DECISION TO MAKE A HOA:
DOES COLLECTIVE ACTION PARADOX MATTER?[1]

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Ability to make collective agreements determines life of many organizations. But does it matter for the decision to make a new organization? On the data of 82 homeowners associations (HOAs) in Moscow and Perm factors that underpin HOA formation are studied. A logit-regression analysis is used. Ability of tenants to resolve the collective action problem in operating housing infrastructure shows its importance along with the physical characteristics of an apartment building. Thus HOA formation by homeowners is a signal of their ability to manage a house. Collective action paradox begins to play role not only *ex post*, but also *ex ante*, prior to organization's establishment.

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1. Introduction[2]

Mass media provides a lot of information about factors that should be took into account for the decision to set up a HOA in Russia (see e.g. Management of an Apartment Building…, 2009). These are, first of all, technological factors such as size of an apartment building ant its age. It's often said that optimal number of flats should be around 100 and that HOAs should be formed only in relatively new houses which have better physical conditions and less pronounced socio-economic heterogeneity. Second strand of discussions refers to immature tenants who don't have incentives to manage their houses by themselves and relevant experience to do so. Weak civil society (see e.g. annual reports of the Civic Chamber of the Russian Federation)[3] provides a fruitful ground for such unreadiness.

But these are just cases that say little about overall tendencies. However this question seems to be very important because touches upon the quality of life of a vast majority of people. Despite of its promise and appeal, HOA formation proved to be highly controversial, and tenants often failed to make proper use of the opportunity to collectively manage their apartment buildings. Moreover many HOAs were pre-established by developers or imposed by municipal governments without proper consultations and consent of the tenants. Current study seeks to establish the main factors that underpin HOA set up and applies regression analysis to do so. There were no such attempts previously done.

Russian law defines HOA as a non-profit legal entity in which tenants are members and which has a governing board headed by a chairperson. HOA must include more than 50% of flat's area but not necessary 100% of it. HOA budget is funded by tenants' maintenance fees and other revenues, including rentals of common property. Most HOA decisions that require tenants' approval are passed by simple majority vote. HOA can enter into contracts with local utilities and other service providers; it can retain services of a management company to which operations of common facilities can be outsourced.

The process of HOA formation had a slow start, and accelerated of late, in large part due to sticks and carrots used by the government which is interested in de-politicizing the residential

[2] This study is a part of a project devoted to homeowners associations in Russia. HOA efficiency factors were studied in its first part. Based on the same survey data this study can also provide an empirical link between organizational efficiency factors and factors that underpin formation of an organization. In the first part it is shown that ability to make collective agreements is crucial for HOA efficiency (Borisova et al., 2012). In current part we show that it matters for HOA establishment as well.

[3] Reports are available at http://oprf.ru/. (Annual report…, 2012) is the latest one.

housing sector, cutting subsidies and waste and offloading the cost of housing maintenance on owners. Incentives to form HOA are combined with pressure to expedite HOA formation, lest local governments step in and do it for procrastinating tenants.

Collective privatization of residential housing proved to be much more difficult and controversial than privatization of individual apartments –despite the strong promise and appeal of the HOA institution, its success was highly uneven (Vihavainen, 2009). Surveys, media reports and other sources reveal multiple problems facing HOA – from revenue shortfalls due to payment delinquency to the 'capture' of the new institutions by local bureaucrats, utility operators and other parties (see e.g. Sivaev, 2009; Yermishina, Klimenko, 2010). There is widespread distrust in the society in HOA – the oft sited reasons include lack of understanding of how this institution operates, concerns of unpredictable liabilities that would escalate the cost of housing to households, reluctance to assume responsibilities for repairs of dilapidated buildings, unsettled land disputes, and poor conditions of the local utilities and housing maintenance sector where dominant providers often enjoy unfettered market power. One of the core issues is mistrust among tenants, lack of leadership and capacity for self-organization, and insufficient experience and culture of self-management of common property.

As a result, tenants are often reluctant to form HOA, despite government's prodding, and many of the existing HOAs function poorly, making their members nostalgic of the status quo ante, even if notorious for mismanagement, waste, and corruption. At the same time, there are quite a few success stories of well-functioning HOAs that were able to improve services, lower costs, cut wastes and otherwise take advantage of common property self-management.

The rest of the paper is organized as follows. Section 2 presents data for the study and explains hypotheses. It is followed by the empirical strategy description and results in Section 3. Section 4 concludes.

2. Hypotheses and Data

The study is based on a survey of 82 homeowners associations conducted by Zircon Research Group in the fall of 2008. 40 of them were located in Russia's national capital Moscow and 42 in a large industrial city of Perm in the Northern Urals[4]. A random sample was created,

[4] Financial and organizational support was provided by the Center for Fundamental Research at the National Research University Higher School of Economics.

with controls over three dimensions: apartment price; time elapsed since building construction/capital repair; and the year HOA was created. In each HOA, the chairperson and nine other randomly selected tenants were interviewed. The survey was designed to reveal HOA efficiency factors, but it contains information that could be used for the proposed task. These are questions about causes of HOA formation and factors which underpin it, namely housing stock characteristics and tenant community indicators.

Causes of HOA formation include two broad categories, which reflect voluntary or non-voluntary establishment. This variable serves as the dependent in our analysis, and special attention is devoted to its different estimations and corrections. Relevant discussion put off to the next section due to methodological content of this issue.

First group of factors consists of age and size of the building. Both can have either positive or negative impact on HOA formation. On the one hand, good physical conditions might lead to greater probability because of the lower costs for HOA to operate such a building. On the other hand old housing infrastructure can underpin HOA creation in order to renovate the house. As for the size of an apartment building, complexity of the collective action problem grows with the number of participants (Olson, 1965), and this, ceteris paribus, makes HOA operations more complicated in large buildings. Lack of socialization among tenants in such buildings further exacerbates the problem. On the other hand, there is an economy of scale in running common facilities in residential housing, which favors bigger apartment buildings – the latter can get bulk discounts from service providers, afford high quality technical, legal and accounting services, etc.

Factors from the second group are comprised mainly of different social capital measures, which demonstrate tenant's capacity to resolve the collective action problem and thus should have positive impact for HOA establishment[5]. Socio-economic inequality is also in this group, but its impact is ambiguous. On the one hand homeowners might believe that a few wealthiest individuals will bear costs, thus the more inequality the better. On the other, tenants may be concerned about reaching consensus over community affairs in heterogeneous communities. In this case less inequality will lead to greater probability of HOA creation. See e.g. Bandiera et al., 2005 for these and other arguments and general discussion of heterogeneity in collective action settings.

[5] For definitions of social capital see for example (Durlauf, Fafchamps, 2005).

We distinguish between two broad categories of social capital — generic and specific. Generic social capital comprises traditional ingredients such as trust, cohesion, social inclusion and communication, mutual assistance etc., whereas specific social capital includes indexes of the proper use of the institution of HOA, and in particular of the decision-making procedures that such institution involves.

Our measurement of generic social capital is based on respondents' answers about whether they can count on neighbors' support; how often a respondent assisted his/her neighbors; how often he/she actually received neighbors' support; how many neighbors and how well a respondent knows. Specific social capital is reflected in answers to the question on how active respondents are in HOA decision-making; in the reported ability to have one's voice heard in the process; and in the ease of reconciling different views and reaching an agreement over HOA affairs.

Definitions of the main variables and their summary statistics presented in Table 1. Rows 1-2 correspond to housing stock characteristics, 3-9 demonstrate various social capital measures and 10 represents socio-economic inequality. The last rows devoted to wealth and education of tenants, which can also matter for the decision to make a HOA. It's worthwhile to mention that community characteristics are calculated as simple averages of the raw answers of each HOA's tenants. Overall we can see sufficient fluctuations of the above mentioned indicators of apartment buildings and tenant communities. More detailed description of the variables as well as underlying individual level data can be obtained from the earlier study based on the same dataset (Borisova et al., 2012).

Table 1. Summary statistics for independent variables

	Obs	Mean	Std. Dev.	Min	Max
1. Building age	82	19.3	17.4	1	93
2. Building size	82	456	423	36	2500
3. Activity in HOA decision-making	81	3.56	0.670	1.7	4.7
4. Ability to have one's voice heard	81	3.79	0.725	2.2	5
5. Ease of reconciling different views and reaching an agreement over HOA affairs	81	3.63	0.480	2.1	5
6. Perception of availability of neighbors' support	76	3.18	0.408	1.7	4
7. Neighbors' support	82	1.99	0.680	0.683	3.89
8. Social inclusion	82	1.02	0.707	0.379	4.58
9. Participation in meetings	81	1.98	1.23	0.595	7.01
10. Inequality	82	2.28	0.672	1	3
11. Education	82	4.00	0.794	2	5
12. Wealth	80	4.03	0.672	2.6	5.5

Notes. 1-2 represent housing stock characteristics, 3-5 correspond to specific social capital measures and 6-9 show generic social capital variables. *Building age* is the number of years since construction. *Building size* is the number of tenants in an apartment building. *Activity in HOA decision-making, ability to have one's voice heard* and *ease of reconciling different views and reaching an agreement over HOA affairs* are measured in 1 (least) to 5 (most) scales. *Perception of availability of neighbors' support* is measured in 1 (least) to 5 (most) scale. *Neighbors' support* aggregates five types of mutual assistance provided to or received from one's neighbors: lending money; lending household items; discussing personal problems; house sitting; and babysitting. Indexes of provided and received assistance are calculated as the numbers of the above types of assistance marked by a respondent, normalized to a maximum total of one. The first principal component of the above indexes is the aggregate measure of neighbors' support. *Social inclusion* indicates how many neighbors and how well a respondent knows, it is the first principal component of two measures – the number of neighbors to whom a respondent talks in his/her everyday life, and of those whom he/she visits. *Participation in meetings* is the first principal component of the total number of tenants general meetings per year and the number of the meetings that the respondent attended. *Inequality* aggregates tenants' assessments of socio-economic inequality in their apartment building in 1 (least) to 3 (most) scale. *Education* is measured in 1 (lowest degree) to 5 (highest degree) scale. *Wealth* is measured in 1 (least) to 6 (most) scale.

For better understanding of HOA creation factors and designing an empirical strategy of the analysis we estimate correlations first. Table 2 provides all pairwise correlations and their significance. Specific social capital variables show significant at 10% level correlations with each other. Moreover, for two of three pairs the size of coefficient is quite high and significance reaches 1% level. Thus principal components aggregation or adding one by one to the regressions should be used. Generic social capital measures on the contrary provide only lite correlations with each other, and most of them are insignificant. Because of their diversity the

explanation of any aggregated measure will be unclear. In this case separate investigation seems to be the proper use. Finally, there are correlations between some of the measures of housing stock, generic social capital, specific social capital and inequality. But they are not too big to be concerned about multicollinearity.

It's well established that wealth and education are strong predictors of social capital (see e.g. Algan, Cahuc, 2013 for the recent overview of the studies and Helliwell, Putnam, 2007 about social capital effect of education). They can stimulate activity and decision making processes of homeowners underpinning HOA creation. Thus we should control for them to be sure to catch social capital effects instead of just wealth and education (rather obvious) influence which goes *through* social capital.

Table 2. Pairwise correlations of HOA formation factors

	1	2	3	4	5	6	7	8	9	10	11	12
1	1											
2	–0.142 (0.203)	1										
3	0.0832 (0.460)	–0.130 (0.247)	1									
4	0.117 (0.300)	0.0146 (0.897)	0.705*** (0.000)	1								
5	0.119 (0.289)	0.217* (0.0515)	0.199* (0.074)	0.521*** (0.000)	1							
6	0.0811 (0.486)	–0.0650 (0.577)	–0.0311 (0.791)	0.0881 (0.452)	0.195* (0.0940)	1						
7	0.0908 (0.417)	–0.0038 (0.973)	0.0644 (0.568)	0.0474 (0.674)	0.0713 (0.527)	0.363*** (0.0013)	1					
8	0.0008 (0.994)	0.140 (0.211)	0.0338 (0.765)	–0.182 (0.103)	–0.0950 (0.399)	0.0394 (0.735)	0.285*** (0.0094)	1				
9	0.0764 (0.498)	–0.0813 (0.471)	0.323*** (0.0034)	0.211* (0.0607)	0.180 (0.110)	0.182 (0.119)	0.365*** (0.0008)	–0.0544 (0.629)	1			
10	0.287*** (0.0091)	–0.198* (0.0751)	0.0867 (0.442)	0.0077 (0.946)	–0.210* (0.0597)	–0.304*** (0.0075)	0.0181 (0.872)	0.170 (0.126)	–0.159 (0.157)	1		
11	–0.175 (0.117)	–0.107 (0.340)	0.341*** (0.0018)	0.232** (0.0368)	–0.128 (0.255)	–0.187 (0.106)	–0.294*** (0.0073)	–0.103 (0.357)	0.0174 (0.878)	–0.0874 (0.435)	1	
12	–0.300*** (0.0069)	0.0107 (0.925)	0.213* (0.0599)	0.314*** (0.0048)	0.110 (0.335)	–0.149 (0.198)	–0.206* (0.0664)	–0.191* (0.090)	0.100 (0.380)	–0.197* (0.0806)	0.718*** (0.000)	1

Notes. 1-12 correspond to variables of Table 1. *, **, and *** — correlations are significant at resp. 10%, 5%, and 1% levels.

3. Empirical strategy and results

In our empirical strategy we apply logit-regression analysis where the dependent variable reflects the cause of HOA formation. In doing so we distinguish HOAs that were created by homeowners from those imposed by third parties (municipalities or developers) or formed from housing cooperatives which appeared in Soviet time and were precursors of HOAs. Thus the dependent variable equals 1 for the first group and 0 for the second. Three corrections of the variable were used (Table 3). The first row represents raw statistics for voluntary and imposed HOAs. Second excludes form voluntary created those HOAs that had the aim for capital repairs funding because physical conditions influence in this group might be different. Third excludes from voluntary created those HOAs that had the aim for capital repairs funding and includes those HOAs that were formed from housing cooperatives. The last group is special because of mixed story of their creation although incorporates all HOAs that were organized by tenants due to their pure motive for self-governance.

Table 3. Causes of HOA formation

	Voluntary	Imposed
1. Basic variable	42	40
2. Capital repairs correction	30	52
3. Housing cooperatives correction	41	41

The main independent variable set consisted of age and size of the building[6], one generic and one specific social capital measure, inequality and control for education and wealth of tenants. Overall different social capital measures were investigated in terms of their influence on HOA formation.

Table 4 presents regressions with the basic estimation of HOA's formation cause and different specific social capital measures. Only years since construction of an apartment building and the number of tenants living in it matter. Results are robust to different components of specific social capital and to controls for homeowners' educational level and material welfare[7]. However such patterns can be driven by contamination of the dependent variable. Above mentioned corrections are needed before any claims of social capital irrelevance in these settings.

[6] Age and size of the building used in natural logarithms.

[7] Tenant's wealth and education are added separately or together. Regressions with only wealth controls were dropped due to the same results as those presented in Table 4.

Table 4. Logit-regression analysis: basic dependent variable and different specific social capital measures

	1	2	3	4	5	6	7	8
Log building age	0.702**	0.763**	0.741**	0.726**	0.755**	0.850**	0.821**	0.794**
	(0.354)	(0.350)	(0.350)	(0.351)	(0.361)	(0.363)	(0.362)	(0.361)
Log building size	1.303***	1.262***	1.268***	1.266***	1.294***	1.254***	1.278***	1.258***
	(0.406)	(0.401)	(0.404)	(0.402)	(0.407)	(0.401)	(0.406)	(0.403)
Perception of availability of neighbors' support	0.295	0.385	0.351	0.330	0.319	0.437	0.395	0.367
	(0.745)	(0.749)	(0.746)	(0.747)	(0.752)	(0.758)	(0.753)	(0.753)
Inequality	-0.0694	-0.0306	-0.0305	-0.0174	0.0288	0.0712	0.0277	0.0684
	(0.702)	(0.707)	(0.716)	(0.705)	(0.714)	(0.721)	(0.725)	(0.718)
Activity in HOA decision-making	0.390				0.385			
	(0.414)				(0.414)			
Ability to have one's voice heard		-0.154				-0.287		
		(0.387)				(0.412)		
Ease of reconciling different views and reaching an agreement over HOA affairs			-0.0346				-0.236	
			(0.573)				(0.603)	
First principal component of specific social capital measures				0.0346				-0.0105
				(0.190)				(0.197)
Control for tenant's education	YES	YES	YES	YES	YES	YES	YES	YES
Control for tenant's wealth	NO	NO	NO	NO	YES	YES	YES	YES
Constant	-13.00**	-11.92**	-12.11**	-12.20**	-14.34***	-13.31**	-13.00**	-13.57**
	(5.172)	(5.152)	(5.405)	(5.101)	(5.441)	(5.352)	(5.508)	(5.355)
Number of observations	75	75	75	75	75	75	75	75
Pseudo-R^2	0.168	0.161	0.159	0.160	0.177	0.173	0.170	0.168

Notes. Basic estimation of the HOA's formation cause is the dependent variable. *, **, and *** indicate significance at resp. 10%, 5%, and 1% level.

Capital repairs and housing cooperatives corrections are used (details of variables listed in Table 3). Some models with the second correction fail probably due to mixed structure of the dependent variable. In others size of an apartment building still matters, while its age loses significance in some specifications, probably because of the exclusion of capital repairs aim to make a HOA. The only social capital variable which is taken into account by homeowners is their activity. Other specific social capital indicators, mutual assistance, social inclusion, etc. doesn't matter at all. Sometimes educational level of tenants or their material welfare also play role for the decision to make a HOA. Table 5 shows regressions with specific social capital variable that matters i.e. activity of homeowners; controls for wealth and education are included.

Overall only two factors are robust to different estimations and thus could be treated as taken into account while deciding to make a HOA. These are *size of the building* and specific social capital namely *activity at tenant's meetings* where decisions about housing management are made. Bigger apartment buildings and higher levels of homeowners' activity lead to greater probability of HOA formation. To be more precise, people are not afraid of making collective agreements which is reflected in their preferences of larger buildings and in the insignificance of the variable "Ease of reconciling different views and reaching an agreement over HOA affairs". But do take care about the costs that can be less in case of more homeowners. Activity at the meetings dominates other specific social capital variables and perhaps includes them. Those who are active would be able to resolve the collective action problem.

Number of tenants in an apartment building and their activity are not only statistically significant predictors of HOA formation, their effect is also economically sizable. One point increase in activity raises probability by 0.2. The same is true for the similar change in the natural logarithm of the building's size.

Table 5. Logit-regression analysis: correcting dependent variable

	Basic variable		Capital repairs correction		Housing cooperatives correction	
Log building age	0.702**	0.755**	0.277	0.378	0.628*	0.648*
	(0.354)	(0.361)	(0.358)	(0.371)	(0.342)	(0.346)
Log building size	1.303***	1.294***	0.912**	0.935**	0.629*	0.619*
	(0.406)	(0.407)	(0.402)	(0.409)	(0.344)	(0.344)
Perception of availability of neighbors' support	0.295	0.319	0.639	0.814	0.640	0.667
	(0.745)	(0.752)	(0.756)	(0.798)	(0.714)	(0.720)
Inequality	-0.0694	0.0288	1.031	1.387*	0.200	0.256
	(0.702)	(0.714)	(0.744)	(0.800)	(0.650)	(0.663)
Activity in HOA decision-making	0.390	0.385	0.900*	0.876*	0.896**	0.895**
	(0.414)	(0.414)	(0.480)	(0.475)	(0.436)	(0.435)
Control for tenant's education	YES	YES	YES	YES	YES	YES
Control for tenant's wealth	NO	YES	NO	YES	NO	YES
Constant	-13.00**	-14.34***	-18.41***	-22.52***	-12.36**	-13.04**
	(5.172)	(5.441)	(5.805)	(6.627)	(4.944)	(5.198)
Number of observations	75	75	75	75	75	75
Pseudo- R^2	0.168	0.177	0.198	0.235	0.129	0.131

Notes. Cause of HOA formation is the dependent variable. Column 1 replicates columns 1 and 5 of Table 4. *, **, and *** indicate significance at resp. 10%, 5%, and 1% level.

4. Concluding remarks

Based on the unique dataset the study revealed that HOA set up is dependent on several parameters. Homeowners do take into account not only physical characteristics of the buildings, but also socio-economic indicators of the tenant community. Tenant's activity is shown to be important along with the size of the building. Thus, taking into account previous study results (Borisova et al., 2012) we can conclude that voluntary creation of HOAs is a credible signal of tenants' ability to utilize the benefits of joint ownership and management of housing infrastructure. It's just the same as the decision to have a higher education is a signal of abilities in a classic job-market signalling model of Michael Spence (Spence, 1973). Thereby massive forced implementation of HOAs may be counterproductive as they will be inefficient.

Insignificance of the building's age looks a little bit puzzling; this factor has a direct effect on the maintenance costs of the housing infrastructure. The data shows that pure motive for self-governance is independent from it. Thus one of the topics of relevant discussions of HOA formation factors is false.

Interestingly none of generic social capital measures showed their importance. It seems that traditional mutual help and social inclusion in the neighborhood can't help in managing housing infrastructure. Indeed, specific social capital is of primary importance for HOAs, as our first study showed. It enhances the quality of government while generic social capital in a form of mutual assistance matters only if the board fails to do the job well.

Heterogeneity also doesn't show its significance although it's widely discussed by the experts. Simultaneous presence of both positive and negative influence could kill the effect. Anyway it means that heterogeneity should not be so important as size of the building or activity of homeowners. Thus it's meaningless to overestimate this factor in public discussions.

In a broad theoretical concept our results mean that collective action paradox begins to play role not only *ex post* (as Mancur Olson noted), but also *ex ante*, prior to organization's establishment. This could provide a new inside for the study of organization's formation.

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