

DO SOCIAL CONNECTIONS REDUCE MORAL HAZARD? EVIDENCE FROM THE NEW
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SUPPLEMENTARY APPENDIX (FOR ONLINE REFERENCE ONLY)

Patterns of lessee-owner matches

Table 9 shows the country matches between owners and lessees. A high rate of in-network leasing is evident.

Drivers leasing from a family member

Previous work in the context of micro-credit group lending finds evidence that network effects are weaker in groups where members have sufficiently close relationships, such as with family members, suggesting a breakdown of the social sanctions mechanism. Sharma and Zeller (1997), Ahlin and Townsend (2007), and Karlan (2007) provide empirical evidence, and Rai and Sjostrom (2004) provide theoretical analysis. We examine this issue in the taxi industry by comparing the outcomes of drivers who lease from a family member versus the outcomes of drivers who lease in-network but not from a family member and drivers who lease out-of-network. Family members are identified as drivers who are registered as leasing from an owner with the same last name.¹ The sample consists of 326 drivers who lease from a family member (9 percent), 1,290 lessees who lease in-network but not from a family member (35 percent), and 2,085 lessees who lease out-of-network (56 percent). The categories are defined to be mutually exclusive such that in-network and family member do not overlap.

¹ This method of identifying family members is imperfect: Drivers identified as family members are very likely to actually be family members since sharing a last name with drivers operating the same taxi is unlikely to be coincidental. However, some drivers who are family members may not be identified as such since drivers related to owners by marriage, for example, would not have the same last name. Nevertheless, family members classified in the data as non-family members are likely to represent only a small fraction of total lessees; hence, this misclassification is unlikely to affect the results meaningfully. If anything, it will bias the estimate of the family effect towards zero.

Regression results are provided in Table 10 and show that drivers leasing from a family member have 0.13 and 0.10 fewer summonses than out-of-network drivers, while non-family in-network drivers have 0.08 fewer summonses than out-of-network drivers, depending on whether fixed effects for the driver's country of birth are included. Thus, the results suggest that family members have even better driving outcomes than non-family in-network drivers and that the effect of social ties is monotonic in the strength of that relationship. However, it is possible that the selection process by which drivers come to lease from a family member versus a non-family member but same-country owner may differ in systematic ways.

In-network drivers versus owner-drivers

Table 11 shows how in-network lessees fare versus the owner-drivers from whom they lease, both relative to out-of-network lessees. As expected, the owner-drivers show somewhat better outcomes in terms of fewer summonses for driving violations. Note, however, that the selection process based on ability by which drivers come to lease in-network versus the process by which they become an owner-driver may be very different; hence, a comparison of the magnitudes of these estimates is only suggestive.

Alternative models and samples

Table 12 reports results from the basic model of number of summons versus in-network leasing but uses alternative modeling functions, including a Poisson regression model and a more flexible negative binomial regression model. Estimates for the latter two models are reported as marginal effects. The results are nearly identical.

Table 9: Patterns of matches between owners and drivers

Driver country	Owner country												Total
	Bangladesh	China	Colombia	Egypt	Greece	Haiti	India	Pakistan	Russia	U.S.	Ukraine	Other	
Afghanistan	0	0	0	0	0	1	0	0	0	1	0	13	15
Bangladesh	124	5	2	2	7	16	18	4	22	17	2	53	272
China	0	11	0	0	0	1	0	0	0	1	0	4	17
Colombia	1	3	26	0	1	2	2	0	0	2	0	13	50
Dom. Rep.	0	3	3	0	2	5	1	1	1	9	0	13	38
Ecuador	0	1	5	1	1	0	2	0	1	3	0	19	33
Egypt	1	1	0	18	3	9	3	2	11	2	0	14	64
Ghana	0	1	1	2	1	6	4	0	3	7	0	28	53
Greece	0	0	0	0	9	1	0	0	0	0	0	0	10
Haiti	0	3	1	0	3	101	1	0	8	12	4	18	151
Hong Kong	1	4	0	0	0	1	0	0	0	0	0	4	10
India	6	2	5	3	5	15	278	11	19	8	6	34	392
Morocco	1	0	1	1	1	6	1	1	1	1	0	10	24
Nigeria	0	0	1	0	0	4	0	0	2	0	1	6	14
Pakistan	0	0	1	6	5	29	36	106	22	21	4	55	285
Peru	0	0	2	2	0	1	0	0	0	0	0	5	10
Puerto Rico	1	0	2	0	2	1	0	1	0	4	1	6	18
Romania	0	0	0	0	1	0	0	0	2	0	0	13	16
Russia	0	0	0	1	0	2	0	1	21	2	10	14	51
Senegal	0	1	0	0	0	2	0	1	2	5	2	3	16
Turkey	0	0	0	0	0	0	2	1	1	0	0	3	7
U.S.	0	1	0	0	2	7	0	1	0	12	0	12	35
Ukraine	0	0	0	0	0	1	0	0	6	0	6	5	18
Vietnam	0	5	0	0	0	1	0	0	0	1	0	8	15
Other	3	3	12	7	7	23	11	6	27	19	4	88	210
Total	138	44	62	43	50	235	359	136	149	127	40	441	1,824

Notes: The table shows the country of birth for drivers and corresponding owners for the 2005 sample. Patterns for the 2007 sample are similar.

Table 10: Outcomes of drivers leasing from a family member

	(1)	(2)
Lease in network from non-family	-0.077*** [0.025]	-0.076*** [0.027]
Lease from family	-0.132*** [0.039]	-0.101** [0.042]
Log years of experience	-0.104*** [0.014]	-0.109*** [0.015]
2007 indicator	-0.058** [0.024]	-0.055** [0.024]
Constant	0.643*** [0.037]	0.649*** [0.039]
Fixed effects for driver country	No	Yes
Observations	3701	3701
R-squared	0.025	0.063

Notes: The dependent variable is number of summonses per driver. Robust standard errors adjusted for clustering at the country-of-birth level are reported in brackets.

**significance at the 5 percent level.

***significance at the 1 percent level.

Table 11: Outcomes of owner-drivers

	(1)	(2)
Lease in-network	-0.084*** [0.023]	-0.068*** [0.025]
Owner-driver	-0.122*** [0.021]	-0.105*** [0.023]
Log years of experience	-0.106*** [0.012]	-0.104*** [0.014]
2007 indicator	-0.042** [0.017]	-0.043** [0.017]
Constant	0.637*** [0.033]	0.624*** [0.036]
Fixed effects for driver country	No	Yes
Observations	5989	5989
R-squared	0.034	0.060

Notes: The dependent variable is number of summonses per driver. Robust standard errors adjusted for clustering at the country-of-birth level are reported in brackets.

**significance at the 5 percent level.

***significance at the 1 percent level.

Table 12: Models of summonses with alternative regression functions

	(1)	(2)	(3)
	OLS	Poisson	Negative binomial
Lease in-network	-0.085*** [0.023]	-0.084*** [0.023]	-0.084*** [0.023]
Log years of experience	-0.103*** [0.014]	-0.092*** [0.011]	-0.091*** [0.011]
2007 indicator	-0.058** [0.023]	-0.055** [0.022]	-0.057** [0.022]
Constant	0.640*** [0.037]		
Fixed effects for driver country	No	No	No
Observations	3701	3701	3701

Notes: The dependent variable is number of summonses per driver. Estimates in columns (2) and (3) are reported as marginal effects evaluated at the means of other regressors. Robust standard errors adjusted for clustering at the country-of-birth level are reported in brackets.

**significance at the 5 percent level.

***significance at the 1 percent level.