Lobbying and Legislative Uncertainty

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The Questions

1. How does uncertainty about legislators' preferences impact
   - lobbying strategies (e.g. who to lobby, how much to 'pay')
   - probability a bill passes
2. Can we distentangle fundamental uncertainty about preferences from equilibrium and modeling uncertainty?
   $\Rightarrow$ Build a structural model to take to U.S. House data
3. Ultimately, want to identify cross-industry measures of legislative uncertainty

Some Stylized Facts

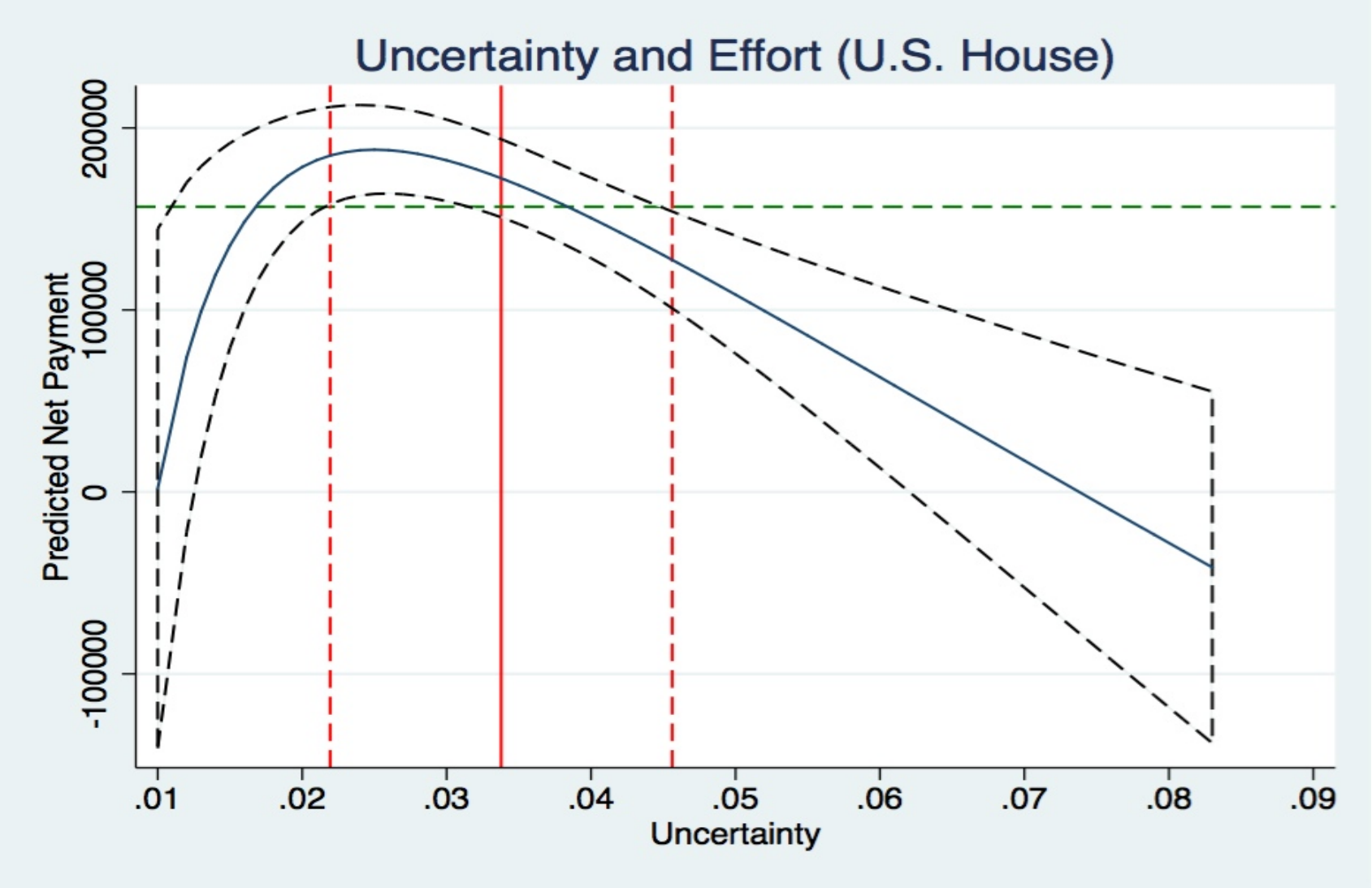
1. In the U.S., about $4 billion / yr spent on lobbying and campaign contributions
2. There is usually lobbying on both sides of a given issue
3. Moderate legislators receive more contributions than those that are ideologically extreme
4. Legislators about whom there is a moderate level of uncertainty are lobbied the most

Adding uncertainty to standard model captures (2) — (4)

Literature

- **Vote Buying in Legislatures**: Groseclose & Snyder 1996, Banks 2000, Dal Bo 2007
- **Lobbying with Uncertainty**: Coates & Ludema 2001, Le Breton & Salanie 2003, Le Breton & Zaphorozhets (2007)
- **Probabilistic Voting with Policy Motivation**: Roemer 1994, 1997, Duggan & Fey 2011

Overview

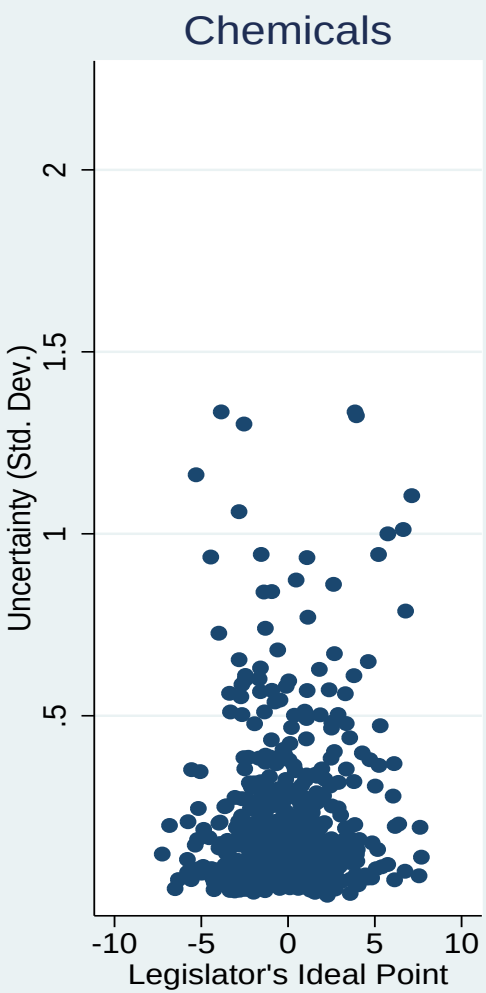

Uncertainty and Effort (U.S. House)
Predicted Net Payment
200000
100000
0
-100000
.01
.02
.03
.04
.05
.06
.07
.08
.09
Uncertainty

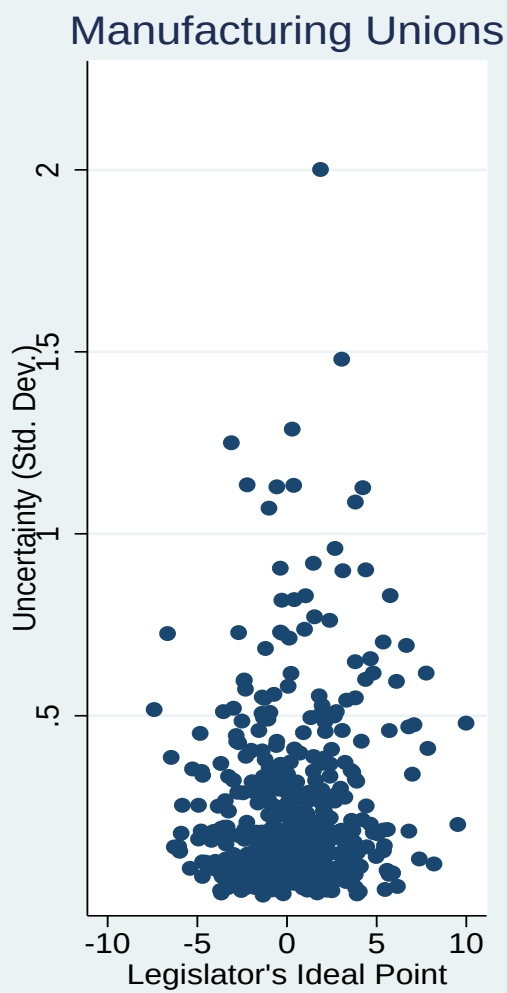
Context

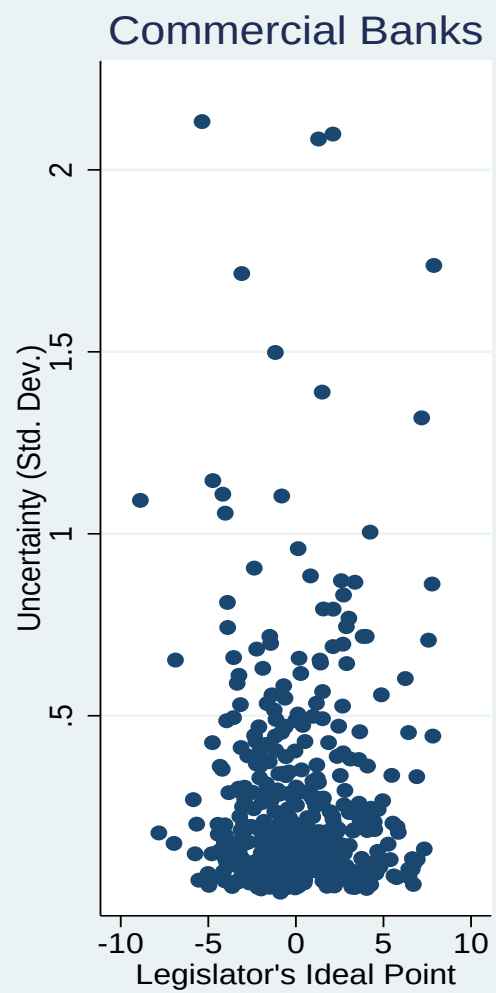
U.S. House of Representative

- All roll call votes, 2005 through present
- Interest group lobbying on each vote
- PAC contributions, LDA lobbying data

Use multi-dimensional ideal-point estimation to identify measures of uncertainty


Chemicals
Uncertainty (Std. Dev.)
.5
1
1.5
2
-10
-5
0
5
10
Legislator's Ideal Point


Manufacturing Unions
Uncertainty (Std. Dev.)
.5
1
1.5
2
-10
-5
0
5
10
Legislator's Ideal Point


Commercial Banks
Uncertainty (Std. Dev.)
.5
1
1.5
2
-10
-5
0
5
10
Legislator's Ideal Point

Policy and Politics

Three legislators

- Identified by location in linear preference space: $i \in \{-0.5, 0, .5\}$
- Each will vote for status quo s or new proposal x
- Decision made by majority vote

Two vote buyers, A and B

- A prefers x, B prefers s

Timeline

1. **Vote Buyer A**
   i. Chooses bribes $\underline{a} = (a_{-.5}, a_0, a_{.5})$
2. **Vote Buyer B**
   i. Observes $\underline{a}$
   ii. Chooses bribes $\underline{b} = (b_{-.5}, b_0, b_{.5})$
3. **Legislature**
   i. All legislators observe $\underline{a}, \underline{b}$
   ii. Uncertainty about preferences realized: $\underline{\theta} = (\theta_{-.5}, \theta_0, \theta_{.5})$
   iii. Each legislator votes for her preferred policy

Legislators

Take ideal point to be linear: $\alpha - \beta i$

- Leg i votes for s if $v(i) = \alpha - \beta i + \theta_i + a_i - b_i \leqslant 0$
  - Probability i votes for s is
    $\Pr[\alpha - \beta i + \theta_i + a_i - b_i \leqslant 0] = \Pr[\theta_i \leqslant \beta i - \alpha - a_i + b_i]$
  - Assuming $\theta \sim$ Logistic $(0, 1)$, it's $\frac{1}{1+e^{-(\beta i - \alpha - a_i + b_i)}}$

Vote Buyer B

Assume vote buyers maximize expected value of winning net of bribes paid

- Assume bribes must be non-negative
- Vote buyer won't spend more than his willingness to pay, W_B
- In three-seat legislature, max probability that $\geqslant 2$ legislators vote for s

Vote Buyer B's Objective Function

Let $X(i) = 1$ denote legislator i votes for the status quo

$$\max_{b_{-.5}, b_0, b_{.5}} W_B \Big[\Pr(X(-.5) = 1) \Pr(X(0) = 1) (X(.5) = 0) + \Pr(X(-.5) = 1) \Pr(X(0) = 0) \Pr(X(.5) = 1) + \Pr(X(-.5) = 0) \Pr(X(0) = 1) \Pr(X(.5) = 1) + \Pr(X(-.5) = 1) \Pr(X(0) = 1) \Pr(X(.5) = 1) \Big] - \sum_{j \in \{-.5, 0, .5\}} b_j$$

Vote Buyer A

Vote Buyer A is just like Vote Buyer B *except*

- She gets to move first
- She wants x to win instead of s

Two Non-Negative Bribes

Let X and Y and Z be the gross positions of each of the three legislators. Then the FOCs are

$$\frac{e^{-Y}+e^{-Z}}{(1+e^{-Y})(1+e^{-Z})}\frac{e^{-X}}{(1+e^{-X})^2}=\frac{1}{W_B} \quad (1)$$

$$\frac{e^{-X}+e^{-Z}}{(1+e^{-X})(1+e^{-Z})}\frac{e^{-Y}}{(1+e^{-Y})^2}=\frac{1}{W_B} \quad (2)$$

Two non-negative bribes

When Vote Buyer B pays bribes to exactly two legislators, the bribes are such that the two bribed legislators' ideal points gross of bribes are equalized. Which two legislators are bribed depends on the bias parameter α.

Three Non-Negative Bribes

Similar intuition for the case where all three legislators are bribed

Three Non-Negative Bribes

When Vote Buyer B pays bribes to all three legislators, the bribes are such that the legislators' ideal points gross of bribes are equalized.

The Rest of the Story...

One Non-Negative Bribe

When Vote Buyer B pays bribes to exactly one legislator, it may be any one of the three legislators depending on the bias parameter α.

No Non-Negative Bribes

When Vote Buyer B has a low willingness to pay, he does not bribe any legislator.

Varying Uncertainty Across Legislators

Now let the scale of uncertainty differ across legislators

- To be precise: the scale parameters in the three logit distributions are not equal

Conjecture

When there is no bias in the positions of the legislators ($\alpha = 0$), the bribes of legislators whose ideal points are at the median in terms of uncertainty receive the highest relative bribes.

Two Vote Buyers

No Bribes

It is possible that neither vote buyer bribes any legislator on a given vote. This occurs when both vote buyers' willingness-to-pay parameters are small.

Both Vote Buyers Bribe

It is possible for both vote buyers to bribe legislators on the same vote.

Next Steps

- Modify model so that both legislators can lobby the *same* legislator in equilibrium
- Derive tight identification of empirical estimates from structural model
- Provide micro-founded explanations for the variation in uncertainty that lobbies face

Conclusion

Taking into account uncertainty about the preferences of legislators brings vote buying models closer to capturing important stylized facts

- helps in understanding lobbying strategies
- may shed light on why some lobbies are more successful than others
- will help in the identification of measures of uncertainty that can be used in many applications