

Tailored Cheap Talk

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- Markets rely heavily on communication to produce matches
- Tailoring: customized communication based on acquired information about each agent's preference
- This paper investigates:
 - ▶ Communication's role in matching
 - ▶ Data collection
 - ▶ Disclosure decisions
 - ▶ Privacy policies and welfare implications

This Paper

- Communication game:
 - ▶ Persuader sends a message to induce a desired action by the receiver
 - ▶ Persuader can collect information about the receiver's preferences to tailor communication
- Receiver observes the quality of the information collected by the sender
- Receiver understands that the message may have been appropriately tailored to appear persuasive

Market Contexts

- Our model applies to multiple matching markets in which one side attempts to persuade the other of a favorable match value
- Examples:
 - ▶ Job market; dating; school admissions; procurement contracts; sales; advertising

Trends in Advertising

- Trends in information acquisition
 - ▶ Real-time acquisition of consumer data
 - ▶ Matching consumer information across multiple channels
 - ▶ Lower acquisition and storage costs
 - ▶ Data brokers
- Trends in ad delivery
 - ▶ Tailored advertising allows firms to customize their messages to individual consumers
 - ▶ Real-time message targeting
 - ▶ Highly automated

Related Literature

Persuasion via Cheap Talk

- Crawford and Sobel (1978)
- Bagwell and Ramey (1993)
- Gardete (2013)
- Chakraborty and Harbaugh (2010, 2014)

Persuasion through Disclosure

- Anderson and Renault (2006)
- Ostrovsky and Schwarz (2010)
- Rayo and Segal (2010)
- Kamenica and Gentzkow (2011)
- Mayzlin and Shin (2011)

Information Acquisition + 1-1 Advertising

- Iyer, Soberman and Villas-Boas (2005)
- de Cornière and de Nijis (2016)
- Shen and Villas-Boas (2016)

Dissipative Advertising

- Milgrom (1981)
- Kihlstrom and Riordan (1984)
- Milgrom and Roberts (1986)
- Austen-Smith and Banks (2000)
- Kartik (2007)

Model Overview

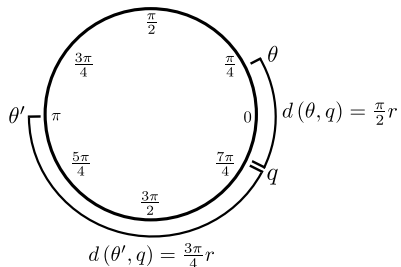
General Setup

- Two parties located along a preference circle
 - ▶ Sender: $q \sim U[0, 2\pi)$
 - ▶ Receiver: $\theta \sim U[0, 2\pi)$
- Match utilities
 - ▶ Sender: $U^S = v^S - d(\theta, q)$
 - ▶ Receiver: $U^R = v^R - d(\theta, q)$
- Not matching yields zero utility to both parties

General Setup

Agents prefer to be matched with nearby counterparts

$$d(\theta, q) = r \cdot \cos^{-1}(\cos(\theta - q))$$



Remarks

- Consider case of transparent motives first
 - ▶ Sender is willing to match with any receiver:

$$v^S > \pi r$$

- Communication has the ability to induce a match (decisive)

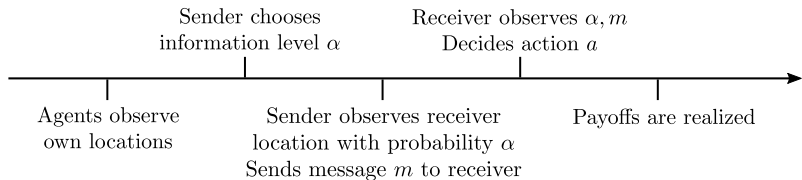
$$v^R - E_q(d(\theta, q)|\theta) = v^R - \frac{\pi r}{2} < 0$$

- Information acquisition is “cheap”

General Setup

- Sender transmits message $m \subseteq [0, 2\pi)$ to try to induce a match
- Message is tailored through information acquisition
 - ▶ Sender chooses the level of information $\alpha \in [0, 1]$
 - ▶ Learns receiver's location with probability α
 - ▶ Receiver observes information level and message and decides whether to match ($a = 1$) or not ($a = 0$)

Timing



Solution Strategy

Focus on Informative PBE

- Receiver's beliefs depend on her own location, the message and the information level:

$$\widehat{f_{q|\theta,m,\alpha}} = \frac{f_{m^*|\theta,q,\alpha} \cdot f_{q|\theta,\alpha}}{f_{m^*|\theta,\alpha}} = \frac{f_{m^*|\theta,q,\alpha} \cdot f_q}{\int_0^{2\pi} f_{m^*|\theta,q,\alpha} \cdot f_q dq}$$

Sender's Communication Policy

- Uninformed sender reveals own location
- Informed sender picks a message $m \in C_\theta$
- Optimal communication policy:

$$f_{m^*|\theta,q,\alpha} = \alpha\phi(m, q, \theta, \alpha) + (1 - \alpha)\delta(m - q)$$

Results

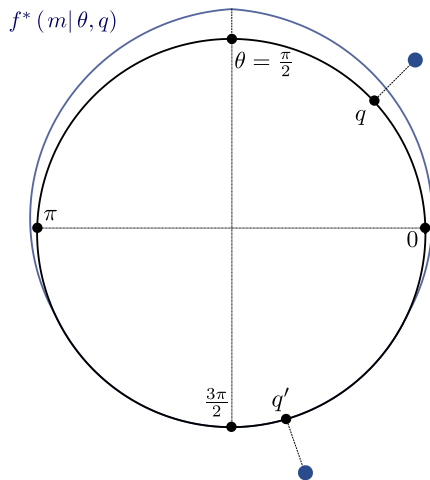
Lemma 1 (Willful Ignorance)

- The level of information acquisition associated with the sender's first-best payoff is given by

$$\bar{\alpha}^* = \left(\frac{v^R}{\pi r - v^R} \right)^2 \in (0, 1)$$

- The first-best information level makes the receiver indifferent between matching and not

Theorem 1: Optimal Communication Policy



Implications

Corollary 1

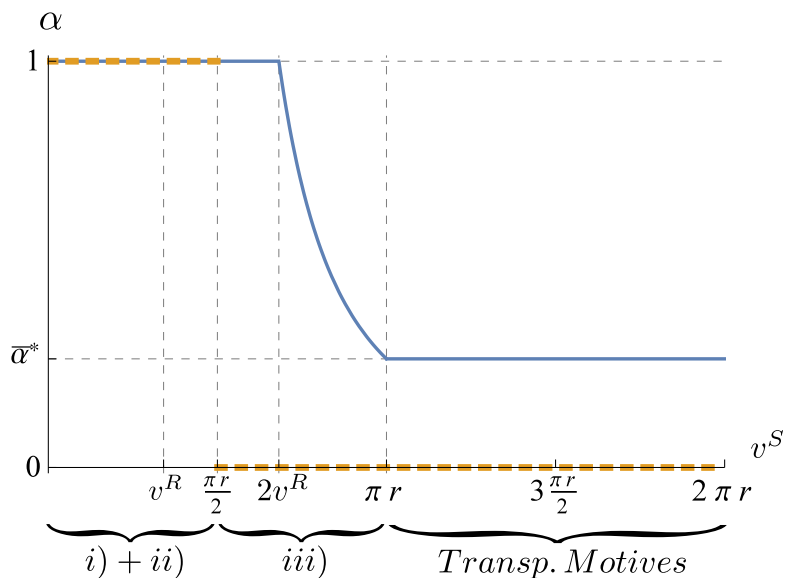
Only the equilibrium outcome associated with the sender's first-best level of information acquisition survives forward induction

Corollary 2

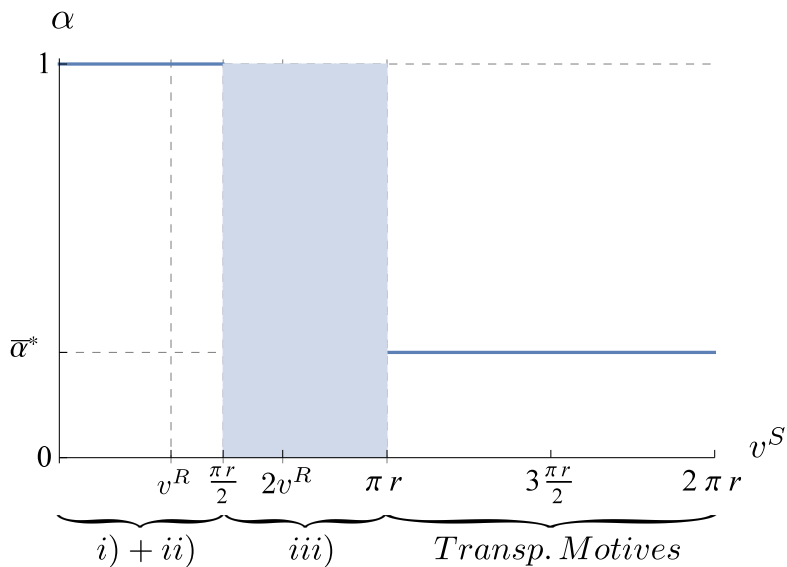
The sender's first-best information acquisition policy makes both the receiver's ex-ante utility and expected utility (conditional on any given message) equal to zero

Welfare Analysis

First-best Information Levels



Joint Welfare Maximization



Results

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Results

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- In the limit, consumers would hear what they like and believe none of it
- Firms have it in their best interest to disclose their information acquisition efforts
- Moreover, firms are better off if they engage in partial willful ignorance about consumer preferences
- Consumers are better off revealing their preferences only in thin product markets

Next Steps

- Communication cost
 - ▶ Message is still relevant as communication costs increase
- Observability of information level α
 - ▶ If α completely unobservable, credibility completely breaks down
 - ▶ Sender has an incentive to transmit α
 - ▶ Robust to communication errors (Schelling 1960)
 - ▶ Results hold under imperfect observability (Bagwell 1995, Van Damme and Hurkens 1997)
- Prices / Vertical Competition
 - ▶ Easy to incorporate (hold-up problem)
 - ★ Bagwell and Ramey (1993), Gardete (2013)

Conclusion

- Tradeoff in information acquisition:
 - ▶ Sender prefers more information: can tailor to receiver's preferences better
 - ▶ Strategic receivers understand that more attractive claims are also more likely to have been tailored
- Sender may prefer to limit information acquisition to keep communication credible
- Receiver either prefers complete privacy or complete information

Thank you