Rational Herding in Microloan Markets
Online Appendix

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A.1. Theoretical Foundation of the Identification Strategy

In the empirical analysis we identify herding by documenting sequential correlation of lending decisions after controlling for listing heterogeneity and payoff externalities. We then distinguish rational herding from irrational herding based on the premise that publicly observable listing attributes should moderate the herding momentum if lenders are rational observational learners. In this section, we present the theoretical foundation of this identification strategy.

Consider a group of lenders each of whom decides to allocate an amount y to a borrower listing. Let lender i's funding decision be represented as a function $y(Z, \theta, \epsilon_i)$. The vector Z denotes the borrower's attributes that are publicly observed by all lenders, such as her credit grade publicized by Prosper. The variable θ denotes the unobservable borrower creditworthiness, or the "quality" of the listing. The vector ϵ_i includes lender-specific attributes, private information, and idiosyncratic utilities.

Suppose θ follows a probability distribution function $f(\theta)$ over $[\underline{\theta}, \overline{\theta}]$. Lenders are uncertain about the value of θ, but are informed of its prior distribution $f(\theta)$.[1] In addition, each lender receives an informative yet imperfect signal of θ. For simplicity of illustration, let y denote the amount contributed by the first lender, which reflects her private signal about θ. We are interested in how the observation of y affects a subsequent lender's posterior inferences about θ. Let $\tilde{f}(\theta|y, Z)$ denote this posterior probability distribution function. By Bayes' rule, we have:

$$\tilde{f}(\theta|y, Z) = \frac{p(y|Z, \theta) f(\theta)}{\int_{\underline{\theta}}^{\overline{\theta}} p(y|Z, \theta) f(\theta)\, d\theta} \tag{A1}$$

[1] Since what amounts to prior information is relative, what the model tries to capture is the *incremental* effect of observational learning on lenders' beliefs.

where $p(y|Z,\theta)$ is the conditional probability that the funding amount equals y given observable borrower attributes Z and the true value of θ. We establish the following result.

PROPOSITION A1. *If the probability of observing funding amount y increases with the borrower's unobservable creditworthiness θ, then the posterior mean of θ after observing y is greater than the prior mean. Formally,*

$$\partial p(y|Z,\theta)/\partial\theta > 0 \Rightarrow \tilde{E}(\theta|y,Z) > E(\theta). \tag{A2}$$

Proof: Let $F(\theta)$ denote the prior cumulative distribution function (c.d.f.) of θ. The posterior c.d.f. is given by

$$\tilde{F}(\theta|y,Z) = \int_{\underline{\theta}}^{\theta} \frac{p(y|Z,\theta)f(\theta)}{\int_{\underline{\theta}}^{\overline{\theta}} p(y|Z,\theta)f(\theta)\,d\theta}\,d\theta = \frac{\int_{\underline{\theta}}^{\theta} p(y|Z,\theta)f(\theta)\,d\theta}{E_\theta p(y|Z,\theta)}$$

where $E_\theta p(y|Z,\theta)$ denotes the expected value of $p(y|Z,\theta)$ taken over θ. It follows that

$$\begin{aligned}
\operatorname{sign}\left(F(\theta) - \tilde{F}(\theta|y,Z)\right) &= \operatorname{sign}\left(E_\theta p(y|Z,\theta)F(\theta) - \int_{\underline{\theta}}^{\theta} p(y|Z,\theta)f(\theta)\,d\theta\right) \\
&= \operatorname{sign}\left(\int_{\underline{\theta}}^{\theta} E_\theta p(y|Z,\theta)f(\theta)\,d\theta - \int_{\underline{\theta}}^{\theta} p(y|Z,\theta)f(\theta)\,d\theta\right) \\
&= \operatorname{sign}\int_{\underline{\theta}}^{\theta} \left(E_\theta p(y|Z,\theta) - p(y|Z,\theta)\right) f(\theta)\,d\theta.
\end{aligned}$$

Let $t(\theta) = E_\theta p(y|Z,\theta) - p(y|Z,\theta)$. If $\partial p(y|Z,\theta)/\partial\theta > 0$, then $\partial t(\theta)/\partial\theta < 0$. Meanwhile, note that $\int_{\underline{\theta}}^{\overline{\theta}} t(\theta)f(\theta)\,d\theta = E_\theta p(y|Z,\theta) - E_\theta p(y|Z,\theta) = 0$. Therefore, for any $\theta \in (\underline{\theta},\overline{\theta})$, $\int_{\underline{\theta}}^{\theta} t(\theta)f(\theta)\,d\theta > 0$, and hence $F(\theta) > \tilde{F}(\theta|y,Z)$. It follows that $\tilde{E}(\theta|y,Z) > E(\theta)$. $\square$

Proposition A1 implies herding. If y represents a generous amount of funding and if a borrower's great creditworthiness increases her probability of receiving this generous funding, then the observation of y serves as a positive quality cue to subsequent lenders. The general condition of $\partial p(y|Z,\theta)/\partial\theta > 0$ does not rely on the specification of the probability distribution $p(y|Z,\theta)$, which allows θ to affect the chance of observing y in flexible ways. For example, true creditworthiness can influence funding decisions through private quality signals, where the chance of receiving positive quality signals increases with creditworthiness, and where the probability of contributing large amounts increases with the signal value (see Zhang 2010 for a choice model based on this mechanism). As long as the decision-makers have positively correlated preferences for θ, which is plausible in lending markets, Proposition A1 implies that funding amounts will be positively correlated across lenders.

Moreover, we expect publicly observable attributes Z to moderate the inferences of θ. Proposition A2 formalizes this intuition.

PROPOSITION A2. *If both unobservable creditworthiness θ and observable attributes Z of a borrower increase her probability of receiving funding amount y, then the posterior mean of θ after observing y decreases with Z unless the complementarity between Z and θ are too strong. Formally, if $\partial p(y|Z,\theta)/\partial\theta > 0, \partial p(y|Z,\theta)/\partial Z > 0$, and $\partial^2[p(y|Z,\theta)/E_\theta p(y|Z,\theta)]/\partial Z\partial\theta < 0$, then*

$$\partial\tilde{E}(\theta|y,Z)/\partial Z < 0. \tag{A3}$$

Proof: For any $Z_1 > Z_2$, and any $\theta \in (\underline{\theta}, \overline{\theta})$, we want to show that $\tilde{F}(\theta|y,Z_1) > \tilde{F}(\theta|y,Z_2)$ in the sense of first-order stochastic dominance, which is a sufficient condition for the posterior mean of θ to be greater given Z_2. We have

$$\begin{aligned}\text{sign}\left(\tilde{F}(\theta|y,Z_1) - \tilde{F}(\theta|y,Z_2)\right) &= \text{sign}\left(\frac{\int_{\underline{\theta}}^{\theta} p(y|Z_1,\theta)f(\theta)\,d\theta}{E_\theta p(y|Z_1,\theta)} - \frac{\int_{\underline{\theta}}^{\theta} p(y|Z_2,\theta)f(\theta)\,d\theta}{E_\theta p(y|Z_2,\theta)}\right) \\ &= \text{sign}\int_{\underline{\theta}}^{\theta}\left(\frac{p(y|Z_1,\theta)}{E_\theta p(y|Z_1,\theta)} - \frac{p(y|Z_2,\theta)}{E_\theta p(y|Z_2,\theta)}\right) f(\theta)\,d\theta.\end{aligned}$$

Let $s(\theta) = \frac{p(y|Z_1,\theta)}{E_\theta p(y|Z_1,\theta)} - \frac{p(y|Z_2,\theta)}{E_\theta p(y|Z_2,\theta)}$. We then have

$$\partial s(\theta)/\partial\theta = \frac{\partial p(y|Z_1,\theta)/\partial\theta}{E_\theta p(y|Z_1,\theta)} - \frac{\partial p(y|Z_2,\theta)/\partial\theta}{E_\theta p(y|Z_2,\theta)} < 0$$

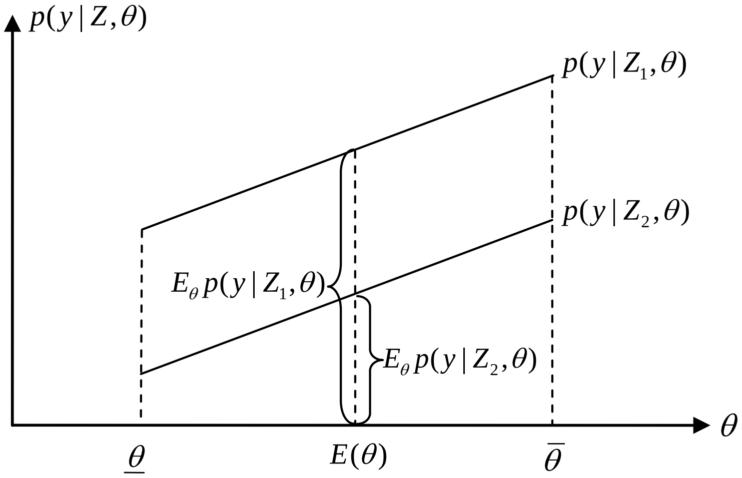
following the assumption of $\partial^2[p(y|Z,\theta)/E_\theta p(y|Z,\theta)]/\partial\theta\partial Z < 0$. Meanwhile, note that $\int_{\underline{\theta}}^{\overline{\theta}} s(\theta)f(\theta)\,d\theta = 0$. Therefore, for any $\theta \in (\underline{\theta}, \overline{\theta})$, we have $\int_{\underline{\theta}}^{\theta} s(\theta)f(\theta)\,d\theta > 0$, and hence $\tilde{F}(\theta|y,Z_1) > \tilde{F}(\theta|y,Z_2)$. □

Figure A1 illustrates the idea behind Proposition A2. By Bayes' rule, the observation of y reshapes the posterior distribution of θ through the conditional probability term $p(y|\theta,Z)$, where a conditional probability that increases with θ assigns greater weight to higher values of θ. Importantly, the *relative* weight assigned to different values of θ varies with Z. The lower conditional probability line $p(y|Z_2,\theta)$ corresponds to the worse listing attributes Z_2—holding θ constant, worse listing attributes do lead to a lower *ex ante* chance of achieving (favorable) funding y. However, when normalized by $E_\theta p(y|Z,\theta)$, the expected conditional probability, the lower line assigns relatively greater weight to higher values of θ than the upper line $p(y|Z_1,\theta)$. As a result, the posterior expectation of θ turns out higher given the worse attributes Z_2.[2]

Proposition A2 suggests a way to identify rational herding in the field. When the condition for Proposition A2 holds, seemingly desirable (undesirable) observable attributes should weaken (strengthen) the positive quality inferences drawn from observations of peer patronage.

[2] Note that Proposition A2 does not require $p(y|Z,\theta)$ to be submodular in Z and θ. The condition is more lenient than submodularity; the result holds for all signs of $\partial^2 p(y|Z,\theta)/\partial Z\partial\theta$ as long as $\partial^2[p(y|Z,\theta)/E_\theta p(y|Z,\theta)]/\partial Z\partial\theta < 0$. Nevertheless, the restriction on the degree of complementarity between Z and θ renders Proposition A2 a conservative test of rational herding.

Figure A1 How Publicly Observable Variables Moderate Observational Learning



Notes: This figure illustrates how variables that are publicly observable by all decision-makers (Z) moderate what inferences about the unobservable variable θ these decision-makers' draw from peer decision y. In posterior inferences, greater weight is assigned to higher values of θ if the conditional probability function $p(y|Z,\theta)$ increases with θ. However, *relatively* greater weight is assigned to higher values of θ when the observable variables take the lower value Z_2.

Table A1 Overview of Microloan Websites in the World

Name	Country Funded	Launch Date	Volume (Million)	Headquarter	Website
Prosper	U.S.A.	Feburary-06	USD 178.0	San Francisco, CA	www.prosper.com
Kiva	U.S.A.	December-05	USD 47.7	San Francisco, CA	www.kiva.org
Lending Club	U.S.A.	June-07	USD 19.8	Sunnyvale, CA	www.lendingclub.com
Raisecapital	U.S.A.	March-07	< USD 0.1	Port Washington, NY	www.raisecapital.com
Fynanz	U.S.A.	June-07	< USD 0.1	New York, NY	www.fynanz.com
Microplace	U.S.A.	October-07	< USD 0.1	San Jose, CA,	www.microplace.com
Greennote	U.S.A.	June-08	< USD 0.1	Rancho Cordova, CA	www.greennote.com
Loanio	U.S.A.	October-08	< USD 0.1	Nanuet, NY	www.loanio.com
Pertuity Direct	U.S.A.	October-08	< USD 0.1	Washington, D.C.	www.pertuitydirect.com
GlobeFunder	U.S.A.	July-07	NA	Kalamazo, MI	www.globefunder.com
Virgin Money	U.K.	October-07	USD 370.0	Waltham, MA	www.virginmoneyus.com
Zopa	U.K.	March-05	GBP 45.0	London, U.K.	www.uk.zopa.com
Cashare	Switzerland	April-08	< USD 0.1	Hünenberg, Switzerland	www.cashare.ch
Loanland	Sweden	December-07	USD 0.75	Stockholm, Sweden	www.Loanland.com.se
Comunitae	Spain	To be launched	NA	Madrid, Spain	www.comunitae.com
Kokos	Poland	Feburary-08	PLN 3.7	Sopot, Poland	www.kokos.pl
Monetto	Poland	March-09	PLN 2.0	Warsaw, Poland	www.monetto.pl
Nexx	New Zealand	To be launched	NA	Auckland, New Zealand	www.NEXX.co.nz
Sellaband	Netherland	August-06	EUR 3.5	Amsterdam, Holland	www.sellaband.com
Boober	Netherland	January-07	EUR 2.4	Amsterdam, Holland	www.boober.nl
Frooble	Netherland	May-07	< USD 0.1	Amsterdam, Holland	www.frooble.nl
Moneyauction	Korea	July-07	USD 7.8	Seoul, Korea	www.moneyauction.co.kr
Popfunding	Korea	June-05	< USD 0.1	Seoul, Korea	www.popfunding.com
Donjoy	Korea	June-05	NA	Seoul, Korea	www.donjoy.net
Maneo	Japan	October-08	JPY 20.0	Tokyo, Japan	www.maneo.jp
RangDe	India	January-08	< USD 0.1	New Delhi, India	www.rangde.org
dhanaX	India	February-08	< USD 0.1	Bangalore, India	www.dhanax.com
Noba	Hungary	To be launched	< USD 0.1	Hungary	www.noba.hu
Investors Without Borders	Ghana	To be launched	NA	Ghana	www.investorswithoutborders.com
Smava	Germany	March-07	EUR 4.6	Berlin, Germany	www.smava.de
YouCredit	Germany	October-08	< USD 0.1	Berlin, Germany	www.youcredit.com
Friendsclear	France	July-07	< USD 0.1	Paris, France	www.friendsclear.com
Babyloan	France	July-08	< USD 0.1	Paris, France	www.babyloan.org
MyC4	Denmark	May-06	EUR 5.0	Copenhagen, Denmark	www.myc4.com
Fairrates	Denmark	April-07	< USD 0.1	Copenhagen, Denmark	www.fairtrades.dk
Ppdai	China	August-07	< USD 0.1	Shanghai, China	www.ppdai.com
Qifang	China	August-07	< USD 0.1	Chengdu, China	www.qifang.cn
IOU Central	Canada	Feburary-08	NA	Montreal, Quebec, Canada	www.ioucentral.ca
CommunityLend	Canada	April-08	NA	Toronto, Ontario, Canada	www.communitylend.com
Igrin	Australia	October-09	AUD 0.2	Sydney, Australia	www.igrin.com.au

Notes: This table includes microloan websites that existed as of October 2008. Circle Lending is excluded from the list; it was acquired by Virgin Money in October 2007. The "Volume" column reports the total amount of loans facilitated by October 2008, except for Sellaband which reports the amount raised by April 2008. The websites are sorted in reverse alphabetical order of "Country Founded" and then in descending order of "Volume."

Table A2 Pearson Correlations among Listing-Specific Variables

	Amount Requested	Borrower Rate	Credit_ Risky (1=Yes)	Debt-to- Income Ratio	Endorse- ments	Group Member (1=Yes)	Home- owner (1=Yes)	Start Day	First-Day Amount Funded	First-Day Bids	First-Day Rate	Last-Day Amount Funded	Last-Day Bids	Last-Day Rate	Total Amount Funded	Total Percent Funded	Fully Funded (1=Yes)
Amount Requested	1.000	-0.147	-0.178	0.089	-0.008	-0.084	0.166	0.031	0.094	0.078	-0.126	0.157	0.149	-0.141	0.201	-0.029	-0.042
		<.0001	<.0001	<.0001	0.062	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Borrower Rate	-0.147	1.000	0.092	-0.021	0.030	-0.023	-0.049	0.329	0.000	-0.004	0.926	0.144	0.152	0.948	0.093	0.152	0.131
	<.0001		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.960	0.360	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Credit_Risky (1=Yes)	-0.178	0.092	1.000	-0.005	-0.035	0.021	-0.218	-0.182	-0.233	-0.222	0.138	-0.258	-0.282	0.180	-0.313	-0.405	-0.334
	<.0001	<.0001		0.262	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Debt-to-Income Ratio	0.089	-0.021	-0.005	1.000	-0.001	-0.020	-0.014	-0.006	-0.049	-0.048	-0.004	-0.034	-0.040	-0.001	-0.048	-0.081	-0.065
	<.0001	<.0001	0.262		0.853	<.0001	0.002	0.183	<.0001	<.0001	0.374	<.0001	<.0001	0.829	<.0001	<.0001	<.0001
Endorsements	-0.008	0.030	-0.035	-0.001	1.000	0.025	0.014	0.059	0.060	0.064	0.011	0.051	0.057	0.008	0.055	0.075	0.064
	0.062	<.0001	<.0001	0.853		<.0001	0.001	<.0001	<.0001	<.0001	0.018	<.0001	<.0001	0.074	<.0001	<.0001	<.0001
Group Member (1=Yes)	-0.084	-0.023	0.021	-0.020	0.025	1.000	-0.035	-0.382	0.037	0.013	-0.037	0.055	0.050	-0.039	0.070	0.085	0.086
	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001	0.003	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Homeowner (1=Yes)	0.166	-0.049	-0.218	-0.014	0.014	-0.035	1.000	0.129	0.137	0.131	-0.060	0.154	0.167	-0.078	0.189	0.170	0.147
	<.0001	<.0001	<.0001	0.002	0.001	<.0001		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Start Day	0.031	0.329	-0.182	-0.006	0.059	-0.382	0.129	1.000	0.088	0.111	0.311	0.115	0.143	0.303	0.110	0.177	0.143
	<.0001	<.0001	<.0001	0.183	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
First-Day Amount Funded	0.094	0.000	-0.233	-0.049	0.060	0.037	0.137	0.088	1.000	0.955	-0.067	0.271	0.298	-0.124	0.653	0.527	0.523
	<.0001	0.960	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
First-Day Bids	0.078	-0.004	-0.222	-0.048	0.064	0.013	0.131	0.111	0.955	1.000	-0.070	0.225	0.258	-0.121	0.579	0.497	0.489
	<.0001	0.360	<.0001	<.0001	<.0001	0.003	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
First-Day Rate	-0.126	0.926	0.138	-0.004	0.011	-0.037	-0.060	0.311	-0.067	-0.070	1.000	0.067	0.070	0.938	0.011	0.019	0.017
	<.0001	<.0001	<.0001	0.374	0.018	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001	0.012	<.0001	0.000
Last-Day Amount Funded	0.157	0.144	-0.258	-0.034	0.051	0.055	0.154	0.115	0.271	0.225	0.067	1.000	0.938	-0.001	0.779	0.611	0.568
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	0.863	<.0001	<.0001	<.0001
Last-Day Bids	0.149	0.152	-0.282	-0.040	0.057	0.050	0.167	0.143	0.298	0.258	0.070	0.938	1.000	-0.010	0.777	0.665	0.618
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		0.020	<.0001	<.0001	<.0001
Last-Day Rate	-0.141	0.948	0.180	-0.001	0.008	-0.039	-0.078	0.303	-0.124	-0.121	0.938	-0.001	-0.010	1.000	-0.081	-0.064	-0.074
	<.0001	<.0001	<.0001	0.829	0.074	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.863	0.020		<.0001	<.0001	<.0001
Total Amount Funded	0.201	0.093	-0.313	-0.048	0.055	0.070	0.189	0.110	0.653	0.579	0.011	0.779	0.777	-0.081	1.000	0.726	0.703
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.012	<.0001	<.0001	<.0001		<.0001	<.0001
Total Percent Funded	-0.029	0.152	-0.405	-0.081	0.075	0.085	0.170	0.177	0.527	0.497	0.019	0.611	0.665	-0.064	0.726	1.000	0.905
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001
Fully Funded (1=Yes)	-0.042	0.131	-0.334	-0.065	0.064	0.086	0.147	0.143	0.523	0.489	0.017	0.568	0.618	-0.074	0.703	0.905	1.000
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.000	<.0001	<.0001	<.0001	<.0001	<.0001	

Notes: This table reports the Pearson correlation among listing-specific variables. The entire sample is included. The number of observations is 49,693 for each variable. The upper number of each cell is the correlation coefficient, and the lower number is the p value.

Table A3 Variance Inflation Factors of Independent Variables

Variable	Variance Inflation Factor
Lag Total Amount	6.788
Lag Percent Needed (%)	4.842
Lag Rate (%)	1.017
Lag Total Bids	9.125
Lag Total Amount * Lag Percent Needed (%)	2.103
Lag Total Amount * Amount Requested (1,000)	5.271
Lag Total Amount * Borrower Rate (%)	4.273
Lag Total Amount * Credit_Risky	1.072
Lag Total Amount * Debt-to-Income Ratio (%)	1.151
Lag Total Amount * Endorsements	1.038
Lag Total Amount * Group Member	2.213
Lag Total Amount * Homeowner	3.382
Lag Total Amount * Lag Total Bids	7.284
Lag Total Amount * Start Day	4.506

Notes: This table reports the variance inflation factors (VIF's) of the independent variables in the main panel analysis reported in column (4) of Table 4. All VIF's are below the conventional cutoff of 10 (Hair et al. 2009).

Table A4 Multicollinearity Check—Introducing the Interaction Terms One by One

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Lag Total Amount	0.256 ***	-0.008	-0.175 ***	0.257 ***	0.243 ***	0.266 ***	0.285 ***	0.260 ***	0.356 ***	-1.890 ***
	(0.004)	(0.005)	(0.006)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.091)
Lag Percent Needed (%)	0.539 ***	-10.198 ***	-2.333 ***	-0.429 **	-1.409 ***	-1.298 ***	-1.378 ***	-1.396 ***	6.103 ***	-1.546 ***
	(0.190)	(0.225)	(0.188)	(0.195)	(0.192)	(0.192)	(0.192)	(0.195)	(0.241)	(0.192)
Lag Rate (%)	28.936 ***	22.280 ***	40.608 ***	27.686 ***	27.780 ***	27.311 ***	27.570 ***	27.646 ***	28.941 ***	28.020 ***
	(1.053)	(1.061)	(1.053)	(1.067)	(1.067)	(1.067)	(1.068)	(1.068)	(1.064)	(1.067)
Lag Total Bids	-22.505 ***	-22.721 ***	-21.528 ***	-23.855 ***	-23.656 ***	-24.689 ***	-25.939 ***	-24.831 ***	-18.388 ***	-28.947 ***
	(0.362)	(0.364)	(0.360)	(0.368)	(0.369)	(0.366)	(0.381)	(0.366)	(0.386)	(0.405)
Lag Total Amount * Lag Percent Needed (%)	0.005 ***									
	(5.3E-05)									
Lag Total Amount * Amount Requested (1,000)		0.013 ***								
		(1.8E-04)								
Lag Total Amount * Borrower Rate (%)			0.021 ***							
			(1.9E-04)							
Lag Total Amount * Credit_Risky				0.288 ***						
				(0.012)						
Lag Total Amount * Debt-to-Income Ratio (%)					2.4E-04 ***					
					(1.0E-05)					
Lag Total Amount * Endorsements						-0.111 ***				
						(0.006)				
Lag Total Amount * Group Member							-0.025 ***			
							(0.002)			
Lag Total Amount * Homeowner								0.006 **		
								(0.002)		
Lag Total Amount * Lag Total Bids									-4.8E-04 ***	
									(9.5E-06)	
Lag Total Amount * Start Day										1.3E-04 ***
										(5.3E-06)
Day-of-Week Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day-of-Listing Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Listing Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	347,851	347,851	347,851	347,851	347,851	347,851	347,851	347,851	347,851	347,851
Adjusted/Pseudo R-Squared	0.489	0.483	0.495	0.475	0.475	0.475	0.474	0.474	0.478	0.475

Notes: This table reports how multicollinearity affects the results by introducing the interaction terms one by one. Each observation is a snapshot of a listing taken at the end of each day. The dependent variable is the amount of funding a listing receives during a day. GLS with standard errors clustered by listing and reported in parentheses under parameter estimates.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A5 How Herding Affects Interest Rates

	(1) After Fully Funded	(2) After Fully Funded	(3) Before Fully Funded	(4) Before Fully Funded
Lag Total Amount	-7.7E-05 ***	3.5E-04	1.3E-05	0.002 ***
	(1.4E-05)	(4.0E-04)	(1.1E-05)	(3.1E-04)
Lag Rate (%)	0.064 ***	-0.040 ***	0.077 ***	0.072 ***
	(0.009)	(0.009)	(0.002)	(0.002)
Lag Total Bids	-0.005 ***	-0.025 ***	-0.017 ***	-0.010 ***
	(0.001)	(0.002)	(0.001)	(0.001)
Lag Total Amount * Amount Requested (1,000)		-1.0E-05 ***		1.2E-05 ***
		(1.5E-06)		(6.8E-07)
Lag Total Amount * Borrower Rate (%)		-2.5E-05 ***		-1.4E-05 ***
		(8.1E-07)		(5.7E-07)
Lag Total Amount * Credit_Risky		-3.2E-04 ***		0.001 ***
		(3.8E-05)		(4.5E-05)
Lag Total Amount * Debt-to-Income Ratio (%)		-3.4E-08		-2.7E-08
		(4.0E-08)		(4.0E-08)
Lag Total Amount * Endorsements		1.2E-04 ***		-1.7E-05
		(2.1E-05)		(1.9E-05)
Lag Total Amount * Group Member		6.0E-06		2.2E-06
		(1.0E-05)		(8.2E-06)
Lag Total Amount * Homeowner		8.8E-06		8.6E-06
		(9.5E-06)		(7.4E-06)
Lag Total Amount * Lag Total Bids		7.8E-07 ***		-1.1E-08
		(5.0E-08)		(6.0E-08)
Lag Total Amount * Start Day		2.0E-09		-1.1E-07 ***
		(2.0E-08)		(2.0E-08)
Day-of-Week Fixed Effects	Yes	Yes	Yes	Yes
Day-of-Listing Fixed Effects	Yes	Yes	Yes	Yes
Listing Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	14,391	14,391	333,460	333,460
Adjusted/Pseudo R-Squared	0.971	0.975	0.978	0.978

Notes: This table reports the effects of herding on interest rates. Each observation is a snapshot of a listing taken at the end of each day. Columns (1) and (2) include observations after a listing is fully funded. Columns (3) and (4) include observations before a listing is fully funded. The dependent variable is a listing's interest rate (%) at the end of each day. The *Lag Percent Needed* variable is constant for columns (1) and (2), and is dropped from all columns for comparability. GLS with standard errors clustered by listing and reported in parentheses under parameter estimates. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

References

Hair, Joseph F., Rolph E. Anderson, Ronald L. Tatham, William C. Black (2009), *Multivariate Data Analysis*, 7th ed. Macmillan, New York.

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