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Andreas Bergh and Alexander Funcke

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Research Institute of Industrial Economics
P.O. Box 55665
SE-102 15 Stockholm, Sweden
info@ifn.se
www.ifn.se

Social trust and sharing economy size: Country level evidence from home sharing services

Andreas Bergh*† and Alexander Funcke‡

†Lund University & the Research Institute of Industrial Economics (IFN)
‡Philosophy, Politics & Economics, University of Pennsylvania

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Abstract

The sharing economy (peer-to-peer based sharing or renting activities coordinated through community-based online services) is often said to be closely related to trust. This paper examines the association empirically. Using data collected from the two sharing economy companies Airbnb and Flipkey that exist in over 100 countries, we construct a measure of sharing economy penetration and examine its correlation with social trust and other potential explanations. Sharing economy penetration is promoted by ICT-infrastructure and economic openness. Conditional on ICT-infrastructure, countries with higher social trust have significantly lower sharing economy penetration. Our conclusion is that sharing economy services do not require high levels of social trust to succeed. Rather, they provide institutions that facilitate trust-intensive economic activities also where social trust is low.

Sharing economy, social trust, home sharing, internet

*Contact: andreas.bergh@ifn.se; IFN, Box 55665, 102 15 Stockholm, Sweden.

1 Introduction

The sharing economy (peer-to-peer based sharing or renting activities coordinated through community based online services) is typically assumed to be closely related to trust. But in what way? Some scholars suggest that the sharing economy can thrive only where the trust level is sufficiently high. For example, Finley (2013: 2) argues that "[t]he continued growth of the sharing economy is contingent upon one crucial factor: trust. Trust is the enabling factor inherent within all sharing-sector activities." Similarly, Olson and Connor (2013: 14) argue that "trust and reputation" are "building blocks for a strong sharing economy".

In contrast, Botsman and Rogers (2010) describe how the founders of Airbnb saw a gap between regular hotels and rental listings that seemed unoccupied by both hotels and by non-monetary exchanges. They attribute the existence of this gap to a lack of trust that Airbnb could exploit, suggesting that (ceteris paribus) the potential market share for a service such as Airbnb.com is larger where trust is lower.

As noted by for example Jøsang, et al. (2007) and Dakhlia, et al. (2016) trust and reputation systems represent a significant trend in decision support for Internet-mediated service provision, because they help to reduce informational asymmetries and opportunistic behavior. They do so by letting transacting parties rate each other after the completion of a transaction, and by using aggregated ratings about a given party to derive a trust or reputation score.

The presence of such rating systems provides an incentive for honesty and therefore positively affects market quality. The ability to choose freely among suppliers based on their reputation can be understood as a mechanism to induce cooperative outcomes in strategic interactions. As a result, the technologies used by sharing economy firms allow transaction to take place where they otherwise, due to a lack of trust, would not have taken place.

This note tests how social trust is related to the size of the sharing economy using a proxy based on listings on home sharing services. In the next section, theoretical considerations are outlined. Section 2 presents the data and section 3 contains the results. Section 4 concludes.

2 Theory and related research

Social trust is linked to cooperation because high-trusting individuals are more cooperative in social dilemmas (Sønderskov, 2011; Acedo and Gomila, 2013). As a result, countries with high average levels of social trust will have a better ability to act collectively and will thus have higher state capacity, defined by Skocpol (1990) the ability of states to achieve official goals. Because online sharing economy services rely on information and communication infrastructure, we expect the size of the sharing economy to be positively associated with social trust because countries with higher trust should have better infrastructure for information and communication technology.

We also expect countries with higher trust to have more economic transactions taking place without the involvement of a third-party enforcer. This follows from the fact noted by Arrow (1972),

that every transaction has within itself an element of trust. Due to limited immediate monitorability, certain transactions are particularly trust-sensitive. If there is trust and trustworthiness, such transactions can take place even without a third party that settles disputes and enforces agreements. An important implication is that the demand for sharing economy services will actually be smaller where social trust is higher: The more buyers and sellers trust each other to start with, the lower is the need for facilitation from online sharing economy services. In contrast, where there is more distrust, the need for a third party that reduces informational asymmetries and minimizes opportunistic behavior is higher. This applies also to home sharing services. Letting strangers into your home is perceived as risky and more so by people who feel that you can't be too careful when dealing with people you don't know. In such situations, internet-mediated service provision with reputation systems can let transacting parties rate each other after the completion of a transaction, allowing for aggregated ratings and reputation scores. The presence of such rating systems provides an incentive for honesty and therefore positively affects market quality.

We will test our theory by examining the link between social trust and sharing economy size in several steps. First the pure correlation between the two is theoretically ambiguous. Controlling in a second step for a relevant measure of state capacity, we should see a negative association between trust and sharing economy size. Finally, that negative association should be robust to adding more controls that capture other factors that are likely to influence the size of the sharing economy (described further in the next section).

3 Data

3.1 Sharing economy penetration

We create a country level measure of sharing economy penetration by examining the global presence of six widely used home-sharing services: Airbnb, Flipkey, HomeExchange, HomeAway, Roomorama and 9flats.

Only Airbnb and Flipkey exist in enough countries to allow for a cross-country analysis. Data from Airbnb and Flipkey were collected from their websites (www.flipkey.com and www.airbnb.com). For each country's capital, we queried both Airbnb and Flipkey and saved the number of hits per city. In the case of Airbnb, some challenges had to be handled. The listings at Airbnb are capped at 1000 hits per query such that queries with more than a thousand hits will only return "1000+ Rentals". To get variation over the full sample, we narrowed the searches by adding criteria. Acceptable room types were set to either "Private room" or "Shared room", acceptable property types to "Apartment", "House", "Villa", "Condominium" or "Townhouse", and with a minimum of three beds.

The Airbnb search query is "smart"' in that it is not strictly geographically constrained, but will include a larger area than the capital's for small capitals, or where there are few renters in the city, but many in relatively proximity. This is a major problem for some of the geographically small

Table 1: Sharing economy penetration (hits per 100 000 inhabitants)

Airbnb			Flipkey	
		Top 5		
Lisbon	34		Lisbon	316
Copenhagen	20		Copenhagen	212
Amsterdam	16		Paris	173
Rome	13		Rome	157
Paris	11		Amsterdam	155
		Bottom 5		
Algiers	0.07		Doha	0.07
Yaoundé	0.06		Havana	0.05
Tashkent	0.05		Kinshasa	0.05
Dhaka	0.03		Damascus	0.03
Riyadh	0.02		Riyadh	0.02

cities, such as San Marino. To minimize the problem, we exclude capitals with less than 500,000 inhabitants (having verified that results are robust to varying the cutoff). The Flipkey website has no similar features or caps, and thus all listings are used to compile the data.

The resulting measure of sharing economy penetration is simply the number of hits divided by city population. As shown in Table 1, Lisbon and Copenhagen are in top for both services.

3.2 Trust and other control variables

Our measure of social trust is the standard measure in the literature: the share of respondents agreeing with the proposition that "most people can be trusted", as measured by the World Values Survey and a number of similar surveys, taken from Berggren and Bjørnskov (2011). Among other things, this measure of social trust has been causally linked to economic growth (Algan and Cahuc 2010) and to welfare state size (Bergh and Bjørnskov 2011). Importantly, country level trust is typically very stable over time. For further information on social trust, see the survey by Nannestad (2008).

In order to compare countries worldwide, we control for GDP per capita (PPP US dollars), the average years of schooling for the population aged 25 and above (from Barro & Lee's Educational Attainment Dataset) and the number of high-speed broadband users per capita (defined as downstream speeds at least 256 kbit/s from the World bank's World Development Indicators). We also control for economic globalization as measured in the KOF-index of globalization (Dreher 2006). Descriptive statistics are shown in Table 2.

Table 2: Descriptive statistics

Airbnb sample	N	mean	sd	min	max
Social trust	116	24.45	12.94	5.774	68.08
Gdp per capita	120	16,498	16,062	962.5	84,764
Avg years of education	107	8.338	2.555	2.792	13.27
KOF economic globalization	114	64.62	15.73	28.46	97.64
Air carrier departures per capita	112	0.348	1.633	0	16.78
Broadband use	126	10.17	11.10	0	42.22
Airbnb hits	152	45.22	99.59	1	941.0
Flipkey sample	**N**	**mean**	**sd**	**min**	**max**
Social trust	135	24.03	12.93	5.419	68.08
Gdp per capita	156	14,111	15,571	540.7	84,764
Avg years of education	131	7.805	2.808	1.203	13.27
KOF economic globalization	137	62.61	16.09	25.69	97.64
Air carrier departures per capita	139	0.279	1.464	0	16.78
Share with broadband	165	7.887	10.53	0	42.22
Flipkey hits	211	146.0	469.3	0	4,496

Having verified that OLS residuals are normally distributed, that there are no multicollinearity problems (average variance inflation factor i 2.8 with no variable higher than 5) and using heteroskedasticity robust standard errors, we regress the number of hits per capita (in logs) for Airbnb and Flipkey respectively on country level social trust and control variables generates results shown in Table 3 for Flipkey and in Table 4 for Airbnb. For both services, the main result is illustrated by comparing column 1 and 2: The raw correlation between social trust and sharing economy penetration is significantly positive, as assumed in the management literature cited above. Once the number of broadband users per capita is introduced as a control variable, social trust is significantly negatively correlated with sharing economy penetration, whereas broadband users are positively so. These effects appear for both Airbnb and Flipkey, and do not change much when controlling GDP per capita (which, perhaps surprisingly, has a negative sign), air carriers per capita and economic globalization (both of which have the expected positive coefficient) and education (which has the expected positive sign, though significant only for Flipkey).

We have subjected our results to robustness tests (not shown). First, we verified robustness with respect to the measurement of ICT. Using secure internet servers per 1 million people (i.e. servers using encryption technology in transactions, also from WDI) instead of broadband users do not change the main results. Including both measures at the same time, broadband users are significant while internet servers are not. Interacting trust with broadband users reveals no further insights.

Table 3: Explaining Airbnb penetration (hits per 100 000)

	(1)	(2)	(3)	(4)
Social trust	0.02*	-0.04**	-0.05***	-0.05***
	(0.01)	(0.02)	(0.02)	(0.02)
Share with broadband		0.12***	0.12***	0.11***
		(0.02)	(0.03)	(0.03)
Gdp per capita (logged)			-0.19	-0.42
			(0.25)	(0.29)
Air carrier departures per capita			1.38***	1.40***
			(0.38)	(0.40)
KOF economic globalization				0.01
				(0.02)
Avg years of education				0.12
				(0.11)
Constant	-11.60***	-11.36***	-9.58***	-9.04***
	(0.33)	(0.30)	(2.17)	(2.34)
Observations	116	106	93	85
R-squared	0.02	0.36	0.49	0.52

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Explaining Flipkey penetration (hits per 100 000)

	(1)	(2)	(3)	(4)
Social trust	0.02	-0.05**	-0.06***	-0.06***
	(0.02)	(0.02)	(0.02)	(0.02)
Share with broadband		0.15***	0.14***	0.10***
		(0.02)	(0.04)	(0.04)
Gdp per capita (logged)			-0.00	-0.47
			(0.32)	(0.39)
Air carrier departures per capita			1.27***	1.38***
			(0.35)	(0.38)
KOF economic globalization				0.04**
				(0.02)
Avg years of education				0.21*
				(0.11)
Constant	-10.41***	-10.28***	-10.09***	-9.58***
	(0.43)	(0.35)	(2.67)	(2.78)
Observations	112	104	94	86
R-squared	0.02	0.41	0.49	0.56

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Second, we tried lowering the cutoff for how small cities are included to both 100 000 and zero inhabitants. The main results remain.

Third, some cities might be more attractive travel destinations, due to weather or other reasons. Assuming that cities can be either too cold or too warm, we add average temperature (from Mitchell et al. 2004) and its square to the specification. The results provide some support for a non-linear effect of temperature (with an implied optimal average temperature at 14 degrees Celsius for Airbnb. For Flipkey, the quadratic term is not significant), but do not change the main result.

Fourth, the negative sign on GDP per capita is perhaps a bit surprising. Adding a quadratic income term does not add explanatory value and does not change the main results. Using GDP per capita without logging also leaves main results unaffected.

As a fifth robustness test, we note that demographic profile may be related to both internet usage and possibly also to trust. Controlling for the share aged 15 to 64 (from WDI) does not change the main results, and the share of working age is negatively related to sharing economy penetration, significantly so for Flipkey. A possible explanation that a higher number of working age means relatively fewer seniors with excess capacity in housing.

Next, we test the idea that corruption (using Transparency International's corruption perception index) affects results by decreasing trust and possibly also affecting the demand or supply of sharing economy services. It turns out that less corrupt countries have lower sharing economy penetration, in line with our claim that sharing economy services provide institutions that act as a substitute for legal institutions and trust. The negative coefficient on trust remains, as does the positive coefficient on broadband users.

As a seventh and final robustness test, we include the burden of government regulation from World Economic Forum's global competitiveness index (item 1.09). It is highly correlated with our corruption measure and also leaves main results unchanged.

4 Concluding discussion

Our empirical analysis suggests that the sharing economy services Airbnb and Flipkey are more common in countries that have lower GDP per capita, with more air carrier departures and where more people have access to high speed internet. The partial correlation with country level social trust is negative and typically statistically significant once ICT-infrastructure is controlled for. Our finding that the market for sharing economy services is larger in countries with lower social trust does not support the popular notion that the sharing economy depends on high levels of social trust. On the contrary, the results suggest that a major contribution of the companies in the sharing economy is that they have found ways to facilitate trust-intensive transactions also where social trust is low. The relative value of reputation and ranking systems, and a third party providing rules and contracts is higher in countries where most people are reluctant to trust anonymous strangers.

In the words of Botsman and Rogers (2010), the rise of the sharing economy services means that

we have "returned to a time when if you do something wrong or embarrassing, the whole community will know".

If the reputation mechanism is indeed a relevant explanation of our empirical results, the implication is that sharing economy penetration may have a positive, though likely small, effect on trust: When people are more likely to care about their reputation, they are less likely to behave opportunistically. Examining the consequences for trust from participation in the sharing economy may prove to be a fruitful area for research, though a clever research design is needed to disentangle self-selection effects from causal effects. We leave this as a suggestion for future research.

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