

The risks of crowdworking - an agent-based approach -

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- 1 Crowdfunding
- 2 Why an agent-based model?
- 3 Results

1 Crowdfunding

2 Why an agent-based model?

3 Results

Crowdworking

- **Crowdsourcing:**
A crowd of people contributes to a common goal
- **Crowdworking:**
participants get financial compensation for their contributions
 - New way to generate income
 - New way to have access to a huge workforce
 - Heavily **criticized**

Crowdworking - Criticism

- Crowdworkers work below minimum wage (sometimes 1\$/h)
- No control of working conditions
- No social security
- Risk of (self-) exploitation
- Risk of **wage dumping**

These risks are unknown and very sensitive to the specific variant of crowdworking (i.e. how are the contracts distributed and how are the wages determined)

Cheapest Offer

- All workers can apply for all contracts
- The **workers decide** how much payment they want
- Platform selects the cheapest offer

Quality Requirement

- Each contract has a **minimal requirement** of qualification
- The **workers decide** how much payment they want
- Platform selects the cheapest offer

Crowdworking - Variants

First Offer

- All workers can apply for all contracts
- The client (or platform) decides how much they want to pay
- The worker, who **applies first**, gets the contract

Best Quality

- All workers can apply for all contracts
- The client (or platform) decides how much they want to pay
- The worker, with the **best qualification**, gets the contract

What do we want to find out?

Research Goal

Which of these Crowdfunding variants is most problematic for

- wage dumping
- job security
- work quality

What mechanisms drive these Crowdfunding variants?

Outline

1 Crowdfunding

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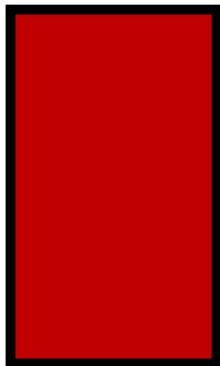
Problems

- Crowdfunding is quite young
- No reliable statistical data
- Statements from crowdworkers and statements from platforms diverge
- Working time and hourly wages are completely inaccessible

Equation-based approach

2 entities: **contracts** and **crowdworkers** connected by a platform

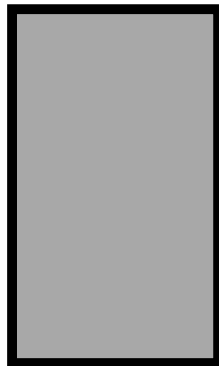
Contracts



Platform



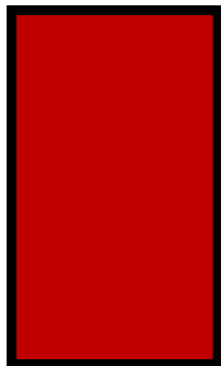
Crowdworkers



Equation-based approach

Problem: macro-scale results are not interesting

Contracts

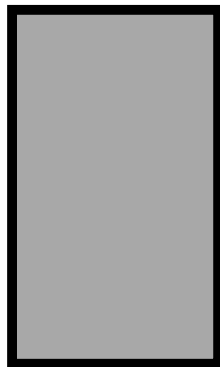


1000 MU

Platform



Crowdworkers

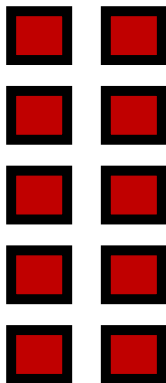


1000/N MU

Agent-based approach

Separate the entities into individual agents

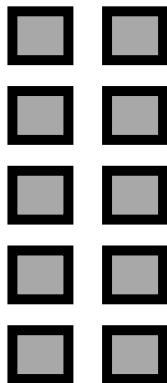
Contracts



Platform



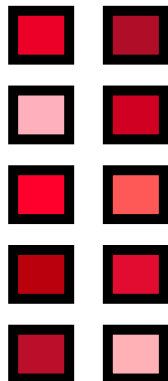
Crowdworkers



Agent-based approach

Give the contracts different difficulties

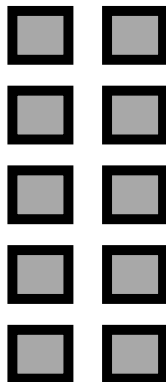
Contracts



Platform



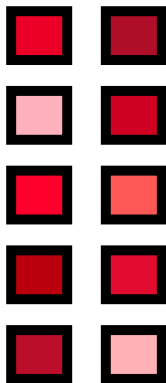
Crowdworkers



Agent-based approach

Give the workers different qualifications

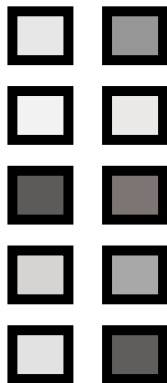
Contracts



Platform



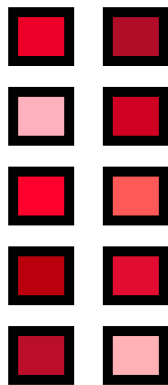
Crowdworkers



Agent-based approach

Individualize the workers further (income expectation, cost of life, ...)

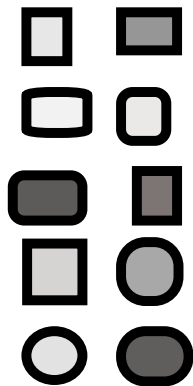
Contracts



Platform



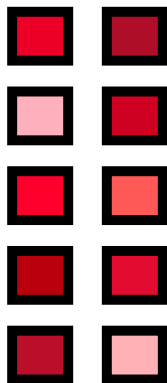
Crowdworkers



Agent-based approach

Let the agents interact: interesting dynamic develops

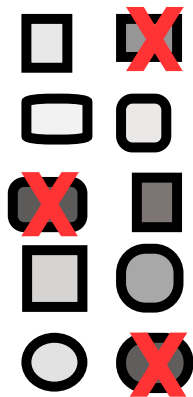
Contracts



Platform



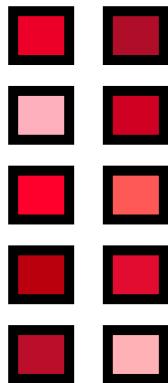
Crowdworkers



Agent-based approach

Let the agents interact: interesting dynamic develops

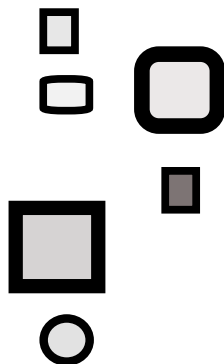
Contracts



Platform



Crowdworkers



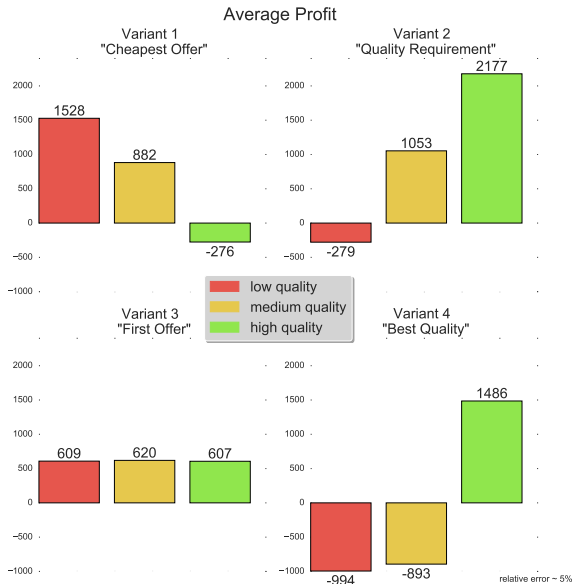
Agent-based approach

- We can investigate a system with **non-trivial dynamics**
- We need **no calibration** to empirical data
- We can **compare** different scenarios
- We have access to interesting **micro-scale results**

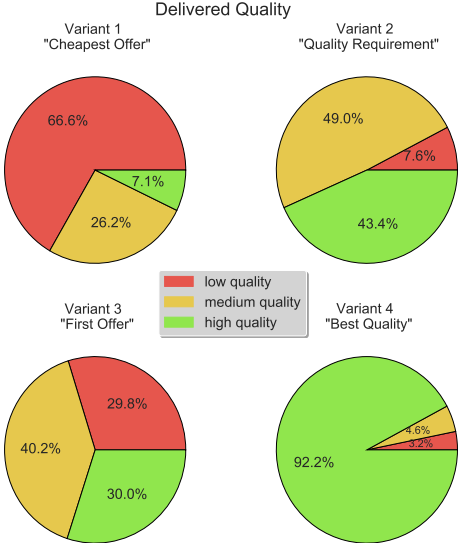
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Average Profit

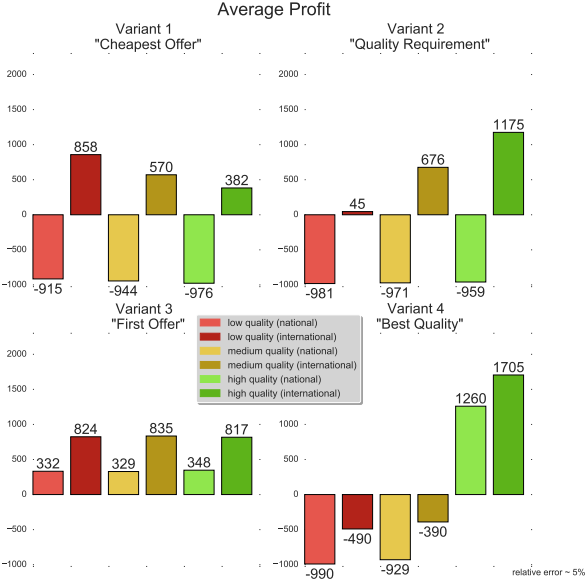


Delivered Quality



relative error ~ 4%

International Competition



Further insights

- A big **driving force** of CW platforms can be workers, who try to generate profit, but fail
- Many individuals try crowdworking only for a short time
- Some individuals can earn enough to cover their cost of life, but in a **continuous struggle**
- Single individuals can develop very successful strategies

Why agent-based modeling?

Simple model without the need for calibration in order to

- investigate different scenarios,
- make predictions,
- gain **understanding** of processes, and **driving forces** of crowdworking.