

Theory of Online Labor Markets

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Tuesday February 19, 2019

Theory of OLMs: A Progression

- David Autor (JEP '01)
 - The effect of the internet on labor markets
 - The emergence of online labor markets
- John Horton (WINE '10)
 - Designing online labor markets
- Agrawal, Horton, Lacetera, & Lyons (NBER '15)
 - Designing online labor markets...
 - Taking into account the effects of online labor markets on the offline labor market

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Online labor markets are changing rapidly...
... but market design considerations remain strikingly similar.

Motivating Questions

- What is **distinctive** about online labor markets?
 - How do online labor markets fit into the broader ecosystem of labor markets?
 - How has this changed over time?
- What types of **market failures** occur in labor markets?
 - Specifically in online labor markets?
- How can **mechanism design** address these market failures?
 - What are the main challenges in doing so?

Autor '01, *Wiring the Labor Market*

What effects will the internet have on labor markets? [job boards]

- What **potential benefits** can the internet have on labor markets?
 - Improved employer-employee matching
 - Reduced costs through online provision of work
 - Globalization of work
- What are some **potential drawbacks**?
 - Adverse selection of job applicants
 - Increased segregation by skill
 - Increased wage inequality

Autor '01, *Wiring the Labor Market*

What effects will the internet have on labor markets? [job boards]

Potential benefits:

- Improved employer-employee match efficiency
 - More and updated information
 - Two-sided signaling and screening
 - Reduced search frictions
- Reduced costs through online provision of work and training
 - Telecommuting vs. physical commuting
 - Online skill acquisition
- Globalization of work
 - Increased elasticity of labor supply and demand, mitigate local unemployment
 - Geographic dispersion of related items: Suppliers of goods have less incentive to locate near demanders ([Kolko, '99](#))

Potential drawbacks:

- Adverse selection of job applicants
 - Excess applications
 - Beliefs that online applicants are adversely selected
 - “Talent mining” of passive job candidates
- Increased segregation by skill
 - Simple example of segregation with high-skill and low-skill types and technologies, which harms low-skill workers
- Increased wage inequality
 - Integrating markets can lead to price dispersion or increase provision of low-skilled workers, decreasing low-skill wage
 - “The economics of superstars” ([Rosen '81](#))

Motivating Questions

- What is **distinctive** about online labor markets?
 - **Autor:** Imperfect and asymmetric information
- What types of **market failures** occur in labor markets?
 - **Autor:** Adverse selection, segregation and inequality
- How can **mechanism design** address these market failures?
 - **Autor:** Online skill accreditation and reputation systems; online collective action and unions

Horton '10, *Online Labor Markets*

How should we design online labor markets? [oDesk → Upwork]

Def. Online Labor Market:

A market where (1) labor is exchanged for money, (2) the product of that labor is delivered “over a wire” and (3) the allocation of labor and money is determined by a collection of buyers and sellers operating within a price system.

- Market Design:
 - Price and Price Structure
 - Ad valorem (commission) vs lump sum fees
 - Optimal ad valorem fees suggest large supply and demand elasticity
 - Recruitment
 - Increasing demand increases revenue
 - Increasing supply likely to increase revenue when supply and demand highly elastic

Motivating Questions

- What is **distinctive** about online labor markets?
 - Autor: Imperfect and asymmetric information
 - **Horton:** High heterogeneity on both sides; less relational than traditional labor markets but still delivered over time
- What types of **market failures** occur in labor markets?
 - Autor: Adverse selection, segregation and inequality
 - **Horton:** Adverse selection and moral hazard
- How can **mechanism design** address these market failures?
 - Autor: Online skill accreditation and reputation systems; Online collective action and unions
 - **Horton:** Determine permissible actions; Increase buy-side (reputation systems, work history) and supply-side (payment history, other past behavior) information

Agrawal et al. '15, *Digitization and the Contract Labor Market*

How should we design online labor markets...

...taking into account effects on the offline labor market?

- **Market Features:**
 - Rapid Growth
 - North-South Trade
 - Sensitivity to Information-Based Frictions
- **Research Agenda:**
 - Distributional Effects
 - Market Design
 - Social Welfare
- **Challenges:**
 - Costs of obtaining offline data
 - Generalizability given rapid technological change
 - Misaligned interests of those who own data

Agrawal et al. '15, *Digitization and the Contract Labor Market*

How should we design online labor markets...

...taking into account effects on the offline labor market?

Potential benefits:

- Decreased employer costs
 - Lower costs of search, communication, and transportation
 - Broader pool of suitable workers
 - Reduced search frictions
- Increased worker opportunity
 - Flexibility of contractors vs. employees
 - Long-tailed effect in demand for video rentals
 - E.g. Dettling '11, Increased female labor force participation
- North-South trade
 - Efficiency gains in production

Potential drawbacks:

- Decreased employer information
 - Hidden-quality problems
 - Difficulty in monitoring/verifying effort
 - Employer moral hazard
 - **High sensitivity to information frictions** ([Pallais '14](#))
- Decreased protections for workers
 - **Uncertain duration/conditions of work, lack of benefits** (e.g. [Gray & Suri '19](#))
 - Online feedback systems could increase superstar effect (e.g. [Horton '17](#))
- North-south trade
 - Costly cultural diversity in work teams
 - Fairness and honesty of employers (e.g. [Horton '11](#))

Motivating Questions

- What is **distinctive** about online labor markets?
 - Autor: Imperfect and asymmetric information
 - Horton: High heterogeneity on both sides; less relational than traditional labor markets but still delivered over time
 - **Agrawal et al.:** Rapid growth; high sensitivity to informational frictions; long-distance north-south trade
- What types of **market failures** occur in labor markets?
 - Autor: Adverse selection, segregation and inequality
 - Horton: Adverse selection and moral hazard
 - **Agrawal et al.:** Moral hazard, superstar effect
- How can **mechanism design** address these market failures?
 - Autor: Online skill accreditation and reputation systems; Online collective action and unions
 - Horton: Determine permissible actions; Increase buy-side (reputation systems, work history) and supply-side (payment history, other past behavior) information
 - **Agrawal et al.:** Monitoring options, platform as regulator and mediator, scoring and recommendation systems (e.g. [Horton '17](#)), career trajectory support, signaling and congestion control, market thickness through segmentation

Conclusion

- What is **distinctive** about online labor markets?
 - Very heterogeneous imperfect & asymmetric information, high sensitivity to information frictions
 - Rapid growth, elastic labor supply and demand, short-term contract relationships
 - Globalization, long-distance north-south trade
- What types of **market failures** occur in labor markets?
 - Adverse selection, moral hazard, superstar effect, segregation and inequality
- How can **mechanism design** address these market failures?
 - Mechanisms for increasing buy-side and supply-side information (e.g. scoring and recommendations, signaling)
 - Mechanisms for increasing credible signals (e.g. skill accreditation and reputation systems, work or payment history, monitoring)
 - Mechanisms for balancing supply and demand (e.g. market thickness through segmentation, platform growth, restricting actions or information)
 - Worker support (e.g. built-in regulation, career trajectory support, online collective action and unions)

Are there other OLM distinctives, market failures, or possible mechanism design solutions? How are these affected by major changes currently occurring in OLMs?

References

Presentation based on:

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