Strategy and Turning Points

Leo Klenner
Johns Hopkins SAIS
lklenne1@jhu.edu

Introduction

- Task: heuristics for incomplete information in quantitative analyses of negotiation
- Context: strategic behavior
- This presentation:
  - Framework
  - Case study
  - Implementation
  - Light on assumptions

Game theory and negotiations

- Problem: first-order information incomplete
- Solution: first-order information ⟵ second-order information
- Requirement: additional framework

Turning Point Analysis

- Turning Point Analysis – Druckman (2001), Druckman (2004), Crump & Druckman (2016)
  - Classify patterns of directional change in negotiations
  - Precipitants – Departure – Consequences
- Consequences
  - Don’t identify the payoffs, identify where the payoffs change

Consequences

- Idea: consequences act as an approximator for payoff distributions
- Definition of consequences: “clear and self-evident impact of a departure in terms of the direction taken by the negotiating parties” (Crump & Druckman 2016, p. 7)
- Assumption: consequences arise from deliberate choices
  - Choices maximize the parties’ short-term payoffs

Approximating payoff distributions

- Features of the consequence-based approximation
  - No specific payoffs identified, negotiation not modeled as a game proper
  - Payoffs approximated through gameplay
  - Deesalatory = cooperative, escalatory = defective
  - Outcome ➡ strategy ➡ payoffs
  - Scope depends on implementation

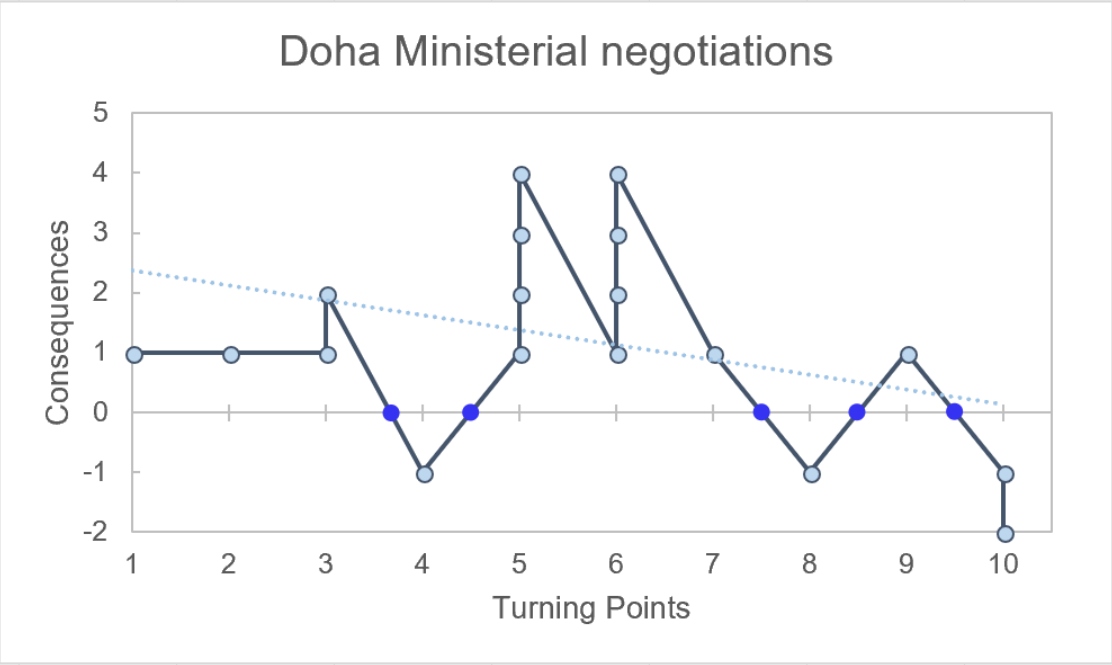
Turning points case study

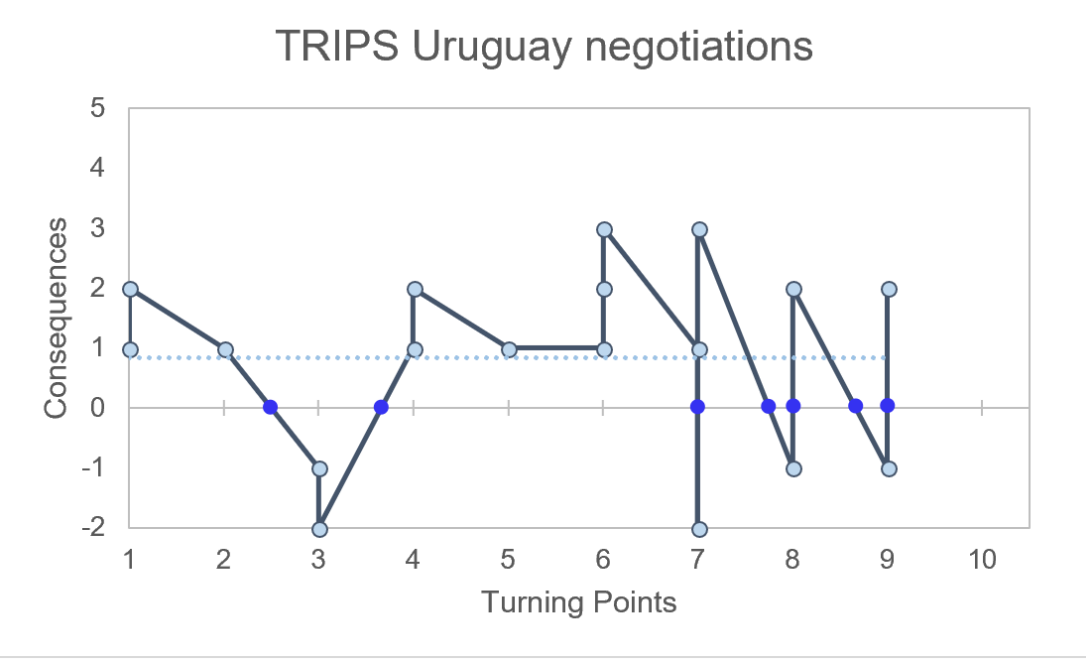
- Two cases of trade negotiations – Crump & Druckman (2016)
  - Ministerial level – WTO Doha Developement Agenda negotiations (2001-present)
  - Committee level – Uruguay round of the TRIPS negotiations (1985-1994)

- Key results
  - Procedual stability
  - Optimal strategies

Graphical analysis of consequences

- Translating the consequences into gameplay





Preliminary results

- Similar stages: cooperation ➡ defection ➡ increased cooperation ➡ volatile endgame
- Impact of deadlines: volatility in the last third exceeds changes in the first two-thirds
- Doha negotiations: if multiple consequences within a turning point, unidirectional
- TRIPS negotiations: if multiple consequences within a turning point, directional change

Numerical analysis of consequences

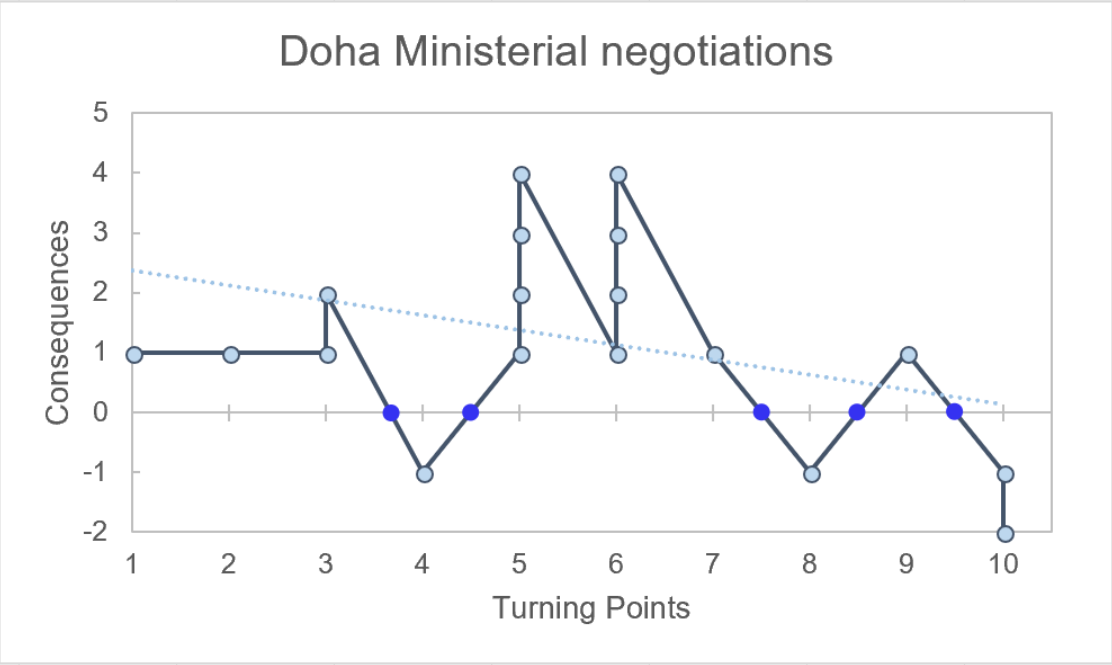
Consequences	Ministerial/Council Level		Committee Level	
Towards-Towards	0.65, of these		0.47, of these	
		0.64 within TPs		0.50 within TPs
		0.36 across TPs		0.50 across TPs
Away-Away	0.06, of these		0.06, of these	
		1.00 within TPs		1.00 within TPs
		0.00 across TPs		0.00 across TPs
Away-Towards	0.12, of these		0.24, of these	
		0.00 within TPs		0.75 within TPs
		1.00 across TPs		0.25 across TPs
Towards-Away	0.18, of these		0.24, of these	
		0.00 within TPs		0.25 within TPs
		1.00 across TPs		0.75 across TPs
Within TPs	0.47, of these		0.53, of these	
		0.88 towards-towards		0.44 towards-towards
		0.12 away-away		0.12 away-away
				0.44 mixed
Across TPs	0.53, of these		0.47, of these	
		0.44 towards-towards		0.50 towards-towards
		0.56 mixed		0.50 mixed

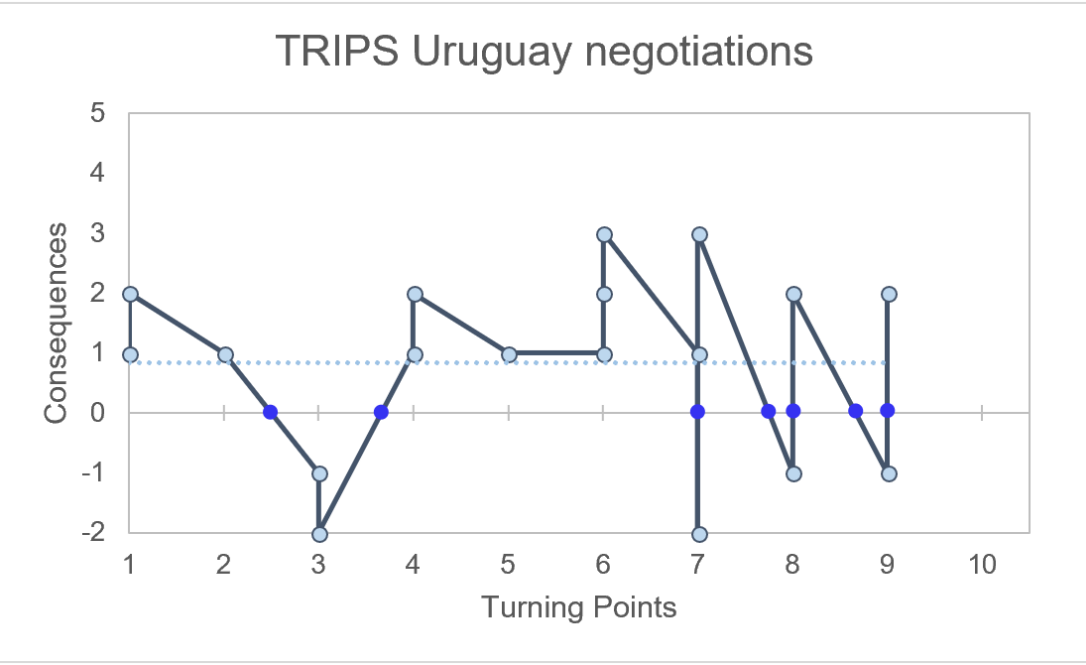
Results

- Strategy
  - Symmetrically matched moves in both negotiations, tit-for-tat depending on assumptions
- Cooperation
  - Succesful outcome requires an agile environment that enables actors to respond quickly
- Expectation setting
  - Ministerial level – low uncertainty but no reversion of defecting moves within turning points
  - Comittee level – high uncertainty but ability to respond to defecting moves
  - Differernt levels of loss aversion

Recap – Graphical analysis of consequences

- Symmetrically matched moves – Doha (within 5, 6, 10) – TRIPS (across 7, 8, 9)





Conclusion

- Turning Point Analysis provides heuristic for payoff-strategy dynamic
  - Efficiently approximate incomplete first-order information
- Remark: differences in optimal strategy between party and process level
- Remark: full scale implementation through inverse game theory
  - Kuleshov and Schrijvers (2015)
  - Yields payoffs based on equilibrium behaviour

Contact

- Thanks to Lynn Wagner and Dan Druckman

- Email: lklenne1@jhu.edu