Will P2P insurance replace traditional insurance ?

An (in-the-lab) experimental study

Charles Davenne,
EconomiX/Yakman

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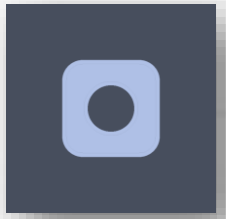
About the speaker

Charles Davenne

- PhD student in behavioral economics at EconomiX (supervisor : Meglena Jeleva)
- Funded by Yakman (CIFRE) (supervisor : Christophe Neves)



EconomiX / Yakman

- EconomiX : Economics research laboratory of Paris Nanterre
- Yakman : Start up specialized in P2P insurance

Plan

- Introduction
- Experimental design
- Results
- Conclusion

Introduction
What about *P2P* and insurance ?

- A commercial deadlock…
  - Commercial failures of most P2P model (B2C)

- …which has not yet said its last word :
  - Alibaba reinvents healthcare thanks to a P2P model (2019)
  - Real commercial success / Over 100 millions users.

- Pool consumers contributions without insurance carrier to reach self-insurance keeps showing its potential.

- Can consumers trust P2P model for damage coverage ?

- Experiment based on Yakman : new B2B2C approach of P2P insurance.

Introduction
P2P model : main characteristics (Yakman)

- Coverage model based on common pot principle:
  - Contributions stored in a common pot.
  - Lump sum compensation payed in less than 72 hours
  - Remaining funds are redistributed when coverage ends
  - Claims management is provided by users
- Main advantages :
  - Agile response to new consumer's needs *(time-to-market)*
  - Reduction of go-to-market costs and claims management costs
  - Transparent financial flow for the consumer
- Main limitation :
  - Limited financial capacity : risk of non-compensation if claims exceeds funds available in the common pot.

Introduction
Motivations

- Through an experimental setting, we sought to answer the following questions :

  - Are there individual or risk characteristics that explain common pot choice ?
    - Social preferences / Risk aversion
    - Value of the good / Probability of loss

  - What is the best way to deal with the risk of non-compensation ?
    - Test of an informational nudge

  - Is group identification essential for the common pot to be chosen ?
    - Adding a group effect

Introduction
Methodology

- Predictions from :
  - Theoretical model (insurance microeconomics) :
    - Modelling insurance and common pot demand
  - Related literature
    - Nudging, group effect and social preferences

- Testing predictions in an experimental setting :
  - Incentivized games (Main task and control tasks)
  - Main task : participants exposed to damage risks with possibility to choose between different types of coverage (insurance, common pot) or no coverage

Introduction
Theoretical model

- Standard vNM Expected utility model :
  - Insurance demand modelization
  - Common pot demand modelization
  - Optimum comparison *(simulation)*

- Predictions :
  - Risk characteristics should not affect the probability to prefer common pot to insurance.
  - Common pot should be preferred by low risk adverse profiles while insurance should be preferred by high risk adverse profiles.

Introduction
Related literature

- Social preferences : *Charness, Rabin (2002)*
- Nudge experimentation : *Banerjee et al. (2014)*
- Group identification and pro-social behavior : *Baldassarri D, Grossman G (2013)*
- Predictions :
  - Individuals with pro-social preferences should prioritize common pot coverage
  - Giving to participants a statistic for the risk of non-compensation should reduce disutility associated to this paramater
  - Introducing a group effect should increase the probability for the common pot to be chosen

Introduction
Hypotheses to be tested

The probability to choose common pot rather than insurance :

- H1 : increases with social preferences – *related literature*
- H2 : increases when nudge is implemented – *related literature*
- H3 : increases more when group effect is added – *related literature*
- H4 : decreases with risk aversion – *theoretical model*
- H5 : is independent of risk characteristics (value of the good and probability of loss) – *theoretical model*

Experimental design
Main task

- Participants are exposed to 4 loss scenarios (2x2) :
  - Value of insured good : 500 E.C.U / 1500 E.C.U
  - Probability of loss : 5% / 15%
- For each scenario participants can either choose to :
  - Not cover
  - Cover with a traditional insurance
  - Cover with a common pot
- 2 treatments :

	Control	Treatment 1	Treatment 2
Statistic about the risk of non compensation with the common pot	NO	YES	YES
Group effect	NO	NO	YES

Experimental design
Main task (control)

Situation	1
Value of the good :	750 E.C.U
Probability of loss :	10 chances out of 100

Options	No coverage	Insurance	Common pot
Premium :	0	75 E.C.U	75 E.C.U
Compensation :		525 E.C.U	525 E.C.U
Risk of non-compensation:		0%	No compensation if the common pot is empty
Expected redistribution :		0 E.C.U	19 E.C.U
Compensation delay :		YES	NO
Subscribe :	Choose	Choose	Choose

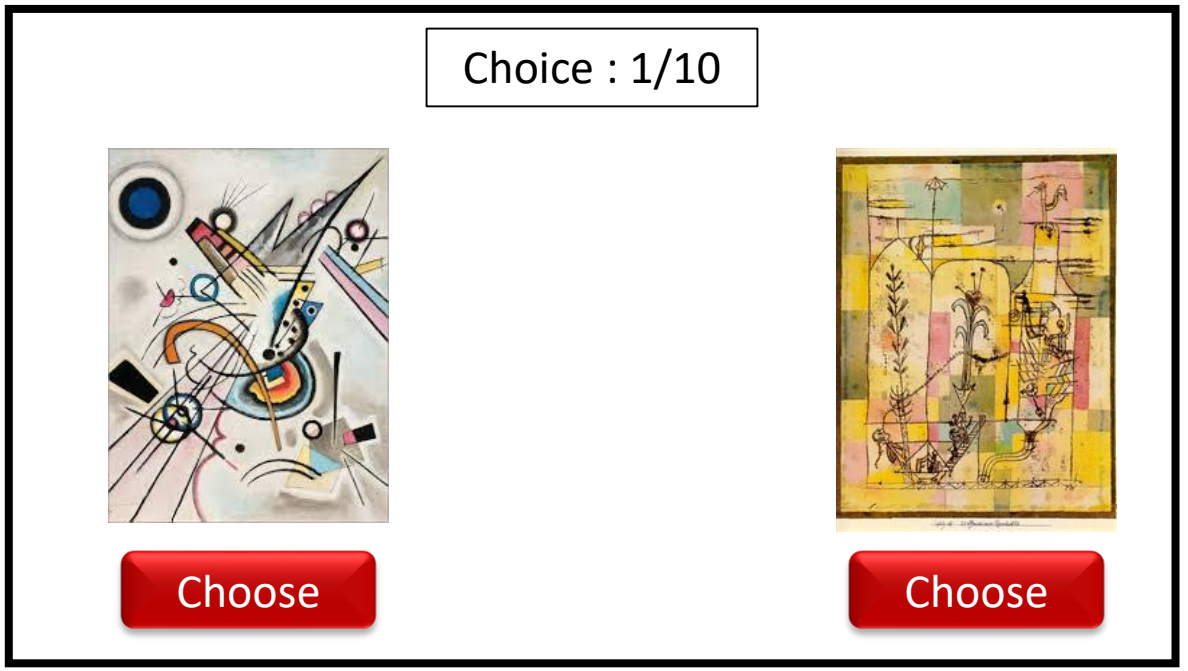
Experimental design
Main task - Treatment 1 (*nudge*)

Situation	1
Value of the good :	750 E.C.U
Probability of loss :	10 chances out of 100

Options	No coverage	Insurance	Common pot
Premium :	0	75 E.C.U	75 E.C.U
Compensation :		525 E.C.U	525 E.C.U
Risk of non-compensation:		0%	1%
Expected redistribution :		0 E.C.U	19 E.C.U
Compensation delay :		YES	NO
Subscribe :	Choose	Choose	Choose

Experimental design
Main task - Treatment 2 (*nudge + group effect*)

- Step 0: Artificially generate groups based on individual preferences (*Gioia (2017)*)



- Group attribution based on individual choices :
  - For instance : You belong to « KANDINSKY » group

Experimental design
Main task - Treatment 2 (*nudge + group effect*)

Situation	1
Value of the good :	750 E.C.U
Probability of loss :	10 chances out of 100

Options	No coverage	Insurance	Common pot KANDINSKY
Premium :	0	75 E.C.U	75 E.C.U
Compensation :		525 E.C.U	525 E.C.U
Probability of non-compensation:		0%	1%
Expected redistribution :		0 E.C.U	19 E.C.U
Compensation delay :		YES	NO
Subscribe :	Choose	Choose	Choose

Experimental design
Control tasks

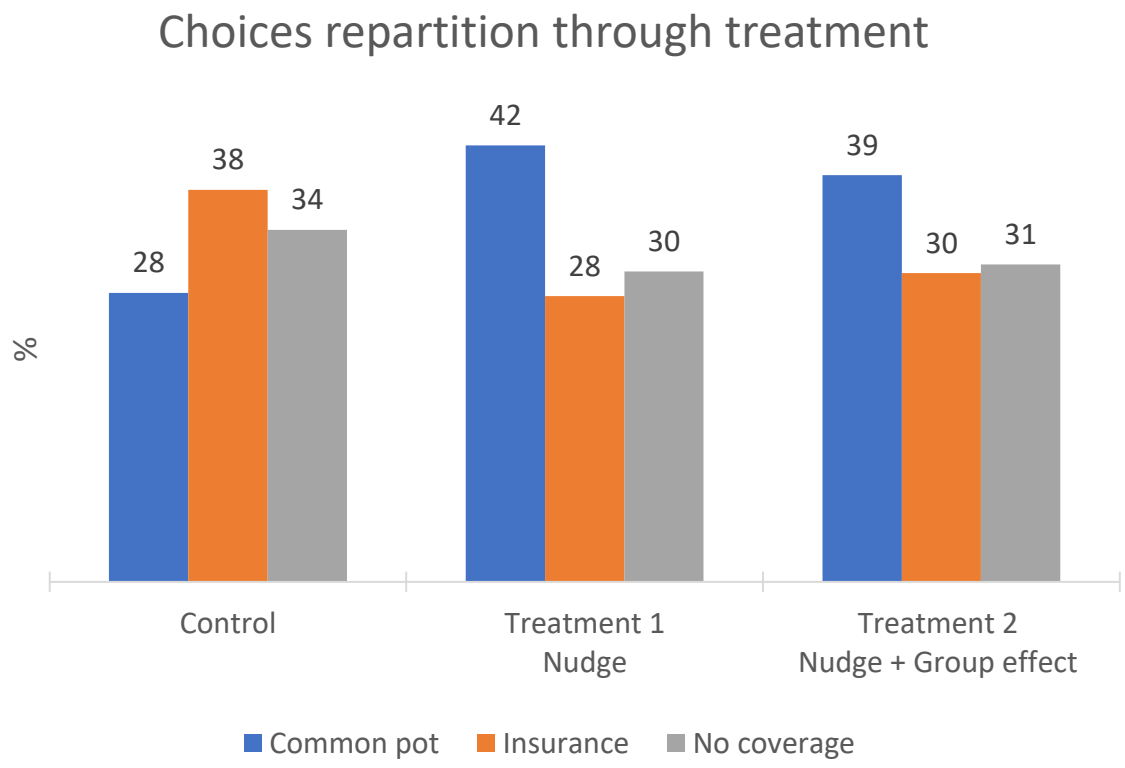
- Risk aversion :
  - Holt & Laury (2002) in loss domain (incentivized)
    - 10 successive choices between loss lotteries (MPL)
- Social preferences :
  - One shot public good game (incentivized)
    - N=4
    - MPCR=0.3
- Time preferences :
  - Time preferences survey
- Sociodemographics :
  - Age, gender, academic level etc.
- Insurance background :
  - Insurance survey

Experimental design
General informations

- Run in LEEP (Laboratoire d'Economie Expérimentale de Paris)
- Duration of the experiment : 45"
- Pay off procedure (RLI) :
  - One scenario randomly chosen at the end of the experiment
- Average payoff : 13.7 €
- Treatment setup : *between* subject.
- 163 participants (163x12=1956 choices) :
  - Control : 56 participants
  - Treatment 1 : 56 participants
  - Treatment 2 : 51 participants
- Software : Z-TREE

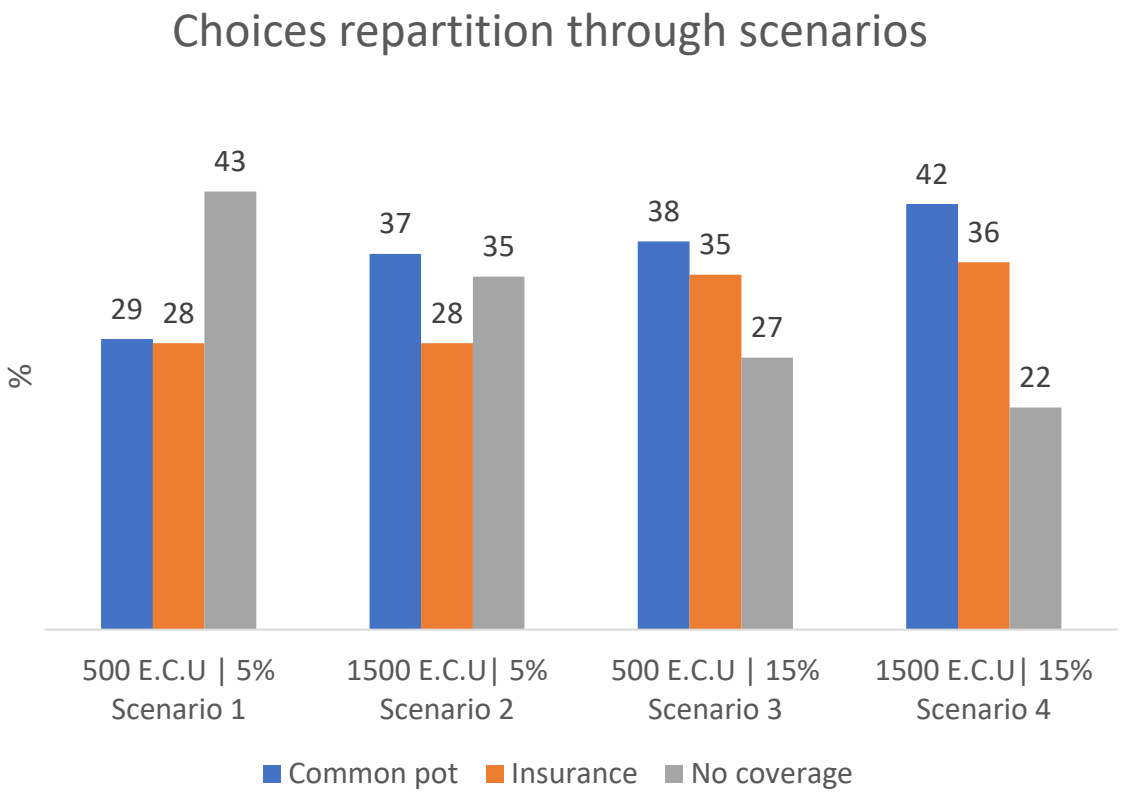
Results
Overview : treatments

- On average (all treatments combined) common pot is the most chosen option (36%) followed by insurance (32%) and no coverage (32%)
- Treatments 1 and 2 have a strong positive effect on common pot choices (X^2, Pr=0.000)
- Difference between treatment 1 and 2 is not significant (X^2, Pr=0.536)



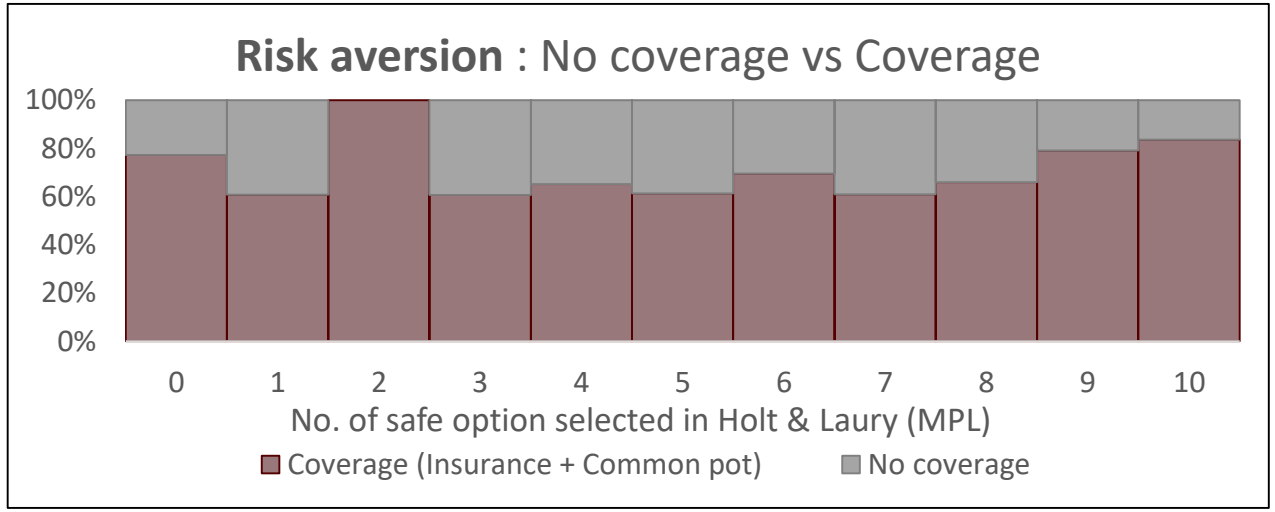
Results
Overview : risk characteristics

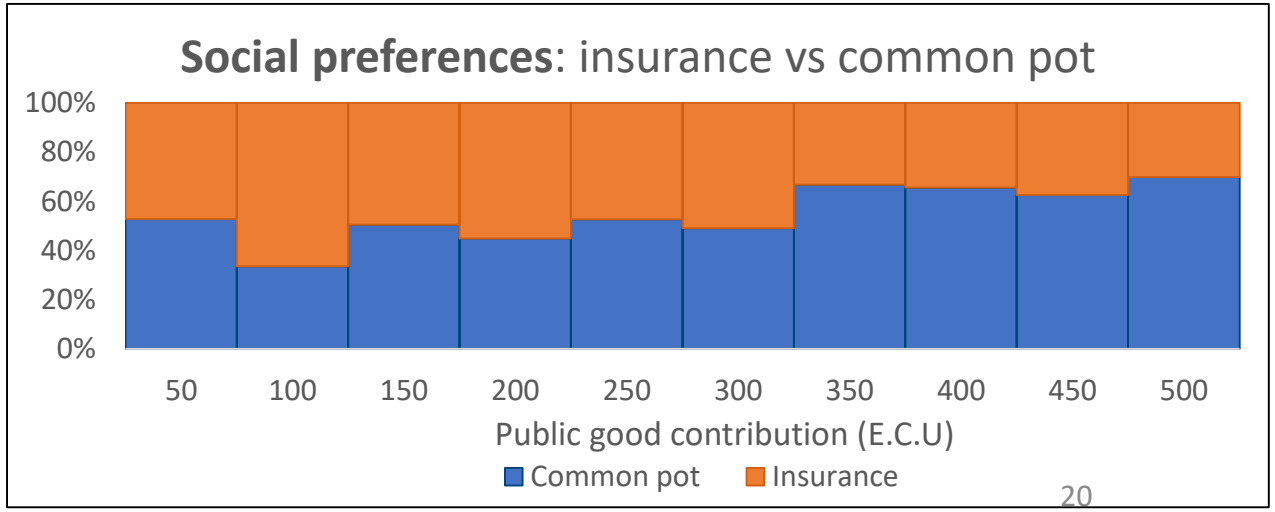
- No coverage decreases with both value of the good and probability of loss.
- Both insurance and common pot increase with probability of loss regardless of the value of the good
- Common pot captures all new coverage needs when value of the good increases for low frequency loss (scenario 1 to scenario 2)



Results
Overview : risk aversion and social preferences

- For risk adverse participants (>5) coverage increases with risk aversion
- No statistically significant correlation between risk aversion and preference for insurance.
- Strong positive correlation between social preferences and probability to choose common pot rather than insurance





Results
Maximum Likelihood Estimation : Conditional logit (1)

Alternative-specific variable	Coef.	Robust Std. Err.				
loading_rate	-1.219195***	.3017647				
Option	**No coverage (NC)**		**Insurance (INS)**		**Common pot (CP)**	
Case-specific variables	**Coef.**	**Robust Std. Err.**	**Coef.**	**Robust Std. Err.**	**Coef.**	**Robust Std. Err.**
value_of_good	-0.3993951***	0.1138507	-0.159626	0.112282	**(base)**	
loss_probability	-0.6942375***	0.1144731	0.018055	0.1126803	**(base)**	
risk	-0.0448506**	0.0198931	0.0125612	0.0209039	**(base)**	
social_preferences	-0.1256324***	0.0179774	-0.1125527***	0.0169922	**(base)**	
time_preferences	-0.0160006	0.0220898	0.0009145	0.0243125	**(base)**	
nudge	-0.482527***	0.1395941	-0.6751655***	0.1379801	**(base)**	
nudge + group effect	-0.4207106***	0.1447528	-0.5565874***	0.1424266	**(base)**	
const	1.122335***	0.2491507	0.823711***	0.218785	**(base)**	

*Significance levels : *: 10% | **: 5% | ***: 1%*

Results
Maximum Likelihood Estimation : Conditional logit (2)

The probability to choose common pot rather than insurance :

- H1 : increases with social preferences ✓
  - (INS/CP : -0.1125527***)
- H2 : increases when nudge is implemented ✓
  - (INS/CP : -0.6751655***)
- H3 : increases more when group effect is implemented ✗
  - (Difference between *nudge* and *nudge+group effect* **not significant**)
- H4 : decreases with risk aversion ✗
  - (INS/CP : 0.0125 (**n.s**))
- H5 : is independent of risk characteristics ✓
  - (INS/CP (*value_of_good*) : -0.159626 (**n.s**) and INS/CP (*loss_probability*) : 0.018055 (**n.s**))

Conclusion

- Participants trust P2P model for damage coverage as much as they trust traditional insurance.
- Risk of non-compensation is not an issue especially if transparency is implemented.
- Group identification is not essential for common pot to be chosen.
- Experimental design improvement :
  - Control efficiency of the implementation of the group effect with (in-group/out-group) dictator games.
  - Control understanding on risk aversion task
- Upcoming experiments :
  - Common pot and fraud
  - Common pot and prevention
- For any questions, please feel free to contact me : charles.davenne@yakman.com

Thank you for your attention

Contact details :

YAKMAN :

Tour Bretagne

44036 Nantes
France

charles.davenne@yakman.com

EconomiX :

200 Avenue de la République

92000 Nanterre
France

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