Economie expérimentale

Coopération et évaluation : le cas d'ebay

Current thinking

- **The web site eBay founded on September 3, 1995 by computer programmer Pierre Omidyar constitutes a good illustration of the success of electronic marketplaces.**

  - eBay 2006 :
  - 60 million users either bid or listed an item on eBay
  - > 200 million transactions (computers, furnitures, vehicles, collectibles…)
  - $34.2 billion woth of goods
  - Frauds at less than 1 percent of all listing

Current thinking

- **Why do people trade on informal online markets**

- **The success of online markets constitutes a challenge for economists.**

  Indeed several features of online marketplaces make the occurrence of opportunistic behaviors much easier than in traditional markets
    - Anonymous traders
    - Changing one's identity
    - Isolated trades and
    - Geographical distance
    - Occasional relationship

Current thinking

❑ Examples of opportunistic behavior :

- Buyer's risk : delivery, quality.
  - The seller can be dishonest on
  - the quality (exaggerating the quality),
  - delivery (not shipping, shipping slowly, Shipping items other than those described)
  - Giving a deliberately misleading description
  - Returning items other than received

- Seller's risk : payment.
  - The buyer can be dishonest on the payment
  - Receiving merchandise and claiming otherwise
  - Credit card fraud, in the form of both stolen credit cards

➜ No Trust, no trade!!!

Current thinking

- **Some mechanisms are generally implemented in order to reduce opportunism on online market**
  - Centralized systems (*B2B*)
    - Centralized monitoring
    - Exclusion of opportunist traders

  - Decentralized systems (*E-Bay*)
    - Peer monitoring
    - Peer sanctioning

Current thinking

- ## Is Ebay Feedback Forum determinant for its succes?

    - *"The majority of people are honest and mean well. […]. But you can unfortunately, on occasion, run into unscrupulous folks, […] Our approach is to eliminate them systematically in order to protect the honest ones, and your active participation is vital to this effort. Sign up with eBay and make use of our evaluation procedure to leave comments on other members. Feel free to compliment those members who are deserving and cite grievances when merited."*
  - **Pierre Omidyar, *eBay* founder**

Current thinking : Ebay's Feedback

A brief survey ...

■ Empirical studies : the influence of rating and evaluation on prices and transactions

Ghose, Ipeirotis and Sundararajan (2006) AmazonMarketplace
Houser and Wooders (2005);0.17/0.24 eBay

■ Empirical studies on the determinants of evaluations

Dellarocas, Fan and Wood (2004) (altruism, reciprocity, selfish)
Resnick and Zeckhauser (2002)

■ Experimental studies on reputation, trust and evaluation

Bolton, Katok and Ockenfels (2004)
Chen, Hogg and Wozny (2004) : market game
Keser (2003) : trust game in e-Bay context

Research questions

-**Experimental investigation of ebay using a trust game**

The aims of our study are threefold :

First, we investigate **the effects** of evaluation on cooperation between traders

Second, we analyze **the different motives** for evaluating her/his partner

Research questions

⇒**The different motives for evaluating her/his partner :**

I may be willing to assign negative (positive) points to sanction (reward) an unfair (fair) behavior (payment, quality, delivery,…) **[Direct reciprocity]**

I may be willing to assign negative (positive) points for having received negative (positive)evaluation **[Indirect reciprocity]**

I may be willing to assign positive points because I expect that such points will lead my partner to reciprocate by sending me a positive evaluation **[Strategic reason]**

Research questions

✓<u>Third</u>, Does the introduction of mechanisms that reduce both strategic and non strategic evaluation incentives allow improving the informational content of evaluations and hence stimulating cooperation among partners?

Experimental design

■ Groups of 10 players (5 players A and 5 players B) playing **20 periods** of a **two stage game** under a *stranger matching protocol*

Stage 1 : Simultaneous Trust game (Berg, Dickhaut, McCabe, 1995)

- **Decisions**
  - Player A sends a part or all of her/his endowment to player B
  - Player B returns a part between zero and the received amount to player A

- **Payoff functions**
  - Player A's payoff : **10-sent amount +received amount**
  - Player B's payoff : **10+3*received amount-returned amount**

Stage 2 : Evaluation stage

Each player can evaluate   her/his partner (+1/-1 point of evaluation)

Evaluation is **directly costly** for the sanctioner : a cost of 1 point for evaluating   his/ her partner

Evaluation is **indirectly costly** for the sanctioned player : this cost is constituted by her/his feedback rating that will provide some information to future other partners at the beginning of each future period

Experimental design

- **4 experimental treatments**
  - *BASELINE :* **Trust game** (no stage 2)

  - *CURRENT :* **Trust game + stage 2 : Sequential Endogenous Evaluation**

    2 phases of evaluation : each participant is given the choice to either evaluate immediately (in phase 1) or to wait (phase 2).

Experimental design

- **VARIANT 1 : Trust game + stage 2 : Sequential exogenous Evaluation**

- The processing of VARIANT 1 is identical to the CURRENT system described above, except that the order in which players evaluate one another has been predetermined (randomly) by computer at each period.

Experimental design

- **VARIANT 2 : Trust game + stage 2 : Simultaneous Evaluation**

- The processing of VARIANT 2 is identical to the VARIANT 1 system described above, except that the decisions of evaluation are taken simultaneously

- 2007

Experimental design

- **Parameters of the experience**
  - Computerized experience using Z-tree Sofware
  - CREM/LABEX, France, Rennes
  - 246 players
  - Average Payment : 15 euro+3 euro

  - Sessions : 7 BASELINE sessions (5 sessions with groups of 10 players and 2 sessions with groups of 8 players)
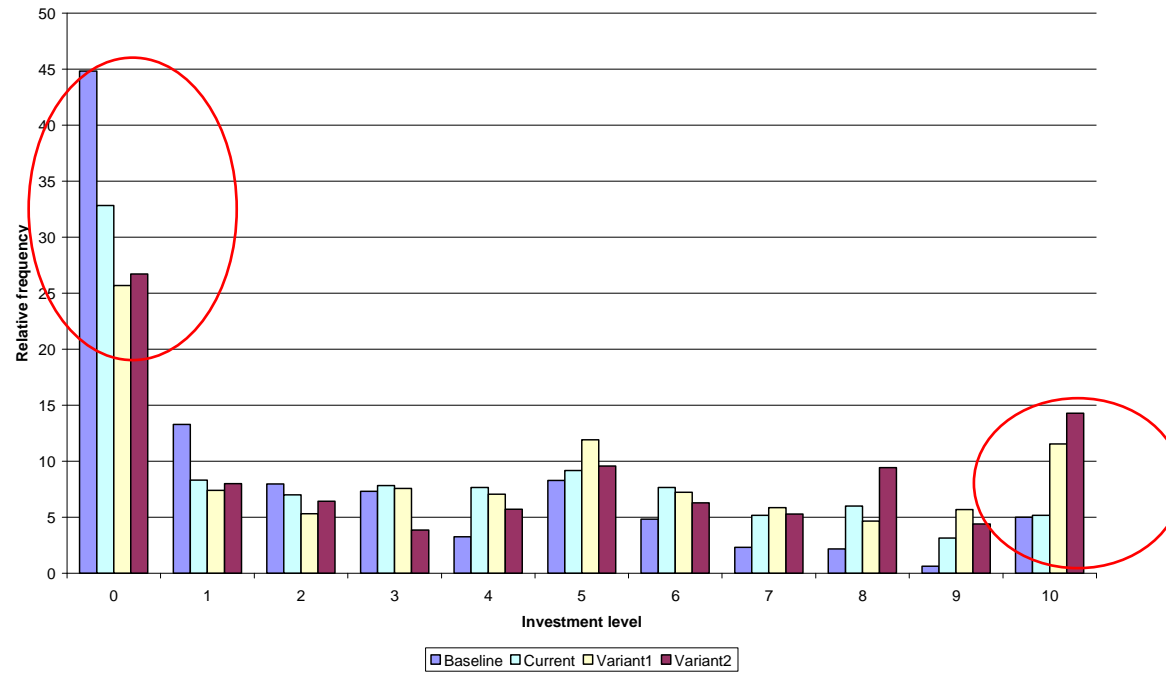 - 6 sessions for each of the three other treatments with groups of 10 players)

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A comparative analysis of eBay evaluation systems

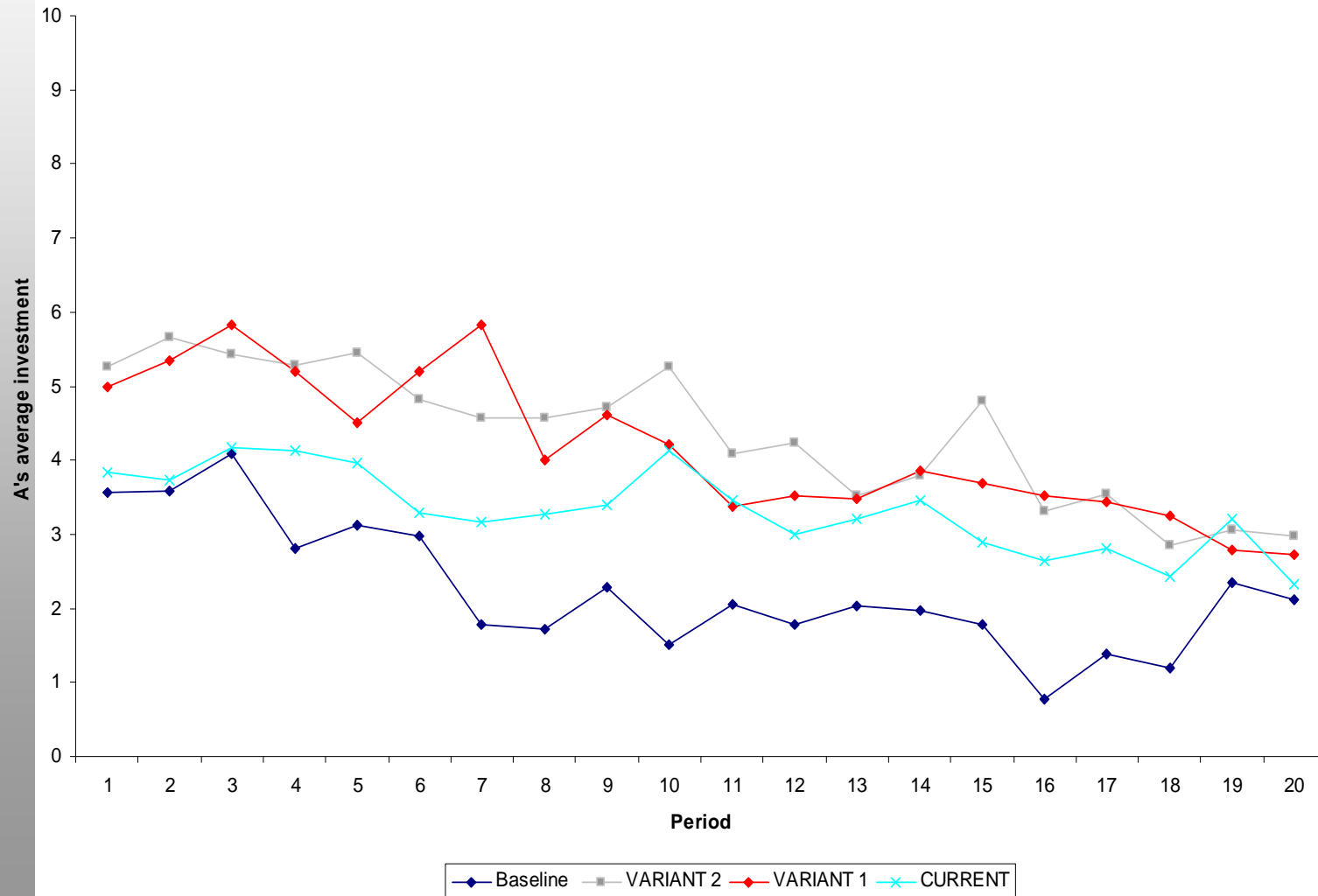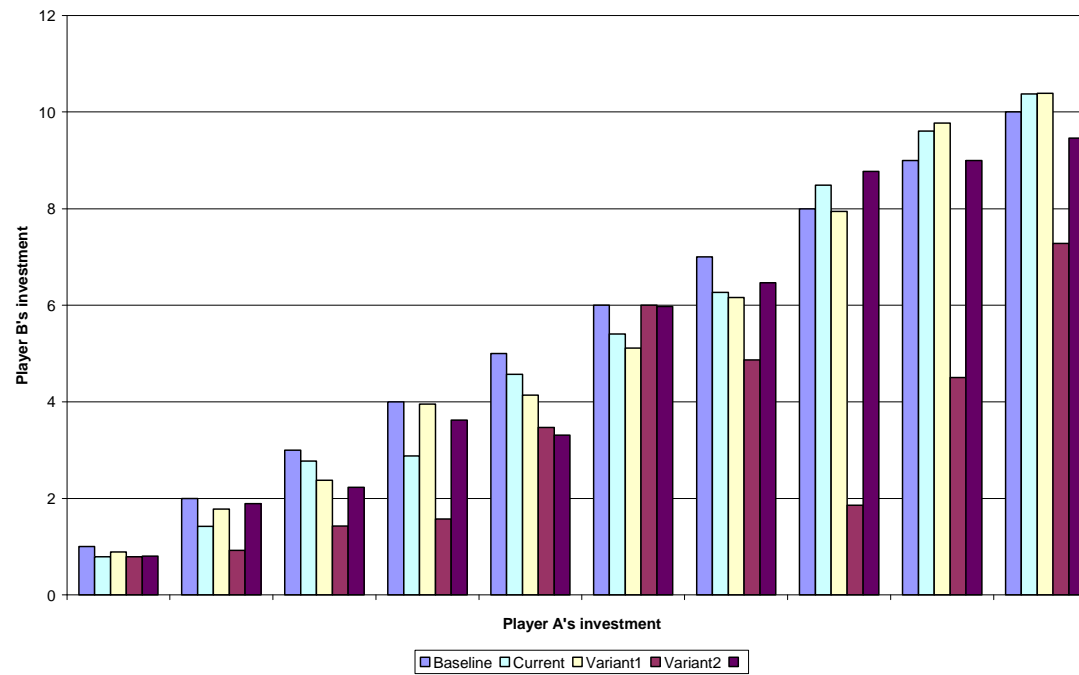**Figure 2**: Distribution of investment level

Results : investments

Fig 1. Player A's average invest.

Figure 3. Player B's return for each player A's investment level

Results : investments

Fig 2. Player B's average invest.
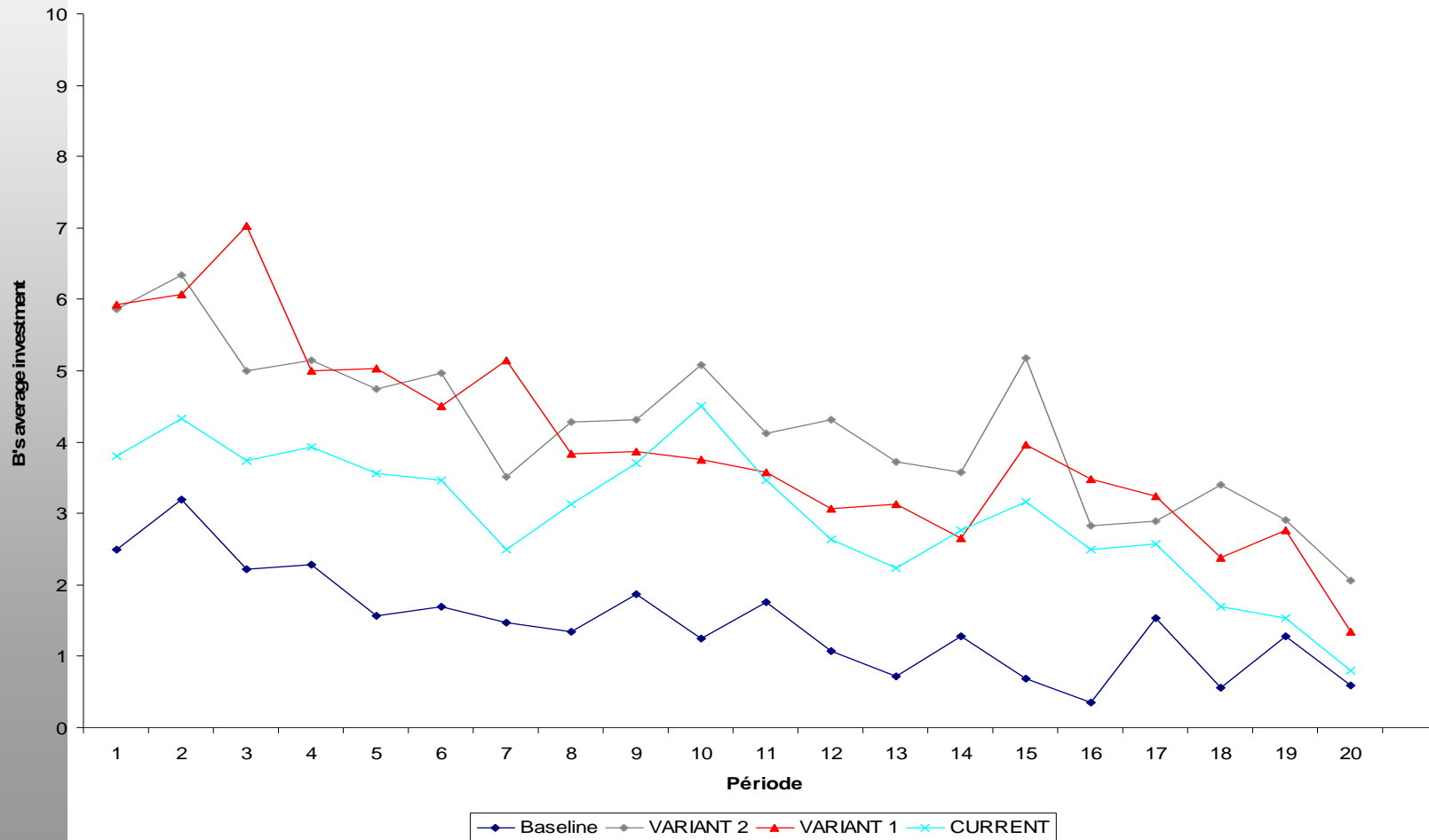
Results : investment decisions by treatment

	Baseline	CURRENT	VARIANT 1	VARIANT 2
Player A 's investment	2.24 (2.91)	3.32 (3.22)	4.17 (3.50)	4.36 (3.70)
Player B's investment	1.45 (3.16)	3.00 (4.81)	3.98 (5.35)	4.21 (6.32)
Invest. Return	11,86%	19,15%	22,45%	22,82%

- In all treatments, evaluations increase the average level of investment (return)
- The level of investment (return) is significantly higher when :
  - The order in which players evaluate one another is predetermined (VARIANT 1)
  - Evaluations are simultaneous(VARIANT 2)

Results : Determinants of the amounts invested

	All treatments	Treatments with evaluation	
Variable		Amount chosen by Player A during period t (1)	Amount chosen by Player B during period t (2)
Amount received during t-1	1.925***	1.505***	-0.195***
	(0.254)	(0.287)	(0.046)
Cumulative positive evaluations (partner's profile)		0.610***	0.564***
		(0.068)	(0.090)
Cumulative negative evaluations (partner's profile)		-0.273***	-0.342***
		(0.048)	(0.120)
Positive evaluation in t-1 (partner's profile)		-0.027	0.485
		(0.297)	(0.379)
Negative evaluation in t-1 (partner's profile)		-0.147	0.059
		(0.199)	(0.429)
CURRENT	0.548***		
	(0.174)		
VARIANT 2	1.091***	0.462***	1.362***
	(0.171)	(0.173)	(0.300)
VARIANT 1	0.979***	0.370**	0.669**
	(0.178)	(0.180)	(0.310)
Period	-0.060***	-0.060***	-0.159***
	(0.012)	(0.019)	(0.033)
Period_20	0.002	-0.111	-0.834
	(0.293)	(0.344)	(0.588)
Constant	1.737***	2.565***	3.540***
	(0.189)	(0.233)	(0.386)

Results : investments

- In all treatments, evaluation significantly increases the average amount invested (return).

- A modification to the CURRENT evaluation system in favor of more heavily constrained rules (i.e. evaluations submitted in a predefined order - VARIANT 1, or simultaneous evaluations - VARIANT 2) leads to greater trust and investment.

Results : investments

■ The amounts sent in a current period (period t) depend on the amount received during the previous period (period t-1).

■ The amounts sent in a current period (period t) depend on one's partner's profile :

– Cumulated positive evaluations have a positive and significant effect on investment

– Cumulated negative evaluations have a negative and significant effect on investment

– Both positive and negative evaluations from the previous period have no effect

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Determinants of evaluation

Figure 5. Average evaluation over time
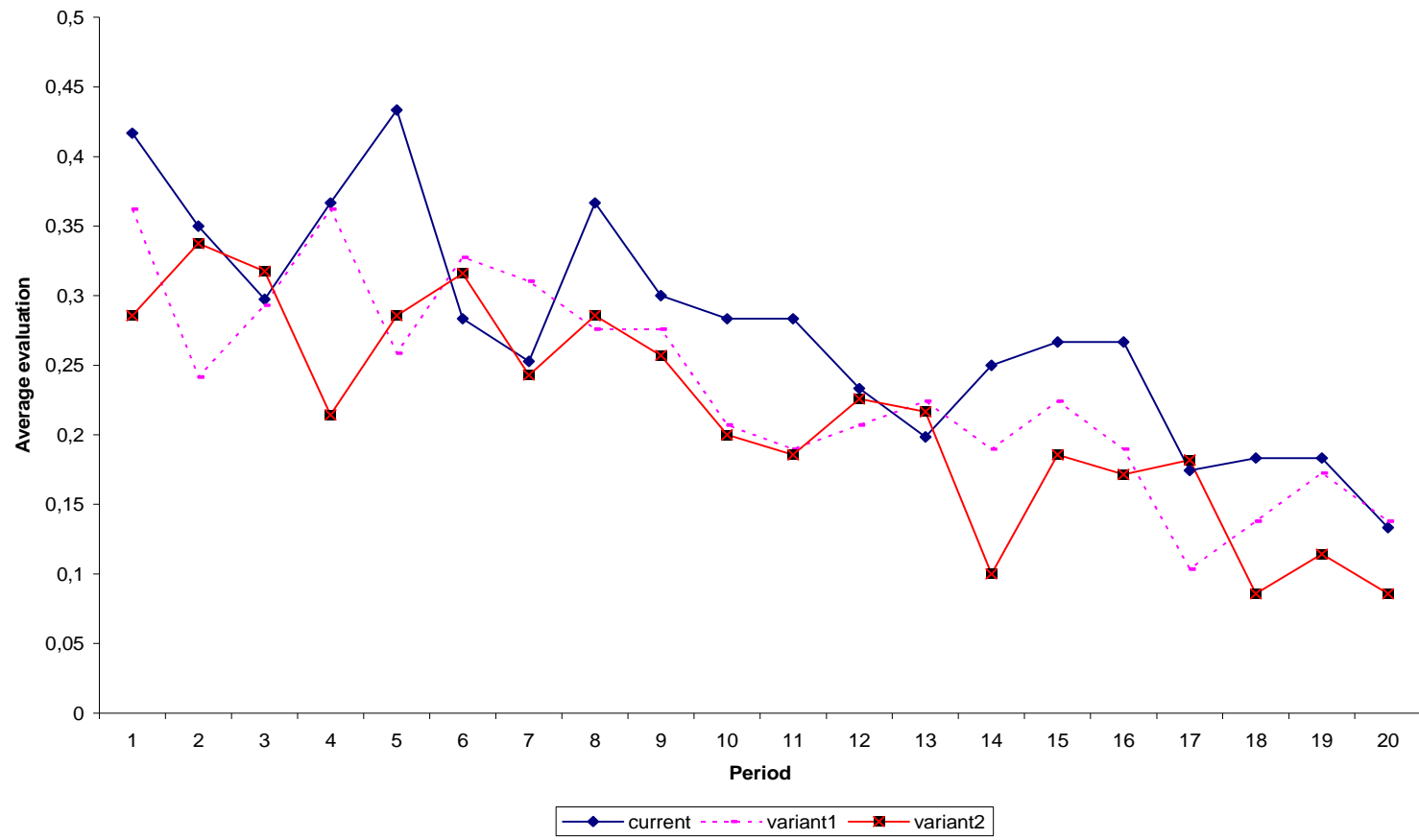
Results : Evaluation

Who?

- Both player A and player B assign points to their partners.
- Player A assigns more negative points whereas player B attributes in majority positive points

When?

- Players evaluate more under the CURRENT and VARIANT 1 treatments than under the VARIANT 2 treatment.
- Players assign more positive points when they evaluate first but send more negative evaluationswhen they evaluate in second position

Why?

- Positive (negative) evaluations are given for high (low) levels of investments /returns

Results : Evaluation determinants

(Probit model with random effects on the probability of negative evaluation using a selection bias correction)

Variable	(1) A's evaluation of B	(2) B's evaluation of A
Amount received	-0.241***	-0.430***
	(0.043)	(0.067)
Evaluated during Phase 1	-1.574***	-0.785**
	(0.471)	(0.328)
received a positive evaluation	0.004	-0.358
AND knows this result	(0.428)	(0.649)
received a negative evaluation	1.785**	0.812**
AND knows this result	(0.827)	(0.403)
Constant	3.810***	2.607**
	(0.789)	(1.070)

Results : Evaluation determinants

- The probability of negatively (positively) evaluating one's partner decreases (increases) with the amount received. (Direct reciprocity)

- Proceeding with an immediate evaluation (phase 1) tends to reduce the probability of a negative evaluation (Strategic motives)

- The positive and highly significant coefficient of the cross variable "Received a negative evaluation AND knows this result" indicates that players use negative evaluations as a means of reprisal (Indirect reciprocity)

Conclusions and extensions

Main conclusions

– Simple Internet-Based Reputation Systems have positive effects on cooperation

– However more complex systems may lead individuals to cooperate more and may prevent individuals from adopting both strategic and non strategic behaviors that negatively affect cooperation.

Suggestions to improve the eBay feedback mechanism

✔ Blind evaluation

✔ Limited timing to evaluate one's partner

Conclusions and extensions

- **Extensions of our study**

- Investigation of more complex online markets with endogenous formation

- Investigation of the evaluation system as a public good game