

Licensing Effect and Insurance Fraud

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- Insurance fraud is an important issue for insurer: the insurance fraud cost is estimated at €2.5 B. per years and the insurers' fight against it permitted to recovered €265 M. in 2016 (2016, FFA, France).
- Difficulty to collect empirical data about fraud behaviors...
- A growing up literature on this topic from an experimental point of view:
 - Effects of control type (bonus-malus vs audit) : Gabaldón et al. (2014)
 - Effects of contract design (full coverage or deductible): Lammers and Schiller (2010)

In the insurance fraud literature, economic agents **are or are not fraudsters** whatever the past context (Picard 1996, 1999), Dionne et al. (2003, 2005), Deghampour and Rezvani (2013).

The purpose of this paper is to **determine the conditions** leading economic agents to adopt dishonest behavior.

Why talking about Licensing effect in Insurance fraud?

- **The licensing effect** is defined as people allow themselves to do something bad (e.g. immoral) after doing something good (e.g. moral)(Khan and Dhar(2006)): *“Past good deeds can liberate individuals to engage in behaviors that are immoral, unethical, or otherwise problematic, behaviors that they would otherwise avoid for fear of feeling or appearing immoral”*.
- First application in social behaviors and public contributions Monin and Miller (2001), Mazar et Zhong, (2010), Blanken, Van de Ven and Zeelenberg (2015) - meta-analysis of 91 studies.

- In insurance, the licensing effect could appear when insured has paid for many years without declaring any sinister and has incentive to build-up their amount of claim (i.e. fraud behavior) in order to compensate previous expenses.
- When an insured receive from the insurer the call for the annual premium, how does she perceive the payment of the last year premium (without claim)?
 - as a cost: which covered her against a risk?
 - or as a dead-loss?
- Licensing effect of fraud could explain small (built-up fraud) but frequent fraud behaviors from an important part of the population: Ichino and Muehlheusser (2008),

What we want to test?

- The effects of contract design: full coverage or deductible (controlling selection effects)
- The effects of time, frequency and amount of loss (with different frequency and sequences of loss events)

What we have to control?

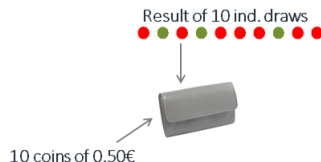
- Individuals' honesty
- Risk aversion

- ① Elicitation of honesty behaviors (Mouminoux and Rullière, 2018)
- ② Insurance game with self-claim of loss amount
- ③ Elicitation of risk aversion in the gain and loss domain (Holt and Laury, 2002)

Elicitation of honesty behaviors (Mouminoux and Rullière, 2018)

- Cohn et al. (2019)
⇒ Civic Honesty around the globe (Science)
- Cohn et al. (2015)
⇒ honesty based on a deviation from a explicit rule but not at the individual level

Elicitation of honest behaviors (Mouminoux and Rullière, 2018)



With the following instruction:

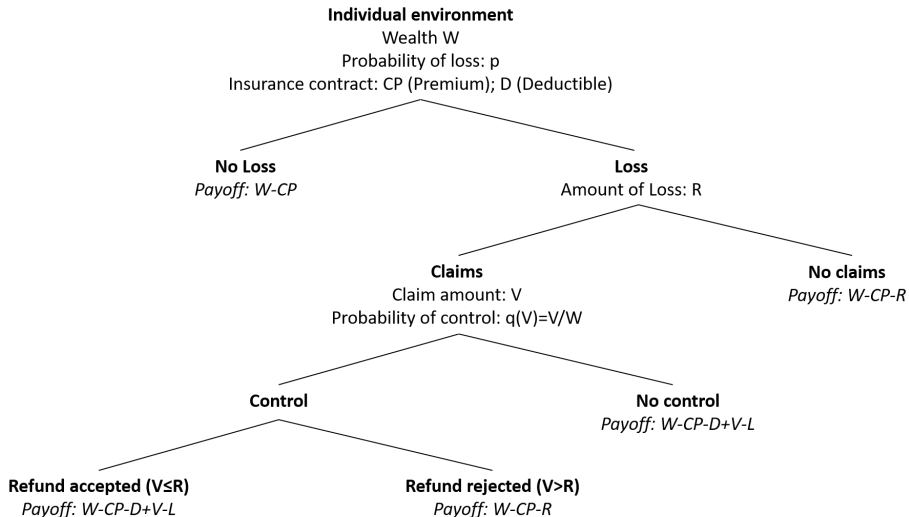
- For each green ball, you can take a coin;
- For each red ball, you should leave a coin.

No way to identify defection

This part is followed by a questionnaire asking subjects: How much would you take if you had received the following draw? (displaying all distributed draws)

→ this part allows us to correct our individual honesty measure with respect to lucky vs. unlucky draws (Mouminoux and Rullière, 2018).

Insurance Game



Parameters:

- 20 dependant periods with the following information about the loss probability: "During a period of 10 years, people have in average 2 losses" without information about the average amount of loss in order to avoid reference point effect. (i.e. wealth is initialized and the same at the beginning of each period: 200 ECU).
- two contract types: 100% or 75% coverage (randomly assigned) with an equal loading factor of 5%.
- losses are randomly drawn between 50, 100 and 150 ECU
- two loss frequencies (randomly assigned) 15% (i.e. 3 losses in 20 periods) or 25% (i.e. 5 losses in 20 periods) with different temporal interval treatment (randomly assigned):
 - equal periods number between each loss event (Control)
 - one loss in an early stage and others in the later stages (Treatment 1)
 - all loss events in the later stages (Treatment 2)

Without taking into account past insurance history and under her risk aversion level r_i , for each period t , a subject i having a loss $R_{i,t}$ maximizes:

$$\max_{V_{i,t}} \begin{cases} (1 - q(V_{i,t}))U(W - CP_i - D_i + V_{i,t} - R_{i,t} \mid r_i) + q(V_{i,t})U(W - CP_i - R_{i,t} \mid r_i) & V_{i,t} \in]R_{i,t}, W] \\ U(W - CP_i - D_i + V_{i,t} - R_{i,t} \mid r_i) & V_{i,t} \leq R_{i,t} \end{cases} \quad (1)$$

Where $V_{i,t}$ is the individual decision variable corresponding to the loss claim amount.

Theoretical results:

- individuals never declare $V_{i,t} < R_{i,t}$
- a decrease of loss amount leads to an increase of fraud frequency
- a decrease of risk aversion leads to increase of fraud amount and frequency (built-up)
- a partial coverage increases fraud behaviors: contract including deductible encourages fraud behaviors.

Potential behavioral evidences:

- an increase of honesty leads to a decrease of fraud ?
- an increase of loss frequency leads to an increase of fraud ? (unlucky effects)
- past audit leads to a decrease of fraud behaviors? (educative vertue of monitoring, in favor of a probabilities distortion biase)
- late loss event leads to an increase of fraud ? (licensing effects)

Experimental Results

Only one experimental session of 20 subjects (pilot stage) ... but encouraging results!

Losses / Claims	50	60	65	75	100	110	115	150	% of fraud	Average Built-up
50	20	3	1	2	0	0	0	0	23%	15,8
100					19	3	1	0	17%	11,3
150								24	0%	-

Contract Type	Number of claims	% of Fraud
Full coverage	19	0%
Partial Coverage	54	18%

Observed Fraud	Q ^o nb. From safe to risky option	Honesty deviation
Yes	3,38	0,15 €
No	4,13	0,06 €

Nb period without claims	0	1	2	3	4	5	7	8	9	11	13	14
Fraud = no	7	14	16	1	5	2	7	5	2	3	2	2
Fraud = Yes	2	1	1		1		3	1		1		
Total	9	15	17	1	6	2	10	6	2	4	2	2
%	22%	7%	6%	0%	17%	0%	30%	17%	0%	25%	0%	0%

- Needs of more experimental session...
- Idea on dynamic fraud decision modelling with endogeneous control in order to integrate licensing effect in our prediction model.
- All your comments, remarks, questions, and literature suggestions are really welcomed!

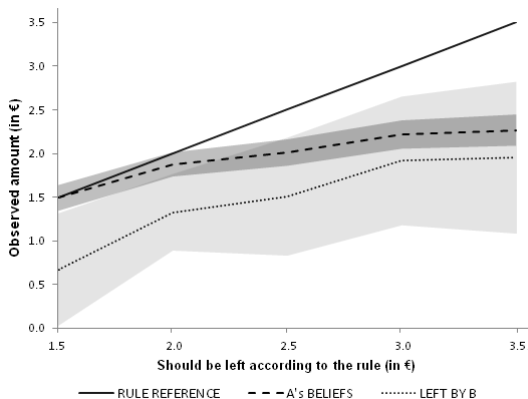
Joyce Berg, John Dickhaut, Kevin McCabe (1995). Trust, Reciprocity, and Social History. *Games and Economic Behavior*, Volume 10, Issue 1, Pages 122-142.

Alain Cohn, Michel André Maréchal, Thomas Noll, Bad Boys: How Criminal Identity Salience Affects Rule Violation, *The Review of Economic Studies*, Volume 82, Issue 4, October 2015, Pages 1289–1308.

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Appendix



Appendix

Round number

1/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

*During a period of 10 years, people
have in average 2 losses*

Play the round

Round number

1/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

*During a period of 10 years, people
have in average 2 losses*

You are incurring a loss amounting to $R1$.

Claim the loss

Next round

Round number

1/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

During a period of 10 years, people have in average 2 losses

You are incurring a loss amounting to $R1$.
Please claim your loss below.



Return

Previous Rounds'
Results

Submit my claims

Round number

1/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

During a period of 10 years, people have in average 2 losses

**You are incurring a loss amounting to $R1$.
Please claim your loss below.**



Return

Previous Rounds'
Results

Submit my claims

Round number

1/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

During a period of 10 years, people have in average 2 losses

You have been controlled.

Your claims is larger than the loss observed, there is no refund.

Rounds Summary

Round Number	Loss	Claims Amount	Control	Loss Observed	Refund Accepted	Your Gain
1	✓	V1	✓	R1	✗	$W-CP-R1 = X$

Next round

Appendix

Round number

2/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

*During a period of 10 years, people
have in average 2 losses*

Play the round

Round number

2/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

*During a period of 10 years, people
have in average 2 losses*

You are incurring a loss amounting to $R2$.

Claim the loss

Next round

Round number

2/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

During a period of 10 years, people have in average 2 losses

**You are incurring a loss amounting to $R2$.
Please claim your loss below.**



Return

Previous Rounds'
Results

Submit my claims

Round number

2/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk:

During a period of 10 years, people have in average 2 losses

You are incurring a loss amounting to R2.
Please claim your loss below.

Rounds Summary						
Round Number	Loss	Claims Amount	Control	Loss Observed	Refund Accepted	Your Gain
1	✓	V1	✓	R1	✗	$W - CP - R1 = X$

Return

Return

Submit my claims

Round number

2/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

During a period of 10 years, people have in average 2 losses

**You are incurring a loss amounting to $R2$.
Please claim your loss below.**



Return

Previous Rounds'
Results

Submit my claims

Round number

1/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

During a period of 10 years, people have in average 2 losses

**You have not been controlled.
Your refund is equal to $V2-D=G2$.**

Rounds Summary						
Round Number	Loss	Claims Amount	Control	Loss Observed	Refund Accepted	Your Gain
1	✓	$V1$	✓	$R1$	✗	$W-CP-R1 = X$
2	✓	$V2$	✗	-	✓	$W-CP-D+V2 = Y$

Next round

Appendix

Round number

3/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

*During a period of 10 years, people
have in average 2 losses*

Play the round

Round number

3/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

*During a period of 10 years, people
have in average 2 losses*

You are incurring a loss amounting to $R3$.

Claim the loss

Next round

Round number

3/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

During a period of 10 years, people have in average 2 losses

**You are incurring a loss amounting to $R3$.
Please claim your loss below.**



Return

Previous Rounds'
Results

Submit my claims

Round number

3/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

During a period of 10 years, people have in average 2 losses

**You are incurring a loss amounting to $R3$.
Please claim your loss below.**



Return

Previous Rounds'
Results

Submit my claims

Round number

3/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

During a period of 10 years, people have in average 2 losses

You have been controlled.
Your refund is accepted and equal to $V3-D=G3$

Rounds Summary						
Round Number	Loss	Claims Amount	Control	Loss Observed	Refund Accepted	Your Gain
1	✓	$V1$	✓	$R1$	✗	$W-CP-R1 = X$
2	✓	$V2$	✗	-	✓	$W-CP-D+V2 = Y$
3	✓	$V3$	✓	$R3$	✓	$W-CP-D+V3 = Z$

Next round

Appendix

Round number

4/20

Your wealth: W

Your insurance contract:

Premium: CP

Deductible: D

Nature of risk :

*During a period of 10 years, people
have in average 2 losses*

Play the round