- All subjects enter a demand between 0 and 60
- One request is randomly selected & that request is posted on the screens of the other subjects in that group
- The remaining subjects place a new request between 0 and 60

# “Behavioral Identification in Coalitional Bargaining”

## In Demand Bargaining Treatments:

- All subjects enter a demand between 0 and 60
- One request is randomly selected & that request is posted on the screens of the other subjects in that group
- The remaining subjects place a new request between 0 and 60
- If sum of a set of requests made so far is less than or equal to 60 & sum of votes controlled by subjects who have placed those requests is enough for a majority, then subject who made last request decides to close (or not) & with whom, if he decides to close, payoffs are implemented & bargaining round ends

# “Behavioral Identification in Coalitional Bargaining”

## In Demand Bargaining Treatments:

- All subjects enter a demand between 0 and 60
- One request is randomly selected & that request is posted on the screens of the other subjects in that group
- The remaining subjects place a new request between 0 and 60
- If sum of a set of requests made so far is less than or equal to 60 & sum of votes controlled by subjects who have placed those requests is enough for a majority, then subject who made last request decides to close (or not) & with whom, if he decides to close, payoffs are implemented & bargaining round ends
- Otherwise process continues

# “Behavioral Identification in Coalitional Bargaining”

## In Demand Bargaining Treatments:

- All subjects enter a demand between 0 and 60
- One request is randomly selected & that request is posted on the screens of the other subjects in that group
- The remaining subjects place a new request between 0 and 60
- If sum of a set of requests made so far is less than or equal to 60 & sum of votes controlled by subjects who have placed those requests is enough for a majority, then subject who made last request decides to close (or not) & with whom, if he decides to close, payoffs are implemented & bargaining round ends
- Otherwise process continues
- If no coalition is formed by end of stage, new round starts & process repeats itself.

# “Behavioral Identification in Coalitional Bargaining”

Let's Get the Terms Right

- Each *Session* has

# “Behavioral Identification in Coalitional Bargaining”

Let's Get the Terms Right

- Each *Session* has
- multiple (11) bargaining *Rounds*

# “Behavioral Identification in Coalitional Bargaining”

Let's Get the Terms Right

- Each *Session* has
- multiple (11) bargaining *Rounds*
- that can have any number of *Stages*

# “Behavioral Identification in Coalitional Bargaining”

Let's Get the Terms Right

- Each *Session* has
- multiple (11) bargaining *Rounds*
- that can have any number of *Stages*
- which, in demand bargaining, each have up to 5 *Steps*

# “Behavioral Identification in Coalitional Bargaining”

## Treatments

- Original design – 2 Treatments:

# “Behavioral Identification in Coalitional Bargaining”

## Treatments

- Original design – 2 Treatments:
  - Equal Weight: A total of 5 votes (1 per subject)

# “Behavioral Identification in Coalitional Bargaining”

## Treatments

- Original design – 2 Treatments:
  - Equal Weight: A total of 5 votes (1 per subject)
  - Apex: A total of 7 votes (3, 1, 1, 1, 1)

# “Behavioral Identification in Coalitional Bargaining”

## Treatments

- Original design – 2 Treatments:
  - Equal Weight: A total of 5 votes (1 per subject)
  - Apex: A total of 7 votes (3, 1, 1, 1, 1)
- Additional treatment:  $\text{Apex}_{1/3}$  – same as Apex but Apex player is only paid  $\frac{1}{3}$  of his payoffs

# “Behavioral Identification in Coalitional Bargaining”

## Treatments

- Original design – 2 Treatments:
  - Equal Weight: A total of 5 votes (1 per subject)
  - Apex: A total of 7 votes (3, 1, 1, 1, 1)
- Additional treatment:  $\text{Apex}_{1/3}$  – same as Apex but Apex player is only paid  $\frac{1}{3}$  of his payoffs
  - Equity (fairness) considerations

# “Behavioral Identification in Coalitional Bargaining”

## Treatments

- Original design – 2 Treatments:
  - Equal Weight: A total of 5 votes (1 per subject)
  - Apex: A total of 7 votes (3, 1, 1, 1, 1)
- Additional treatment: Apex<sub>1/3</sub> – same as Apex but Apex player is only paid  $\frac{1}{3}$  of his payoffs
  - Equity (fairness) considerations
  - Represent case where power equals number of representatives

# “Behavioral Identification in Coalitional Bargaining”

## Treatments

- Original design – 2 Treatments:
  - Equal Weight: A total of 5 votes (1 per subject)
  - Apex: A total of 7 votes (3, 1, 1, 1, 1)
- Additional treatment: Apex<sub>1/3</sub> – same as Apex but Apex player is only paid  $\frac{1}{3}$  of his payoffs
  - Equity (fairness) considerations
  - Represent case where power equals number of representatives
- All use proportional selection protocol

# “Behavioral Identification in Coalitional Bargaining”

Predicted Shares

	Base Formateur	Partner
	Equal Weight	
BF	0.6	0.2
DB	0.333	0.333

# “Behavioral Identification in Coalitional Bargaining”

## Predicted Shares

	Base Formateur	Partner
	Equal Weight	
BF	0.6	0.2
DB	0.333	0.333
	Apex	
BF	0.571	0.429*
DB	0.25	0.75*

\*Shares for Apex partner. Divide by 3 for base players.

# “Behavioral Identification in Coalitional Bargaining”

## Predicted Shares

	Base Formateur	Partner	Apex Formateur	Partner
	Equal Weight			
BF	0.6	0.2		
DB	0.333	0.333		
	Apex			
BF	0.571	0.429*	0.857	0.143
DB	0.25	0.75*	0.75	0.25

\*Shares for Apex partner. Divide by 3 for base players.

# “Behavioral Identification in Coalitional Bargaining”

Results: Does Bargaining End in Stage 1?

	Baron Ferejohn			Demand Bargaining		
	Freq.	Mean Stage	Max Stage	Freq.	Mean	Max
	Equal Weight					
Inexp.	61.7%	1.7	5	96.7%	1.0	2
Exp.	50.0%	1.6	3	100%	1.0	1
	Apex					
Inexp.	57.9%	1.9	12	93.3%	1.1	2
Exp.	76.7%	1.4	7	95%	1.1	2

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 1

- Majority of allocations completed in *stage 1* for both BF & DB (stat. sig.)

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 1

- Majority of allocations completed in *stage 1* for both BF & DB (stat. sig.)
- Substantially more allocations completed in *stage 1* under DB (stat. sig.)

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 1

- Majority of allocations completed in *stage 1* for both BF & DB (stat. sig.)
- Substantially more allocations completed in *stage 1* under DB (stat. sig.)
- However, far from all DB bargaining rounds ended in minimal number of *steps*

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 1

- Majority of allocations completed in *stage* 1 for both BF & DB (stat. sig.)
- Substantially more allocations completed in *stage* 1 under DB (stat. sig.)
- However, far from all DB bargaining rounds ended in minimal number of *steps*
- In equal wt. treatment 45% require more than 3 *steps*

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 1

- Majority of allocations completed in *stage* 1 for both BF & DB (stat. sig.)
- Substantially more allocations completed in *stage* 1 under DB (stat. sig.)
- However, far from all DB bargaining rounds ended in minimal number of *steps*
- In equal wt. treatment 45% require more than 3 *steps*
- Cause: Early requests are too high – 0.54 for excluded vs. 0.29 for included when there are 4 steps

# “Behavioral Identification in Coalitional Bargaining”

## Frequency of Minimal Winning Coalitions (MWC)

	Baron Ferejohn	Demand Bargaining
	Equal Weight	
Inexp.	76.6%	82.5%
Exp.	94.2%	87.6%
	Apex	
Inexp.	63.1%	77.3%
Exp.	73.4%	100.0%

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 2

- Majority of proposals were for MWCs (stat. sig.)

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 2

- Majority of proposals were for MWCs (stat. sig.)
- Frequency of MWCs is slightly higher under DB (not stat. sig.)

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 2

- Majority of proposals were for MWCs (stat. sig.)
- Frequency of MWCs is slightly higher under DB (not stat. sig.)
- Non-MWCs in DB treatment consists of cases where a subject closed but left money for later movers

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 2

- Majority of proposals were for MWCs (stat. sig.)
- Frequency of MWCs is slightly higher under DB (not stat. sig.)
- Non-MWCs in DB treatment consists of cases where a subject closed but left money for later movers
- The sum leftover averaged \$8.15 for DB as compared to \$13.85 given to redundant coalition partners in BF game

# “Behavioral Identification in Coalitional Bargaining”

BF Allocations Passed for MWCs

	Base Formateur	Partner
	Equal Weight	
Inexp.	0.4 [0.6]	0.31 [0.2]
Exp.	0.4 [0.6]	0.3 [0.2]

Predicted values in brackets

# “Behavioral Identification in Coalitional Bargaining”

BF Allocations Passed for MWCs

	Base Formateur	Partner
	Equal Weight	
Inexp.	0.4 [0.6]	0.31 [0.2]
Exp.	0.4 [0.6]	0.3 [0.2]
	Apex – Inexperienced	
Apex In	0.47 [0.57]	0.53 [0.43]
Apex Out	0.32 [0.57]	0.27 [0.14]
	Apex – Experienced	
Apex In	0.52 [0.57]	0.48 [0.43]
Apex Out	0.33 [0.57]	0.22 [0.14]

Predicted values in brackets

# “Behavioral Identification in Coalitional Bargaining”

BF Allocations Passed for MWCs

	Base Formateur	Partner	Apex Form.	Partner
	Equal Weight			
Inexp.	0.4 [0.6]	0.31 [0.2]		
Exp.	0.4 [0.6]	0.3 [0.2]		
	Apex – Inexperienced			
Apex In	0.47 [0.57]	0.53 [0.43]	0.72 [0.86]	0.28 [0.14]
Apex Out	0.32 [0.57]	0.27 [0.14]		
	Apex – Experienced			
Apex In	0.52 [0.57]	0.48 [0.43]	0.67 [0.86]	0.33 [0.14]
Apex Out	0.33 [0.57]	0.22 [0.14]		

Predicted values in brackets

# “Behavioral Identification in Coalitional Bargaining”

DB Allocations Passed for MWCs

	Base Formateur	Partner
	Equal Weight	
Inexp.	0.34 [0.33]	0.36 [0.33]
Exp.	0.35 [0.33]	0.35 [0.33]

Predicted values in brackets

# “Behavioral Identification in Coalitional Bargaining”

DB Allocations Passed for MWCs

	Base Formateur	Partner
	Equal Weight	
Inexp.	0.34 [0.33]	0.36 [0.33]
Exp.	0.35 [0.33]	0.35 [0.33]
	Apex	
Inexp.	0.36 [0.25]	0.64 [0.75]
Exp.	0.35 [0.25]	0.65 [0.75]

Predicted values in brackets

# “Behavioral Identification in Coalitional Bargaining”

DB Allocations Passed for MWCs

	Base Formateur	Partner	Appex Form.	Partner
	Equal Weight			
Inexp.	0.34 [0.33]	0.36 [0.33]		
Exp.	0.35 [0.33]	0.35 [0.33]		
	Apex			
Inexp.	0.36 [0.25]	0.64 [0.75]	0.64 [0.75]	0.36 [0.25]
Exp.	0.35 [0.25]	0.65 [0.75]	0.81 [0.75]	0.19 [0.25]

Predicted values in brackets

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 3

- Base formateurs have a first mover advantage in both BF & DB (stat. sig. but only vs. worst off subject in DB)

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 3

- Base formateurs have a first mover advantage in both BF & DB (stat. sig. but only vs. worst off subject in DB)
- Although base formateurs do not take nearly as much as predicted under BF, as predicted they take more than under DB (stat. sig.)

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 3

- Base formateurs have a first mover advantage in both BF & DB (stat. sig. but only vs. worst off subject in DB)
- Although base formateurs do not take nearly as much as predicted under BF, as predicted they take more than under DB (stat. sig.)
- Apex formateurs have no formateur power in both games, thus behavior is much more similar than predicted between BF & DB (not stat. sig. dif.)

# “Behavioral Identification in Coalitional Bargaining”

About Formateur Power in Baron Ferejohn

- Limited formateur power results from voting behavior

# “Behavioral Identification in Coalitional Bargaining”

About Formateur Power in Baron Ferejohn

- Limited formateur power results from voting behavior
- High rejection rates of shares close to Stationary Subgame Perfect Equilibrium Prediction (SSPE) imply that SSPE share does not maximize expected income

# “Behavioral Identification in Coalitional Bargaining”

About Formateur Power in Demand Bargaining

- Why did base players accept smaller shares?

# “Behavioral Identification in Coalitional Bargaining”

About Formateur Power in Demand Bargaining

- Why did base players accept smaller shares?

① Risk aversion

# “Behavioral Identification in Coalitional Bargaining”

About Formateur Power in Demand Bargaining

- Why did base players accept smaller shares?
- ① Risk aversion
- ② Inability to perform backward induction

# “Behavioral Identification in Coalitional Bargaining”

## About Formateur Power in Demand Bargaining

- Why did base players accept smaller shares?
- ① Risk aversion
- ② Inability to perform backward induction
- ③ **Belief that others cannot perform backward induction**

# “Behavioral Identification in Coalitional Bargaining”

## About Formateur Power in Demand Bargaining

- Why did base players accept smaller shares?
  - 1 Risk aversion
  - 2 Inability to perform backward induction
  - 3 Belief that others cannot perform backward induction
- However, this is not very costly: lowest share in equal wt treatment is \$2.90 lower than predicted

# “Behavioral Identification in Coalitional Bargaining”

## About Formateur Power in Demand Bargaining

- Why did base players accept smaller shares?
  - 1 Risk aversion
  - 2 Inability to perform backward induction
  - 3 Belief that others cannot perform backward induction
- However, this is not very costly: lowest share in equal wt treatment is \$2.90 lower than predicted
- Cannot explain Apex taking smaller shares since they are always in. However, they accept \$6.48 less than predicted.

# “Behavioral Identification in Coalitional Bargaining”

About Coalition Choice

- Baron Ferejohn:

# “Behavioral Identification in Coalitional Bargaining”

## About Coalition Choice

- Baron Ferejohn:
  - Base player earns more as formateurs when partnering with Apex

# “Behavioral Identification in Coalitional Bargaining”

## About Coalition Choice

- Baron Ferejohn:
  - Base player earns more as formateurs when partnering with Apex
  - They invite Apex player 70% of time as compared to predicted rate of 25%

# “Behavioral Identification in Coalitional Bargaining”

## About Coalition Choice

- Baron Ferejohn:
  - Base player earns more as formateurs when partnering with Apex
  - They invite Apex player 70% of time as compared to predicted rate of 25%
- Demand Bargaining:

# “Behavioral Identification in Coalitional Bargaining”

## About Coalition Choice

- Baron Ferejohn:
  - Base player earns more as formateurs when partnering with Apex
  - They invite Apex player 70% of time as compared to predicted rate of 25%
- Demand Bargaining:
  - Base forms coalition with Apex 100% of the time

# “Behavioral Identification in Coalitional Bargaining”

## About Coalition Choice

- Baron Ferejohn:
  - Base player earns more as formateurs when partnering with Apex
  - They invite Apex player 70% of time as compared to predicted rate of 25%
- Demand Bargaining:
  - Base forms coalition with Apex 100% of the time
  - Only 4 bargaining rounds where Apex was not selected by fourth step

# “Behavioral Identification in Coalitional Bargaining”

- Literature on bilateral bargaining games suggest equity considerations could explain:

# “Behavioral Identification in Coalitional Bargaining”

- Literature on bilateral bargaining games suggest equity considerations could explain:
  - Why Apex proposers do not exhibit formateur power in BF

# “Behavioral Identification in Coalitional Bargaining”

- Literature on bilateral bargaining games suggest equity considerations could explain:
  - Why Apex proposers do not exhibit formateur power in BF
  - Why Base proposers rarely propose 4-way coalitions

# “Behavioral Identification in Coalitional Bargaining”

- Literature on bilateral bargaining games suggest equity considerations could explain:
  - Why Apex proposers do not exhibit formateur power in BF
  - Why Base proposers rarely propose 4-way coalitions
  - Why Base formateurs exhibit formateur power in DB

# “Behavioral Identification in Coalitional Bargaining”

- Literature on bilateral bargaining games suggest equity considerations could explain:
  - Why Apex proposers do not exhibit formateur power in BF
  - Why Base proposers rarely propose 4-way coalitions
  - Why Base formateurs exhibit formateur power in DB
- To verify this hypothesis, ran Apex<sub>1/3</sub> treatment identical to Apex treatment except Apex player only gets  $\frac{1}{3}$  of his earnings at end

# “Behavioral Identification in Coalitional Bargaining”

- Literature on bilateral bargaining games suggest equity considerations could explain:
  - Why Apex proposers do not exhibit formateur power in BF
  - Why Base proposers rarely propose 4-way coalitions
  - Why Base formateurs exhibit formateur power in DB
- To verify this hypothesis, ran Apex<sub>1/3</sub> treatment identical to Apex treatment except Apex player only gets  $\frac{1}{3}$  of his earnings at end
- Equalizes ex-ante payoffs of base & Apex players

# “Behavioral Identification in Coalitional Bargaining”

## Allocations Passed for MWCs in Third Treatment

	Freq. Ends Stage 1 (Mean)		Freq. of MWC	
	BF	DB	BF	DB
Inexp.	72% (1.8)	73% (1.4)	74%	94%
Exp.	80% (1.3)	100% (1.0)	80%	87%

# “Behavioral Identification in Coalitional Bargaining”

Allocations Passed for MWCs in Third Treatment

	Base Formateur	Partner	Apex Formateur	Partner
Baron-Ferejohn				
Inexp.	0.28 [0.57]	0.72 [0.43]	0.78 [0.86]	0.23 [0.14]
Exp.	0.27 [0.57]	0.73 [0.43]	0.76 [0.86]	0.24 [0.14]
Demand Bargaining				
Inexp.	0.29 [0.25]	0.71 [0.75]	0.78 [0.75]	0.22 [0.25]
Exp.	0.24 [0.25]	0.76 [0.75]	0.83 [0.75]	0.17 [0.25]

# “Behavioral Identification in Coalitional Bargaining”

## Apex versus Third Treatment

- Under both BF & DB, Apex players obtain a small formateur advantage in the  $\text{Apex}_{1/3}$  (stat. sig.).

# “Behavioral Identification in Coalitional Bargaining”

## Apex versus Third Treatment

- Under both BF & DB, Apex players obtain a small formateur advantage in the  $\text{Apex}_{1/3}$  (stat. sig.).
- Apex players require larger nominal shares under both BF & DB in  $\text{Apex}_{1/3}$  when invited by base players (more details later).

# “Behavioral Identification in Coalitional Bargaining”

## Apex versus Third Treatment

- Under both BF & DB, Apex players obtain a small formateur advantage in the  $\text{Apex}_{1/3}$  (stat. sig.).
- Apex players require larger nominal shares under both BF & DB in  $\text{Apex}_{1/3}$  when invited by base players (more details later).
- Base players invite Apex players into MWCs less often in BF  $\text{Apex}_{1/3}$ : only 39% of the time as opposed to 70% of the time.

# “Behavioral Identification in Coalitional Bargaining”

## Apex versus Third Treatment

- Under both BF & DB, Apex players obtain a small formateur advantage in the  $\text{Apex}_{1/3}$  (stat. sig.).
- Apex players require larger nominal shares under both BF & DB in  $\text{Apex}_{1/3}$  when invited by base players (more details later).
- Base players invite Apex players into MWCs less often in BF  $\text{Apex}_{1/3}$ : only 39% of the time as opposed to 70% of the time.
- In BF, there is no impact on share base formateurs obtain when forming coalitions with all base players (not stat. sig.)

# “Behavioral Identification in Coalitional Bargaining”

## Apex versus Third Treatment

- Under both BF & DB, Apex players obtain a small formateur advantage in the  $\text{Apex}_{1/3}$  (stat. sig.).
- Apex players require larger nominal shares under both BF & DB in  $\text{Apex}_{1/3}$  when invited by base players (more details later).
- Base players invite Apex players into MWCs less often in BF  $\text{Apex}_{1/3}$ : only 39% of the time as opposed to 70% of the time.
- In BF, there is no impact on share base formateurs obtain when forming coalitions with all base players (not stat. sig.)
- **Base formateurs in both BF & DB display a small formateur advantage (stat. sig.).**

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 4

- Voting power accounts for  $\frac{2}{3}$  of difference in average share of Apex formateurs in Apex<sub>1/3</sub> treatment & a base player in equal weight treatment.

# “Behavioral Identification in Coalitional Bargaining”

## Conclusion 4

- Voting power accounts for  $\frac{2}{3}$  of difference in average share of Apex formateurs in Apex<sub>1/3</sub> treatment & a base player in equal weight treatment.
- The remaining  $\frac{1}{3}$  represents an equity adjustment.

# “Behavioral Identification in Coalitional Bargaining”

Conclusions 5 & 6 – Analysis of Voting Patterns (see paper for statistical analysis)

- Own share of benefits is key factor affecting voting for or against an allocation.

# “Behavioral Identification in Coalitional Bargaining”

Conclusions 5 & 6 – Analysis of Voting Patterns (see paper for statistical analysis)

- Own share of benefits is key factor affecting voting for or against an allocation.
- As predicted, average shares required to vote in favor of an allocation are larger under DB than BF.

# “Behavioral Identification in Coalitional Bargaining”

Conclusions 5 & 6 – Analysis of Voting Patterns (see paper for statistical analysis)

- Own share of benefits is key factor affecting voting for or against an allocation.
- As predicted, average shares required to vote in favor of an allocation are larger under DB than BF.
- However, these differences not as large as predicted

# “Behavioral Identification in Coalitional Bargaining”

Conclusions 5 & 6 – Analysis of Voting Patterns (see paper for statistical analysis)

- Own share of benefits is key factor affecting voting for or against an allocation.
- As predicted, average shares required to vote in favor of an allocation are larger under DB than BF.
- However, these differences not as large as predicted
- Apex players required a higher share to support an allocation in  $\text{Apex}_{1/3}$  consistent with notion that subjects have some lower bound on payoffs they are willing to accept.

# “Behavioral Identification in Coalitional Bargaining”

Conclusions 5 & 6 – Analysis of Voting Patterns (see paper for statistical analysis)

- Own share of benefits is key factor affecting voting for or against an allocation.
- As predicted, average shares required to vote in favor of an allocation are larger under DB than BF.
- However, these differences not as large as predicted
- Apex players required a higher share to support an allocation in  $Apex_{1/3}$  consistent with notion that subjects have some lower bound on payoffs they are willing to accept.
- **However, acceptance thresholds are sensitive to strategic considerations.**

# “Behavioral Identification in Coalitional Bargaining”

Conclusions 5 & 6 – Analysis of Voting Patterns (see paper for statistical analysis)

- Own share of benefits is key factor affecting voting for or against an allocation.
- As predicted, average shares required to vote in favor of an allocation are larger under DB than BF.
- However, these differences not as large as predicted
- Apex players required a higher share to support an allocation in  $\text{Apex}_{1/3}$  consistent with notion that subjects have some lower bound on payoffs they are willing to accept.
- However, acceptance thresholds are sensitive to strategic considerations.
- See paper also for analysis of profits made by subjects as compared to predictions.

# “Behavioral Identification in Coalitional Bargaining”

## Comparison to Field Data

- Empirical analysis use post-world war II European coalition governments to distinguish between BF & DB

# “Behavioral Identification in Coalitional Bargaining”

## Comparison to Field Data

- Empirical analysis use post-world war II European coalition governments to distinguish between BF & DB
- Two recent approaches:

# “Behavioral Identification in Coalitional Bargaining”

## Comparison to Field Data

- Empirical analysis use post-world war II European coalition governments to distinguish between BF & DB
- Two recent approaches:
  - Warwick & Druckman

# “Behavioral Identification in Coalitional Bargaining”

## Comparison to Field Data

- Empirical analysis use post-world war II European coalition governments to distinguish between BF & DB
- Two recent approaches:
  - Warwick & Druckman
  - Ansolabehere, Snyder, Strauss, & Ting

# “Behavioral Identification in Coalitional Bargaining”

Warwick & Druckman

- Measure a party's strength by share of seats they contribute to winning coalition

	Field Data
	Unwtd
Specification 1	
Share	0.92***
of Votes	(0.01)

# “Behavioral Identification in Coalitional Bargaining”

Warwick & Druckman

	BF Lab Data		Field Data
	Inexp.	Exp.	Unwtd
Specification 1			
Share of Votes	0.94*** (0.02)	0.90*** (0.03)	0.92*** (0.01)

# “Behavioral Identification in Coalitional Bargaining”

Warwick & Druckman

	BF Lab Data		DB Lab Data		Field Data
	Inexp.	Exp.	Inexp.	Exp.	Unwtd
Specification 1					
Share	0.94***	0.90***	0.93***	1.01***	0.92***
of Votes	(0.02)	(0.03)	(0.02)	(0.02)	(0.01)

# “Behavioral Identification in Coalitional Bargaining”

Warwick & Druckman

	Field Data	
	Unwted	Wted
Specification 1		
Share	0.92***	
of Votes	(0.01)	
Specification 2		
Share	1.05***	0.86***
of Votes	(0.02)	(0.02)
Form. S.	-0.18***	0.14***
of Votes	(0.02)	(0.02)

# “Behavioral Identification in Coalitional Bargaining”

Warwick & Druckman

	BF Lab		Field Data	
	Inexp.	Exp.	Unwted	Wted
Specification 1				
Share	0.94***	0.90***	0.92***	
of Votes	(0.02)	(0.03)	(0.01)	
Specification 2				
Share	0.83***	0.77***	1.05***	0.86***
of Votes	(0.02)	(0.03)	(0.02)	(0.02)
Form. S.	0.29***	0.44***	-0.18***	0.14***
of Votes	(0.03)	(0.05)	(0.02)	(0.02)

# “Behavioral Identification in Coalitional Bargaining”

Warwick & Druckman

	BF Lab		DB Lab		Field Data	
	Inexp.	Exp.	Inexp.	Exp.	Unwted	Wted
Specification 1						
Share	0.94***	0.90***	0.93***	1.01***	0.92***	
of Votes	(0.02)	(0.03)	(0.02)	(0.02)	(0.01)	
Specification 2						
Share	0.83***	0.77***	0.90***	0.91***	1.05***	0.86***
of Votes	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)
Form. S.	0.29***	0.44***	0.08*	0.18***	-0.18***	0.14***
of Votes	(0.03)	(0.05)	(0.04)	(0.04)	(0.02)	(0.02)

# “Behavioral Identification in Coalitional Bargaining”

Ansolabehere, Snyder, Strauss, & Ting

- Seat shares do not generally equal voting weight

# “Behavioral Identification in Coalitional Bargaining”

Ansola-behere, Snyder, Strauss, & Ting

- Seat shares do not generally equal voting weight
- **BF & DB make predictions based on voting weight**

# “Behavioral Identification in Coalitional Bargaining”

Ansola-behere, Snyder, Strauss, & Ting

- Seat shares do not generally equal voting weight
- BF & DB make predictions based on voting weight
- They develop a framework that nests BF & DB

# “Behavioral Identification in Coalitional Bargaining”

Ansolabehere, Snyder, Strauss, & Ting

	Field Data	
	Unwted	Wted
Constant	0.07***	0.06***
	(0.01)	(0.01)
Voting	1.12***	0.98***
Weight	(0.05)	(0.05)
Form.	0.15***	0.25***
	(0.02)	(0.01)
R <sup>2</sup>	0.72	0.82

# “Behavioral Identification in Coalitional Bargaining”

Ansolabehere, Snyder, Strauss, & Ting

	BF Lab		Field Data	
	Inexp.	Exp.	Unwted	Wted
Constant	0.07*** (0.02)	0.13*** (0.01)	0.07*** (0.01)	0.06*** (0.01)
Voting	0.99*** (0.09)	0.75*** (0.05)	1.12*** (0.05)	0.98*** (0.05)
Weight Form.	0.14*** (0.01)	0.16*** (0.02)	0.15*** (0.02)	0.25*** (0.01)
R <sup>2</sup>	0.54	0.61	0.72	0.82

# “Behavioral Identification in Coalitional Bargaining”

Ansolabehere, Snyder, Strauss, & Ting

	BF Lab		DB Lab		Field Data	
	Inexp.	Exp.	Inexp.	Exp.	Unwted	Wted
Constant	0.07***	0.13***	0.09***	-0.07***	0.07***	0.06***
	(0.02)	(0.01)	(0.02)	(0.03)	(0.01)	(0.01)
Voting	0.99***	0.75***	1.01***	1.80***	1.12***	0.98***
Weight	(0.09)	(0.05)	(0.11)	(0.15)	(0.05)	(0.05)
Form.	0.14***	0.16***	0.08***	0.09***	0.15***	0.25***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
R <sup>2</sup>	0.54	0.61	0.39	0.78	0.72	0.82

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions

- Ex-post distribution of benefits under BF & DB are predicted to be very different

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions

- Ex-post distribution of benefits under BF & DB are predicted to be very different
  - BF sharply skewed in favor of proposer

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions

- Ex-post distribution of benefits under BF & DB are predicted to be very different
  - BF sharply skewed in favor of proposer
  - **BD predicts shares proportional to bargaining power**

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions

- Ex-post distribution of benefits under BF & DB are predicted to be very different
  - BF sharply skewed in favor of proposer
  - BD predicts shares proportional to bargaining power
- As predicted, experimental data shows:

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions

- Ex-post distribution of benefits under BF & DB are predicted to be very different
  - BF sharply skewed in favor of proposer
  - BD predicts shares proportional to bargaining power
- As predicted, experimental data shows:
  - Proposer power in BF games

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions

- Ex-post distribution of benefits under BF & DB are predicted to be very different
  - BF sharply skewed in favor of proposer
  - BD predicts shares proportional to bargaining power
- As predicted, experimental data shows:
  - Proposer power in BF games
  - **Benefits shift substantially in favor of player with greater real voting power.**

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions Continued

- However, sharp differences in ex-post shares between BF & DB fail to materialize

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions Continued

- However, sharp differences in ex-post shares between BF & DB fail to materialize
  - Less formateur advantage than predicted in BF

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions Continued

- However, sharp differences in ex-post shares between BF & DB fail to materialize
  - Less formateur advantage than predicted in BF
  - **Unpredicted formateur advantage in DB**

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions Continued

- However, sharp differences in ex-post shares between BF & DB fail to materialize
  - Less formateur advantage than predicted in BF
  - Unpredicted formateur advantage in DB
- Using experimental data to conduct regressions similar to those reported with field data for distinguishing between BF & DB, unable to distinguish which game subjects are playing.

# “Behavioral Identification in Coalitional Bargaining”

## Conclusions Continued

- However, sharp differences in ex-post shares between BF & DB fail to materialize
  - Less formateur advantage than predicted in BF
  - Unpredicted formateur advantage in DB
- Using experimental data to conduct regressions similar to those reported with field data for distinguishing between BF & DB, unable to distinguish which game subjects are playing.
- *Behavioral Identification Problem!*