BORN TO RADA, FORCED TO HROMADA: EFFECT OF THE DECENTRALIZATION PROCESS ON DONATIONS OF UKRAINIANS AFTER THE FULL-SCALE RUSSIAN INVASION

by

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Date _____

Kyiv School of Economics

Abstract

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This thesis explores how decentralization has influenced people's willingness to donate during wartime in Ukraine. It looks at whether the type and size of local communities—called hromadas—affect how much people donate. Although decentralization was meant to strengthen local governments and boost civic engagement, we still don't know much about how it has shaped people's behavior in the long run. This study addresses this gap by investigating whether voluntary versus enforced amalgamation of hromadas and their population size—as proxies for local social cohesion—impact individual contributions to public goods in the form of military and humanitarian donations.

Using a unique representative survey of over 12,000 Ukrainians conducted by Northwestern university scholars, combined with a detailed administrative dataset of Ukrainian territorial hromadas from KSE Institute, the study applies OLS, Tobit, and Probit models to analyze donation behavior both through a quasi-experimental setup and self-reported donation activity. The findings reveal that individuals from smaller, voluntarily amalgamated hromadas are significantly more likely to donate to humanitarian issues, but not to military efforts. Future research could explore whether these patterns persist beyond wartime or influence other forms of civic engagement.

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Chapter 1

INTRODUCTION

Even though a full-scale Russian invasion of Ukraine in 2022 caused devastating damage for people's lives, it simultaneously triggered a sharp increase in volunteerism, donations, and enlistments in the Ukrainian Armed Forces. For instance, the Ukrainian largest non-public fund "Come Back Alive" from 2014 to 2021 fundraised 200 million of hryvnias. However, from 2022 to 2024 the amount of fundraised money increased more than 70 times to 14,2 billion of hryvnias. This remarkable increase in prosocial behavior—despite its individual cost and the theoretical expectations of the free rider problem—raises important questions about the underlying motivations for such widespread civic engagement during wartime (Olson 1971). Since public goods, such as national defense, provide the same utility to both contributors and non-contributors, one of the key aims of this research is to explore in greater detail the problem of free-riding—specifically, who is less willing to contribute and why.

Nevertheless, while donations peaked in 2022, since that time the amount of money Ukrainians donate is shrinking. Thus, fund "Come Back Alive" fundraised 5.7 billion hryvnias in 2022, 4.5 billion in 2023 and 3 billion in 2024 (Come Back Alive Foundation 2025). According to a nationwide survey conducted by the Ilko Kucheriv Democratic Initiatives Foundation and Razumkov Centre in August 2024, 34% of Ukrainians reported that they started to donate less (Democratic Initiatives Foundation 2024). Thus, a more in-depth study is required to understand in more details the motivation of Ukrainians who donate and look for possible tracks to encourage such pro-social behavior in times of war where Ukrainian society is struggling finding resources for defending from the big threat.

In times of war, people's decisions to donate are shaped by many factors, such as patriotism and support from their community (Teperik, 2017).

Stronger social cohesion can boost prosocial actions like donations. It creates unity and a sense of urgency, encouraging people to help others, even if it comes at a personal cost. Many factors can influence this behavior, including larger social changes and ongoing reforms.

Decentralization reform in Ukraine initiated after the Revolution of dignity in 2014 was one of the biggest reforms implemented in Ukraine recently and ended in 2020 less than 2 years before the Russian Full-scale invasion. The goal of the reform was to enhance local and fiscal autonomy, also to improve public service delivery by shifting decision-macing powers and resources from central to local institutions.

Before decentralization, Ukraine's local governance system was highly centralized and fragmented. The country was then sub-divided into regions (oblasts), which is further split into districts (rayons), and then into single village councils or small municipalities, which were operated separately of each other. These lowest-level units often lacked both the authority and resources to function effectively.

At the heart of the reform was the voluntary formation of amalgamated territorial communities (ATCs), designed to grant greater administrative and fiscal autonomy to local governments. However, not all of them were created voluntarily, hromadas which failed to amalgamate before the 2020 were forced to do it. During the voluntary phase (2015-2019), 982 ATCs were formed, representing 54% of the rural population and 26% of the total population. In 2020, to complete the process, approximately 33% of all territorial communities (487 out of 1,469) were created through mandatory amalgamation, covering the whole country (KSE, 2022).

While the primary goal of Ukraine's decentralization reform was to enhance local fiscal autonomy and improve the efficiency of public service delivery, scholars have noted that one important consequence has been the strengthening of local group cohesion and citizen engagement (Faguet 2014; OECD 2020; KSE 2022). The mode of amalgamation, whether voluntary or

enforced—may serve as a proxy for the strength and legitimacy of local governance units. Voluntarily amalgamated hromadas were usually created through local initiative and agreement, showing stronger local capacity and cohesion. In contrast, enforced amalgamations often faced resistance and had little community involvement.

Based on this distinction, we hypothesize that the benefit of decentralization is stronger in voluntarily formed hromadas. This provides a natural basis for investigation, as we can compare individuals residing in communities that amalgamated voluntarily with those in communities amalgamated by government directive. We contribute to the existing literature by examining whether the type of amalgamation correlates with stronger group cohesion and a greater willingness to contribute to public goods through individual donations.

As Full-scale Russian invasion has started shortly after the decentralization reform ended, during which Ukrainians are highly engaged in enhancement of public goods provision, 86% of Ukrainians donated to war and humanitarian efforts—averaging nine donations per person—42% volunteered, and over 100,000 joined the Territorial Defense Forces (RTI International 2024). While this surge may reflect the effects of decentralization, current civic participation is declining, thus a better understanding of role of decentralization on donations is warranted.

This study contributes to the growing literature on prosocial behavior by examining how the structure of local governance—specifically, the type of hromada amalgamation resulting from Ukraine's decentralization reform—influences individual contributions to public goods, such as donations and volunteering. The main goal of the thesis focuses on whether voluntary vs. enforced decentralization and the size of local communities, as proxies for social cohesion, help explain variation in civic engagement, particularly in the form of donations.

By applying Ordinary Least Squares (OLS), Probit and Tobit models to individual-level survey data, this study provides rare empirical evidence on how institutional design can shape public goods provision under extreme conditions. The central research question is: Does the type of decentralization (voluntary vs. enforced) and size of formed hromadas through increased social cohesion influence individuals' willingness to contribute to public goods such as donations during full-scale invasion of Ukraine?

The study uses a fresh representative survey conducted in 2024 with more than 12,000 respondents by InfoSapiens via Qualtrics and generously shared by the research team at Northwestern University. This survey data is combined with a rich administrative dataset containing detailed characteristics of Ukrainian amalgamated territorial communities (ATCs) compiled by the KSE Institute.

Via studying the impact of Ukrainian decentralization process on the willingness to provide public goods to society, this research aims to provide useful insights for Ukrainian policymaking and to highlight broader implications for other countries facing similar threats for national security or other similar socio-economic challenges, including consideration of decentralization reform implementation or facing challenges in its implementation.

The remainder of this thesis is organized as follows. Chapter 2 reviews the relevant literature on public goods provision through donations and the role of decentralization in shaping provision of public goods. Chapter 3 outlines the methodological framework, detailing the hypotheses, econometric models, and identification strategies employed. Chapter 4 presents the data sources, including the individual-level survey and administrative information on hromadas. Chapter 5 provides the estimation results and interprets the key findings. Chapter 6 discusses these findings in the broader context of social cohesion and public policy. Finally, Chapter 7 concludes the study and offers

policy recommendations for Ukraine and other countries undergoing decentralization amidst big challenges such as war.

Chapter 2

LITERATURE REVIEW

2.1. Donations as a public goods delivery

In this study, we treat donations to the army and for humanitarian purposes as contributions to public goods, as they increase, for example, national defense or other benefits society in other ways. Public goods are characterized by non-excludability – people cannot be excluded from usage of the good and non-rivalrousness – usage of the good by one person does not reduce the amount available to others (Samuelson, 1954).

To make a clear categorization of public goods after full-scale invasion of Ukraine, we divide them using the framework proposed by Dag McAdam (1986), who classifies activism based on the level of personal risk—to life, status, or freedom, and for low-cost/high-cost activism by spending of money, time, energy. Thus, donation involves low risk and while they may have financial cost, they usually require less time and physical involvement than high-effort activities, like volunteering or protest participation. Although sometimes these activities may vary in specific cases, respondents generally perceive them in these dimensions.

In economics charitable giving has long sought altruism as a main driver of motivation. However, James Andreoni's theory of "warm-glow giving" (1990) challenge this view by suggesting that individuals often donate not only because of concern for others but also due to the intrinsic satisfaction they derive from the act of giving itself. This concept has since been widely used to interpret results from public goods experiments, including settings where contributions persist despite negligible marginal impact (see e.g., Fischbacher et al., 2001).

Other research pays attention to reputational and social incentives. Roberts' theory of competitive altruism (1998) states that people can give a lot to

charities to signal their status, reliability and generosity within their communities. This especially increases in wartimes when social cohesion and collection are vital and considered by others as more important.

Moreover, literature from behavioral economics highlights the role of norms, reciprocity, and moral obligation in shaping donation behavior—factors that are particularly powerful in conflict-affected societies where formal institutions are under pressure (Bekkers & Wiepking, 2011).

The literature on public goods provision and collective action consistently highlights the problem of free-riding, especially when individual contributions have limited marginal impact (Olson 1965; Ledyard 1995). While the Ukrainian case following the full-scale invasion initially appeared to defy this logic—with a surge in donations and volunteer activity driven by high perceived stakes and a strong sense of national identity—subsequent data reveal a decline in contributions over time. This pattern aligns with findings from repeated public goods experiments, where conditional cooperation tends to break down as individuals observe declining participation from others (Fischbacher, Gächter, and Fehr 2001).

Prior research has also pointed out that risks have interplay with the donation participation and donation amounts. Risk-averse people are less likely to donate, especially to more uncertain, bigger projects (Eckel and Grossman 2003; Bekkers and Wiepking 2011). Other studies show that donors tend to avoid projects they perceive risky or more uncertain. So, we can consider military donations and humanitarian donations as two separate types. Military donations are riskier, more uncertain and long-term, while humanitarian donations are less risky, more certain and more immediate. This distinction also aligns with McAdam's (1986) framework, which classifies activism along dimensions of risk and cost. By treating these donation types separately, we aim to capture potential heterogeneity in motivation and willingness to contribute under conditions of war.

Donations in wartime Ukraine can be example how individuals contribute to public goods under extreme conditions. Motivated by altruism, social norms, and conditional cooperation, these contributions play a critical role in national defense and civilian protection. Understanding the drivers and dynamics of donation behavior can help policymakers and civil society better design mechanisms for sustaining public engagement during protracted crises.

2.2. Studies of effects of decentralization on individuals' behavior.

The study of decentralization reform on individuals' behavior in taking part in public goods provision closely aligns with the mainstream modern economic literature. North (1990) in his research argues that formal institutions, like decentralization, have a influential effect on society and economy, reducing uncertainty by creating structured interactions between individuals.

Osrom (1998) studies the role of collective action in the decentralized system. She argues that grassroot initiatives can effectively manage resources and deliver services. Her finding claims that social norms and community driven efforts which foster during decentralization can outperform centralized system in enhancing cooperation and sustainable results.

Importantly, donations during wartime blur the line between individual action and state function—they not only address immediate needs but also contribute to broader state resilience and public trust. This reinforces earlier findings in political science that effective civic engagement can substitute for weak institutions, especially in transitional or states with conflict (Ostrom, 1996; Putnam, 1994).

Several studies explore the role of socio-economic situation for the contributions to public goods. Konrad et al. (2024) highlight how grassroots organizations and communities organize to fill gaps left by bureaucratic government through donations and volunteer efforts to support army.

Additionally, the work of 2024 Nobel laureates Acemoglu Johnson, Robinson (2012) in their work distinguish between inclusive and extractive institutions. Inclusive institutions, which promote broad participation and accountability are both important for successful decentralization reform and can be enhanced by it. In contrast, extractive institutions concentrate power and resources in the hands of a few, limit civic participation, and often weaken local autonomy. If decentralization is implemented in an extractive institutional environment, there is a high risk that it will lead to a higher elite control at the local level rather than empowering communities.

The focus of much research was the investigation of decentralization effects on societal development. For example, Bardhan (2002) studied how decentralization brings decision-making closer to individuals and lowers barriers within socio-political institutions, thereby improving governance and service delivery. His research highlighted that decentralization can strengthen community engagement and increase the efficiency of resource allocation. However, it also pointed out that in the presence of weak local governance, decentralization may lead to elite capture or administrative inefficiency.

Faguet (2014) also emphasizes that decentralization positively affects individuals' contributions to local public goods. His research highlights that strengthening interpersonal trust encourages more active engagement with communal challenges, leading to improved collective outcomes.

Social cohesion—defined as the degree of trust, sense of belonging, and willingness to cooperate within a community—plays a central role in fostering collective action and contributions to public goods (Chan, To, and Chan 2006). Recent experimental studies, such as Gächter, Starmer, and Tufano (2023), show that cohesive groups outperform others in coordination tasks due to stronger mutual expectations and trust. While their study does not directly examine public goods, it highlights a behavioral mechanism—cohesion-driven cooperation—that helps explain why communities with stronger internal ties, such as voluntarily amalgamated hromadas, may be

more inclined to engage in prosocial behavior like humanitarian donations. This interpretation is supported by additional research showing that social cohesion enhances cooperation in public goods contexts (Fischbacher et al. 2001; Alesina and La Ferrara 2004), reinforcing its relevance in understanding civic engagement during wartime Ukraine.

Some research of decentralization where also conducted in Ukraine in recent years. For instance, Romanova and Umland (2019) studied the how behavior of Ukrainian citizens changed with the decentralization reform. They find that decentralization in Ukraine led to the more citizens trust, and engagement with the increase in in fiscal autonomy and enhancement of service delivery. However, they found that because of challenges individual behaviour also was influenced by uneven distribution of resources and unequal quality of service delivery. The OECD (2020) report supports the previous findings illustrating that decentralization increased efficiency and institutional trust especially in the rural areas.

Some researches of decentralization also were conducted in effected by wars similarly to Ukraine today. Like research of Wily (2018), who is more skeptical about positive effects of decentralization. He finds that in conflict areas some communities thrive because of increased autonomy and participation in local issues, others struggle because of resource scarcity and weak local institutions, what leads to disproportional outcomes. He argues that for successful decentralization robust grassroots participation is crucial.

Existing studies highlight the potential of decentralization to positively influence individual behavior toward collective goals. However, they largely focus on aggregate outcomes and do not examine whether the type or process of decentralization leaves a lasting effect on individuals' behavior, especially in times of big crisis such as war. This research addresses that gap by investigating whether pre-war decentralization reforms in Ukraine influenced individual contributions to public goods—specifically, donations for humanitarian and defense purposes—during the full-scale invasion.

This study makes two key contributions. First, studies empirically evidence the effect of decentralization on individual contributions to humanitarian and defense-related donations. Second, it explores group cohesion as a behavioral mechanism that may explain why voluntary decentralization leads to higher levels of participation and collective action during wartime.

Chapter 3

METHODOLOGY

Based on the findings described in the literature review, the objective of this study is to look closer at the effect of bigger cohesion because of amalgamation of territorial hromadas due to representative survey of Ukrainian population data.

To measure social cohesion, we use voluntary amalgamation of territorial hromadas as a proxy. While this is not a direct measure, the decision to amalgamate voluntarily may reflect higher levels of local trust, mutual agreement, and shared identity—core components of social cohesion as defined in the sociological literature (Chan, To, and Chan, 2006). In contrast to forced amalgamations, voluntary ones likely required greater internal consensus and engagement, making them a reasonable proxy for stronger within-community cohesion.

Usually, pro-social behavior in Ukraine studied by qualitative methods and descriptive statistics methods. To study the topic from a different perspective this study uses ordinary least squares (OLS) regression similarly to Ryan Sheely (2013) research of examining the causes of public goods maintenance and probit method.

Thus, the main research method of this study is: Does the type of decentralization (voluntary vs. enforced) and size of formed hromadas through increased social cohesion influence individuals' willingness to contribute to public goods such as donations during full-scale invasion of Ukraine?

To test this, we started the following hypothesis which differ based on the unit of measurement and target of donation.

H1: Individuals in smaller and voluntarily amalgamated hromadas will donate larger amounts of money to the Armed Forces of Ukraine.

H2: Individuals in smaller and voluntarily amalgamated hromadas will be more likely to donate to the Armed Forces of Ukraine.

H3: Individuals in smaller and voluntarily amalgamated hromadas will be more likely to donate to humanitarian needs

We distinguish between military and humanitarian donations based on their perceived risk and immediacy, as discussed in the theoretical section. However, due to data limitations, we are unable to test a fourth hypothesis regarding the amount donated to humanitarian causes (H4), as only binary information on donation occurrence is available for this category.

To test these hypotheses, the independent variables of interest are the individuals hromadas amalgamation and type of hromadas based on the population size (1). This allows us to examine whether the form and scale of decentralization influence donation behavior.

$$DONATION_i = \beta_0 + \beta_1 \cdot Voluntary_i + \beta_2 \cdot SmallHromada_i + \varepsilon_i \quad (1)$$

The advantage of OLS model is that it can incorporate many control variables which can help address partially omitted variable problems which can arise because some other variables can influence the interplay between the variable of interest and the dependent variable (2).

$$DONATION_i = \beta_0 + \beta_1 \cdot Voluntary_i + \beta_2 \cdot SmallHromada_i + \beta_3 \cdot Voluntary_i \cdot SmallHromada_i + \varepsilon_i \quad (2)$$

In this model there are two types of independent variables. The first one is the variable of interest in our case, this is an amalgamation type of the territorial Hromada, in which respondents live.

The second type of independent variables is the personal characteristics of the individual, there are 9 of them in this model each can be important to donation and can change of variable of interest. The variables were selected to be mutually exclusive and to have strong multicollinearity between each other. These variables are age, gender, financial status, type of settlement, migration after full-scale invasion, language, financial status, region before war and education.

However, this model can have potential issues. On the one hand it can omit the other characteristics of the Hromada's, for example perhaps individuals donate more because their Hromada is smaller in size they have bigger social cohesion to others and not because there Hromada amalgamated sooner. To control this also Hromada specific characteristics were added as whether Hromada includes oblast center, and number of settlements in Hromada.

Another problem that may arise in our model is survey bias. Respondents may provide answers that are not truthful. There are two main reasons for such bias.

First one is social desirability bias as individuals like to answer the questions in the manner which is more socially approved (Sheely, 2013). It is important in our situation in which we measure the contribution towards public goods which are considered by society as good behavior especially during war. So, it was added variable whether individuals were said that they are not expected to answer positively to the question about the public goods or not as survey split respondents to two groups one of which received such message and other do not. Both groups are present in the sample.

The second survey bias which is controlled in this model is response bias (Sheely, 2013). Respondents can fill in the survey not attentively or fill random answers. To face this potential issue a second model incorporates two screener questions which look to see whether individuals attentively read the questions, they were required to answer specifically some questions, like to answer 'usually' to the question.

So, an extended model with controls is designed to control Hromada specific characteristics and survey biases (3). Donation was measured like combined amount of money people donated in the quasi-experiment to United 24 and "Come Back Alive", the range was between 0 and 150 hryvnias.

$$DONATION_i = \beta_0 + \beta_1 \cdot Voluntary_i + \beta_2 \cdot SmallHromada_i + \beta_3 \cdot Voluntary_i \cdot SmallHromada_i + \gamma \cdot Controls_i + \varepsilon_i \quad (3)$$

As our data is non-normally distributed and has many individuals who donated all or nothing, we additionally used a Tobit model for censoring extreme values (4).

$$DONATION_i^* = \beta_0 + \beta_1 \cdot Voluntary_i + \beta_2 \cdot SmallHromada_i + \beta_3 \cdot Voluntary_i \cdot SmallHromada_i + \gamma \cdot Controls_i + \varepsilon_i \quad (4)$$

$$DONATION_i = \begin{cases} 0 & \text{if} \quad DONATION_i^* \leq 0 \\ DONATION_i^* & \text{if} \quad 0 < DONATION_i^* < 150 \\ 150 & \text{if} \quad DONATION_i^* \geq 150 \end{cases}$$

Our second and third hypotheses use a binary question whether individuals self-reported participation in humanitarian and military donations, so for them probit was used as a more robust check for binary variables (5).

$$DONATION\_PARTICIPATION_i = \beta_0 + \beta_1 \cdot Voluntary_i + \beta_2 \cdot SmallHromadai + \beta_3 \cdot Voluntary_i \cdot SmallHromadai + \gamma \cdot Controls_i + \varepsilon_i \quad (5)$$

$$P(DONATION\_PARTICIPATION_i = 1) = \Phi$$

Estimation was done using R statistical software. Tydyverse package was used to data preparation, haven package was used for survey data handling and ggplot2 package was used for data visualization.

Chapter 4

DATA

The main source of data for this research is a representative survey conducted by InfoSapiens and Qualtrics in the not occupied territories of Ukraine. The survey was conducted in early 2024, with over 12,192 participants.

This survey contains detailed social and economic information, such as civilian and military engagement, perceptions of institutions, political ideology, and willingness to donate through a quasi-experimental approach, providing a good basis for this research. The most important is that the survey contains the settlements where people lived before the full-scale invasion, making it possible to merge this survey with the dataset of Ukrainian hromadas. In addition, common survey biases such as social desirability bias, acquiescence bias, and recall bias may be present, but the survey is rich with questions designed to face these potential issues (Sheely, 2013).

The second source of the data is the public dataset of Ukrainian territorial hromadas created by KSE institute. The dataset has more than 100 variables for each of the 1470 territorial hromadas in Ukraine, such as date Hromada amalgamation, size of the Hromada, its location, population and many more.

To merge the main sources of data, the dataset of Ukraine administrative units was used as a mediator to match the settlement with Hromada as survey data do not contain a hromada name for each respondent. As some Ukrainian settlements have the same names additionally to settlement to match, were used regions, however there was still 1,100 respondents who lived in the settlements which have the settlement with the same name in that region. To handle this issue was decided to drop these respondent as we are not able to precisely identify the hromadas, of these respondents. This is one of the limitations of our research, however omitting this 10% of respondents will decrease the chance that we interpret respondents incorrectly. Descriptive statistics are presented in Table 1.

Table 1. Descriptive statistics of variables

Variable	N	Mean	SD	Median	MAD	Min	Max	Range
Private_Donate	2781	41.46	32.35	50	37.06	0	75.0	75.0
State_Donate	2776	37.61	32.65	38	54.86	0	75.0	75.0
voluntary.x	2396	0.25	0.43	0	0.0	0	1.0	1.0
Population_Group	2396	1.48	0.5	1	0.0	1	2.0	1.0
Age	2788	39.64	11.33	39	11.86	18	70.0	52.0
Trust	2779	1.81	0.4	2	0.0	1	2.0	1.0
Gender	2788	1.55	0.5	2	0.0	1	2.0	1.0
Settlement_type	2788	1.21	0.58	1	0.0	1	3.0	2.0
Migration	2788	1.66	0.47	2	0.0	1	2.0	1.0
User_Language	2788	0.89	0.32	1	0.0	0	1.0	1.0
Financial_status	2779	3.04	1.17	3	1.48	1	6.0	5.0
Region_Before_War	2787	3.05	1.32	3	1.48	1	5.0	4.0
Oblast_Center	2396	0.57	0.49	1	0.0	0	1.0	1.0
Number_of_Settlements	2396	14.15	16.03	9	11.86	1	125.0	124.0
Population_2022	2396	441901.18	469653.77	267046	333957.87	2040	1421125.0	1418464.0
Don_Game_Order	2788	1.5	0.5	2	0.0	1	2.0	1.0
Travel_Time	2396	41.41	59.88	0	0.0	0	285.4	285.4
Screener_1	2785	0.9	0.3	1	0.0	0	1.0	1.0
Screener_2	2783	0.9	0.3	1	0.0	0	1.0	1.0
Education	2786	4.81	1.57	6	0.0	1	7.0	6.0
Tr_CivicActivism	2788	1.5	0.5	1	0.0	1	2.0	1.0

Our key dependent variable for the first hypothesis is donation by individuals during the quasi-experiment was conducted by providing people 75 hryvnias, which they could use some as a donation to the private volunteering fund "Come Back Alive" and the rest for themselves. After this, they were provided with 75 hryvnias again and could give them to the governmental fund "United 24" 75 hryvnias and the rest for themselves. The order was different to omit the order of the question survey bias. The usage of quasi-experiments with real money and not a question about public goods contribution helps with omitting the social desirability bias. Not all the survey

participants have a quasi-experiment, 2,450 from participants with clear hromada affiliation had a quasi-experiment.

We can see that the quasi-experiment money is not normally distributed and instead it U-shape distributed (Figure 1). There are spikes on the 0 hryvnias and 150 hryvnias and there are smaller spikes on the 50, 75 and 100 hryvnias. Such not a normal distribution can cause possible issues in OLS model usage of models that controls it such Probit and Tobit is required.

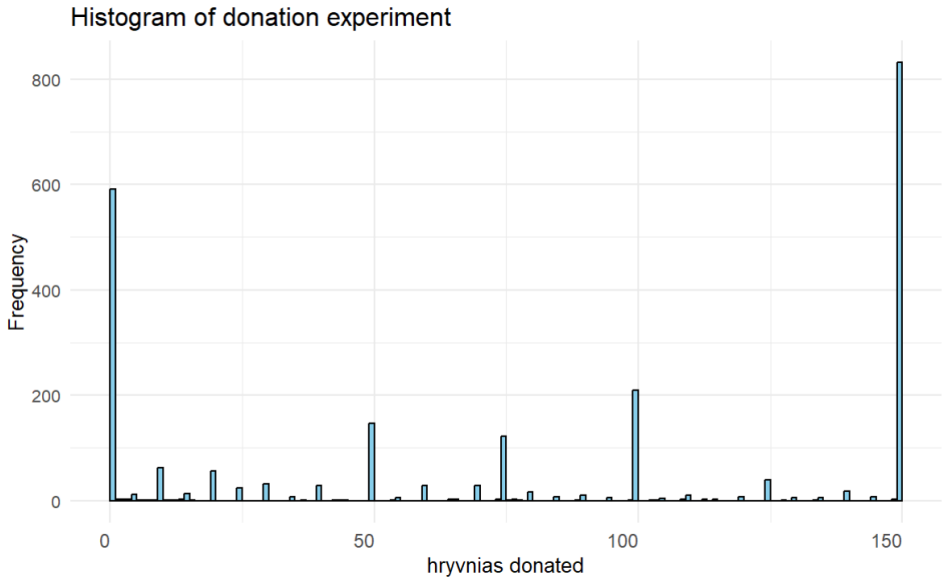

Figure 1. Histogram of donation quasi-experiment

First variable of interest - hromada amalgamation which is used as proxy for social cohesion.

As we can see the distribution is left skewed and most of the participants gromadas were amalgamated not voluntarily in 2020 (Figure 2).

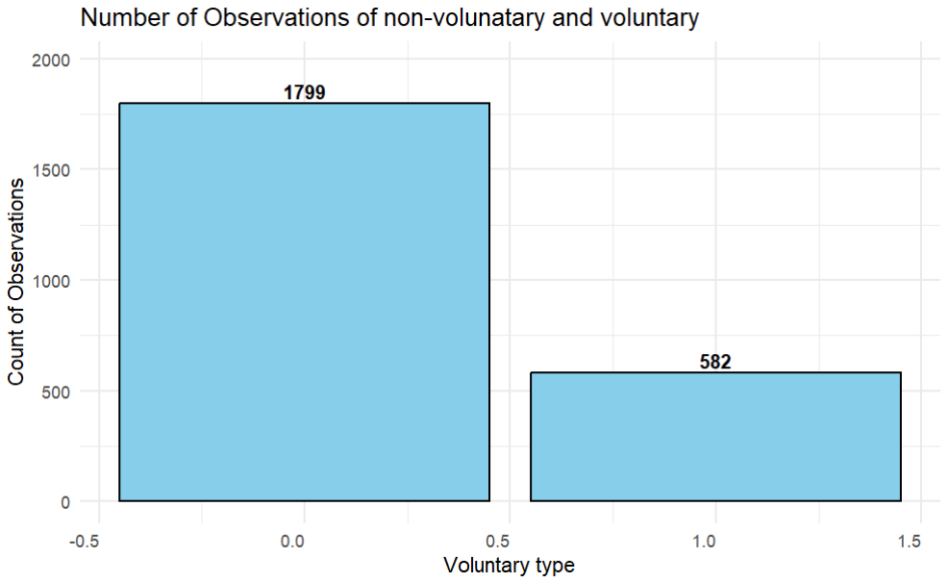

Figure 2. Number of observations based on amalgamation type

The second variable of interest – hromada size was created by splitting participants hromadas population by two groups based on the median Population.

The heatmap between variables shows interesting interactions between our variables (Figure 3). For example, year of the hromada creation is significantly negatively correlated with the age. Supposing that hromadas who were voluntarily amalgamated have a bigger share of elderly people.

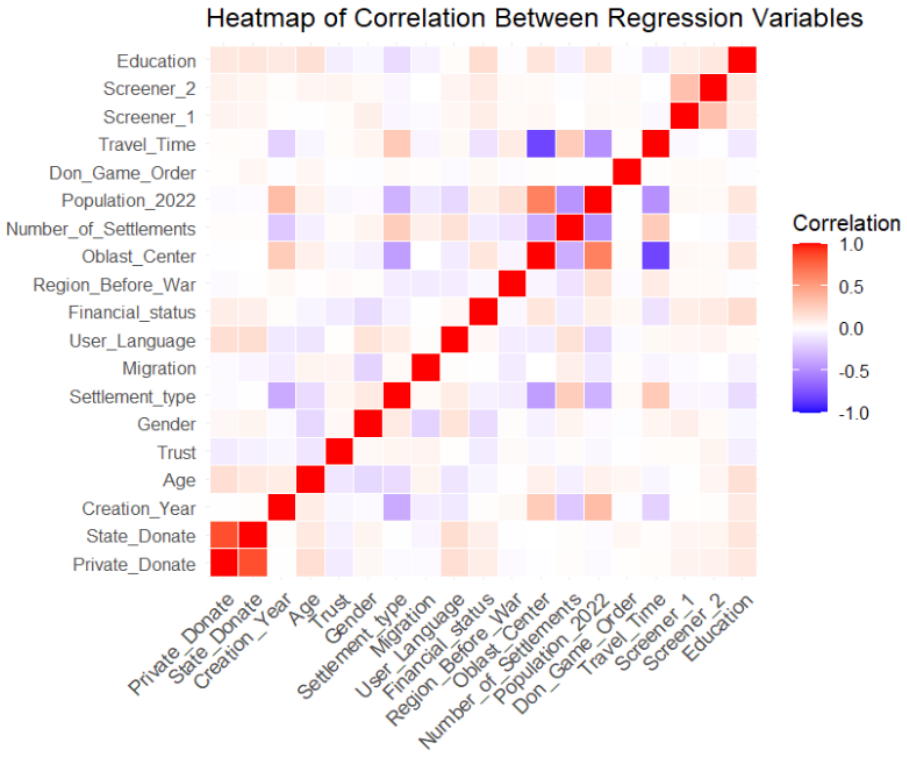

Figure 3. Heatmap of correlation between regression variables

Also, we can see that state donation and private donation are strongly correlated (0.84), which makes it logical to unite them in our research. The other variables in which we see a strong correlation is education and age. Surprisingly there is a small negative correlation between trust and private donation but can be influenced by some third factor.

Chapter 5

ESTIMATION RESULTS

In Chapter 3, I have presented the OLS and Tobit model to estimate the effects of voluntary amalgamation and hromada population on the donation of the people they did in the survey. There are 3 OLS models and one Tobit model for censoring extreme variables such as 0 donation and all the donations, which make more than 60% of donations and help with the U-shaped distribution.

The first column shows the results of OLS with the only independent variables of interest – voluntary amalgamation and population size (Table 2). The model does show the significance of the regressors, while the model itself is not significant.

The second OLS model adds to the first model interaction between the variables of interest. The results show that estimations remain not significant, and the interaction does not add significant improvement to model estimations.

The third OLS model adds all the control variables we use that are expected to influence the estimation results and might be omitted otherwise. This model becomes stronger in estimating the results of the donation. Adjusted R^2 of the model is 0.094. However, our regressors remain still not significant, indicating no effect on the amount people donate. Meanwhile, the strongest estimators are User Language of the person, Age, and Financial Status. Only statistically significant control variables are shown, and Financial Status and Education are treated as numerical variables, which do not influence the results significantly, as well as the control of heteroscedasticity. Estimation of all control variables can be seen in Appendix 1.

Table 2. Estimation results of Donation quasi-experiment

	Donated Amount			
	OLS: Interaction	OLS: No Interaction	OLS: Full Controls	Tobit
	(1)	(2)	(3)	(4)
Voluntary	-1.748	-1.748	-1.148	-4.071
	(3.636)	(3.636)	(3.663)	(8.907)
Small Hromada	2.148	2.148	2.767	6.422
	(2.998)	(2.998)	(4.257)	(10.362)
Age			0.941***	2.171***
			(0.115)	(0.283)
Trust			-6.324**	-15.265**
			(3.155)	(7.725)
Gender			6.722**	13.003**
			(2.628)	(6.375)
User_Language			32.367***	77.553***
			(4.116)	(10.121)
Financial_status			4.022***	8.439***
			(1.121)	(2.733)
Education			2.874***	6.415***
			(0.823)	(1.998)
Region_Before_WarSouth			10.283**	27.858**
			(4.487)	(10.923)
RA_familiarity			9.227***	21.124***
			(1.819)	(4.444)
Voluntary: Small Hromada		0.835	0.710	-5.842
		(7.830)	(7.921)	(19.215)
Other not significant variables			*	*
			*	*
Constant	81.053***	80.981***	-39.446***	-180.021***
	(2.202)	(2.304)	(13.659)	(33.428)
Observations	2,380	2,380	2,362	2,362
R^2	0.0003	0.0003	0.101	
Adjusted R^2	-0.001	-0.001	0.094	
Log Likelihood				-7,166.885
F Statistic	0.385 (df = 2; 2377)	0.260 (df = 3; 2376)	13.845*** (df = 19; 2342)	
Wald Test				216.112*** (df = 19)
Note:	*p<0.1; **p<0.05; ***p<0.01			

The fourth model is a Tobit model with the left censorship of 0 hryvnias donation and right censorship of whole donation (150 hryvnias). The result of the model is quite like the OLS model with the controlled variables; variables of interest still remain not statistically significant.

Thus, there is no proof for the first hypothesis that voluntary amalgamation and population size of the hromadas will increase the amount people donate in the quasi-experiment.

While the first hypothesis was aimed at studying behavior in a quasi-experiment, the second and the third aim to study the self-reported donations of the respondents. These were measured by asking participants to answer the multiple-choice question: "Since the beginning of the full-scale invasion, which of the following activities have you participated in at least once?" The relevant answer options were: "Donating own funds for humanitarian aid (e.g., to purchase food/medicine for civilians, to rebuild homes, etc.)" and "Donating own funds to purchase military aid (e.g., helmets, bulletproof vests, medical kits, drones, vehicles)"

As the dependent variables are binary, the probit method was chosen for all models. Models 5–7 have self-reported donations which takes the values from 0 to 1,as the dependent variable. While models 8–10 have participation in donation to the army as the dependent variable (Table 3).

The fifth model shows that voluntary amalgamation is statistically significant at the $p < 0.05$ level and increases participation in humanitarian donation by 8%, while hromada size is not significant. In the sixth model, the interaction between variables of interest was added, but it does not change the results significantly, and they remain almost the same.

Table 3. Estimation results of Donation self-reporting

	Humanitarian Donation			Army Donation		
	Additive	Interaction	Full Controls	Additive	Interaction	Full Controls
	(5)	(6)	(7)	(8)	(9)	(10)
Voluntary	0.084**	0.083**	0.081**	-0.003	0.014	0.032
	(0.033)	(0.038)	(0.040)	(0.034)	(0.039)	(0.042)
Small Hromada	0.022	0.023	-0.124***	-0.062**	-0.050	0.013
	(0.028)	(0.031)	(0.046)	(0.029)	(0.032)	(0.048)
Age			-0.001			0.007***
			(0.001)			(0.001)
Trust			-0.090**			-0.092**
			(0.035)			(0.037)
Gender			0.138***			0.266***
			(0.028)			(0.030)
Migration			-0.121***			-0.051
			(0.030)			(0.032)
User_Language			0.504***			0.662***
			(0.043)			(0.044)
Financial_status			0.032***			0.056***
			(0.012)			(0.013)
Education			0.091***			0.103***
			(0.009)			(0.009)
Region_Before_WarSouth			-0.270***			-0.074
			(0.049)			(0.051)
Region_Before_WarNorth			-0.177***			-0.085*
			(0.047)			(0.049)
Region_Before_WarEast			-0.322***			-0.088**
			(0.043)			(0.045)
Region_Before_WarCentre			-0.114**			0.010
			(0.046)			(0.048)
Oblast_Center			-0.100**			-0.065
			(0.041)			(0.043)
Tr_CivicActivismTreatment			-0.084***			-0.035
			(0.027)			(0.028)
Screener_1			0.221***			0.291***
			(0.045)			(0.046)
Screener_2			0.192***			0.395***
			(0.046)			(0.047)
Voluntary: Small Hromada		-0.006	0.153*		-0.074	-0.138
		(0.079)	(0.086)		(0.080)	(0.089)
Constant	0.303***	0.304***	-0.622***	0.528***	0.521***	-1.685***
	(0.023)	(0.024)	(0.145)	(0.024)	(0.025)	(0.151)
Observations	9,499	9,499	9,389	9,493	9,493	9,384
Log Likelihood	-6,290.725	-6,290.721	-5,929.057	-5,872.291	-5,871.867	-5,357.120
Akaike Inf. Crit.	12,587.450	12,589.440	11,898.110	11,750.580	11,751.730	10,754.240

Note: *p<0.1; **p<0.05; ***p<0.01

In the seventh model, in addition to the probit model, the control variables are added. In this model, the estimate of voluntary amalgamation remains almost the same, and its significance remains at the same level. However, the estimates of small hromadas and interaction change; they become statistically significant at the $p < 0.01$ level for small hromadas and at the $p < 0.1$ level for the interaction of voluntary amalgamation and small hromadas. The estimates have different effects: individuals from non-voluntary small hromadas tend to donate less, while individuals from small voluntary amalgamated hromadas tend to donate more. Such effect rejects the null hypothesis in the third hypothesis.

Despite voluntary donation, there is no statistical significance of the variables of interest in models 8–10. The only significance is observed in the simplest eighth model for small hromadas, in which it has a negative coefficient. However, this significance disappears when interaction and control variables are added.

As a result, our estimation of effect of voluntary amalgamation and population size of hromadas shows no difference for military donations both in quasi-experiment and in questionnaire of military donation participation. However, we found that individuals from the voluntary amalgamated hromadas, especially in small tend to donate more for humanitarian donation. This is aligned with our expectation that decentralization will have a bigger effect in communities which have bigger social cohesion because they were more engaged in decentralization process and received more from and thus have bigger social cohesion, but it also shows that it only works in humanitarian purposes but not in military which has not been previously covered in the literature.

Chapter 6

DISCUSSION

This study finds that voluntary amalgamation and size of hromadas as proxies of social cohesion is positively associated with the amount of donations made to humanitarian causes but does not significantly affect donations to the military. This differential effect suggests that distinct mechanisms support each type of donation behavior, even though both are typically treated as forms of collective action and public goods provision in the literature.

The positive association between social cohesion and humanitarian donations is consistent with existing theoretical frameworks that link trust, interpersonal solidarity, and prosocial behavior (Putnam 2000; Bekkers and Wiepking 2011). In cohesive communities, individuals may feel a stronger moral obligation or collective empathy toward vulnerable groups, especially displaced civilians or those in need of medical support. Humanitarian giving, in this sense, may be viewed as an extension of local or national solidarity, reinforced through social norms and interpersonal networks.

In contrast, the lack of association between social cohesion and military donations implies that such contributions may be driven by other motivations. These could include political ideology, nationalistic identification, or perceived existential threats, rather than horizontal trust or communal bonds. This aligns with research suggesting that military support is more often influenced by identity-based or ideological drivers (Fowler and Kam 2007; Hirsch-Hoefler and Canetti 2016), and less by interpersonal trust or civic engagement. For example, the most important variable for donation to army was Ukrainian language of speaking of respondents.

These findings have both theoretical and practical implications. Theoretically, they challenge the assumption that social cohesion universally promotes all forms of collective contribution. Instead, they suggest that the perceptions of the impact of these donations might differ—whether as humanitarian

solidarity or national defense—moderates how social trust translates into action (Tversky and Kahneman 1981). Practically, these results indicate that appeals for humanitarian aid may be more successful when targeting communities with high social capital, while appeals for military support might require different mobilization strategies, such as emphasizing national identity or security narratives.

This study faces several limitations. The first limitation of the question about participation in humanitarian donation was self-reporting which introduces social desirability bias what can be reinforced by wartime in which charitable activity can be perceived as norm. Although we do not find statistical significance of social cohesion either in quasi-experiment or in self-response about donations it would be great if future research would study more the difference between the donation behavior depending on purpose using quasi-experiment.

Second, to address inattentive respondents, the survey included screener questions and failure to answer them as control variables, rather than excluding participants from the sample. While this allows us to retain more observations they were included and control inattentiveness statistically, it could possibly add some noise to the estimates if inattention effect is more significant than just control variables.

This divergence between military and humanitarian donations also opens important routes for future research: under what conditions does cohesion translate into broader civic mobilization? How do trust in institutions or political polarization interact with donation preferences in wartime? And what distinguishes the motivations behind these two types of donations?

Addressing these questions could further clarify the channels through which prosocial norms shape behavior in high-risk, high-uncertainty environments. Experimental and behavioral approaches can also bring a new insight into the mechanisms which link group identity and prosocial action.

Chapter 7

CONCLUSIONS AND POLICY RECOMMENDATIONS

This study examined whether the type of decentralization—specifically voluntary amalgamation—and the population size of hromadas influence individuals' willingness to contribute to public goods in wartime Ukraine. Using OLS, Tobit, and probit models, we tested the effects of these variables on both the amount donated in a quasi-experimental setup and on self-reported participation in donations to the Armed Forces and humanitarian causes.

The results do not provide evidence to support the hypothesis that voluntary amalgamation or hromada size significantly affect military donations. Neither the amount donated in the quasi-experiment nor the reported participation in military support showed consistent differences across decentralization types.

However, the findings show that people from small hromadas that joined voluntarily are more likely to donate to humanitarian causes. This supports the theoretical expectation that when communities are more involved in decentralization, they build stronger social ties, which in turn encourages more collective actions like donating.

Importantly, the observed effects appear limited to humanitarian support, suggesting that different motivations may drive donations to military versus non-military causes. This distinction has not been widely addressed in the literature and opens new directions for research on the interaction between decentralization, social cohesion, and types of civic engagement during times of social mobilization.

The possible theoretical explanation of effect only on humanitarian donation could be that increased social cohesion leads to increased engagement in local pro-social activities and humanitarian donation could be associated with a more localized initiative, while army donations are more associated with the

more global initiatives to which in local social cohesion do not have such big effect. This ambiguity requires further research. For example, it would be interesting to look at the results of quasi-experiment if the two possibilities to donate were not between state and non-state funds but between military and humanitarian funds.

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APPENDIX A. Full estimation results

Table 4 Regression Results (extended)

	Dependent variable:			
	Donated Amount			
	OLS			Tobit
	OLS: Interaction only	OLS: No interaction	OLS: Full controls	Tobit
	(1)	(2)	(3)	(4)
Voluntary amalgamation	-1.928	-1.748	-1.052	-3.807
	(3.219)	(3.636)	(3.657)	(8.873)
Population_GroupBig	-2.270	-2.148	-2.917	-6.939
	(2.769)	(2.998)	(4.259)	(10.344)
Age			0.907***	2.087***
			(0.117)	(0.287)
Trust			-6.552**	-15.754**
			(3.153)	(7.704)
Gender2			6.071**	11.509*
			(2.639)	(6.385)
Settlement_type			1.001	4.242
			(2.364)	(5.735)
Migration			-2.852	-7.436
			(2.789)	(6.766)
User_Language			32.201***	77.532***
			(4.118)	(10.110)
Financial_status2			13.882***	28.871**
			(4.698)	(11.356)
Financial_status3			19.917***	41.381***
			(4.581)	(11.081)
Financial_status4			21.904***	45.396***
			(4.968)	(12.014)
Financial_status5			20.955***	44.395***
			(5.665)	(13.737)
Financial_status6			5.468	-0.010
			(14.053)	(35.863)
Education2			19.410**	54.975**
			(9.039)	(22.117)
Education3			23.986***	62.460***
			(8.290)	(20.374)
Education4			27.313***	73.040***
			(8.798)	(21.603)
Education5			24.318***	62.772***
			(9.407)	(23.024)

Education6			29.923***	76.009***
			(8.061)	(19.860)
Education7			21.376*	54.520*
			(12.167)	(29.790)
Region_Before_WarSouth			10.085**	27.324**
			(4.484)	(10.893)
Region_Before_WarNorth			5.314	14.477
			(4.258)	(10.308)
Region_Before_WarEast			3.613	11.287
			(3.925)	(9.485)
Region_Before_WarCentre			4.836	8.492
			(4.152)	(10.008)
Oblast_Center			-1.158	-4.879
			(3.768)	(9.149)
Tr_CivicActivismTreatment			1.699	3.420
			(2.461)	(5.965)
UN24_familiarity			2.197	6.547
			(1.665)	(4.032)
RA_familiarity			8.908***	20.381***
			(1.819)	(4.433)
voluntary.x:Population_GroupBig		-0.835	-1.191	4.344
		(7.830)	(7.918)	(19.160)
Constant	81.053***	80.981***	-47.521***	-209.180***
	(2.202)	(2.304)	(14.637)	(36.121)
Observations	2,380	2,380	2,362	2,362
R^2	0.0003	0.0003	0.108	
Adjusted R^2	-0.001	-0.001	0.098	
Log Likelihood				-7,157.662
Residual Std. Error	62.499 (df = 2377)	62.512 (df = 2376)	59.378 (df = 2333)	
F Statistic	0.385 (df = 2; 2377)	0.260 (df = 3; 2376)	10.116*** (df = 28; 2333)	
Wald Test				231.752*** (df = 28)
Note:	*p<0.1; **p<0.05; ***p<0.01			

Table 5.Probit Models of Army Donation (extended)

	Dependent variable:					
	Army Donation (binary)			Humanitarian_Donation		
	Interaction	Additive	Full Controls			
	(1)	(2)	(3)	(4)	(5)	(6)
voluntary.x	0.083**	0.084**	0.079*	0.014	-0.003	0.027
	(0.038)	(0.033)	(0.040)	(0.039)	(0.034)	(0.042)
Population_GroupBig	-0.023	-0.022	0.125***	-0.050	-0.062**	0.014
	(0.031)	(0.028)	(0.046)	(0.032)	(0.029)	(0.048)
Age			-0.001			0.006***
			(0.001)			(0.001)
Trust			-0.088**			-0.092**
			(0.035)			(0.037)
factor(Gender)2			0.136***			0.263***
			(0.028)			(0.030)
Settlement_type			-0.004			0.017
			(0.026)			(0.027)
Migration			-0.124***			-0.056*
			(0.030)			(0.032)
User_Language			0.502***			0.659***
			(0.044)			(0.044)
factor(Financial_status)2			0.071			0.254***
			(0.050)			(0.051)
factor(Financial_status)3			0.206***			0.309***
			(0.049)			(0.050)
factor(Financial_status)4			0.198***			0.362***
			(0.053)			(0.055)
factor(Financial_status)5			0.097			0.324***
			(0.061)			(0.064)
factor(Financial_status)6			0.004			-0.061
			(0.133)			(0.135)
factor(Education)2			0.210**			0.290***
			(0.095)			(0.097)
factor(Education)3			0.272***			0.357***
			(0.087)			(0.088)
factor(Education)4			0.468***			0.503***
			(0.093)			(0.094)
factor(Education)5			0.431***			0.397***
			(0.100)			(0.101)
factor(Education)6			0.545***			0.662***
			(0.085)			(0.086)
factor(Education)7			0.619***			0.644***
			(0.134)			(0.138)
Region_Before_WarSouth			-0.268***			-0.072
			(0.049)			(0.051)
Region_Before_WarNorth			-0.175***			-0.080
			(0.047)			(0.049)
Region_Before_WarEast			-0.322***			-0.086*

			(0.043)			(0.045)
Region_Before_WarCentre			-0.111**			0.013
			(0.046)			(0.048)
Oblast_Center			-0.099**			-0.068
			(0.041)			(0.043)
Tr_CivicActivismTreatment			-0.083***			-0.035
			(0.027)			(0.028)
Screener_1			0.214***			0.274***
			(0.046)			(0.046)
Screener_2			0.180***			0.370***
			(0.046)			(0.047)
voluntary.x:Population_GroupBig	0.006		-0.153*	-0.074		-0.128
	(0.079)		(0.086)	(0.080)		(0.089)
Constant	0.304***	0.303***	-0.507***	0.521***	0.528***	-1.482***
	(0.024)	(0.023)	(0.152)	(0.025)	(0.024)	(0.157)
Observations	9,499	9,499	9,389	9,493	9,493	9,384
Log Likelihood	-6,290.721	-6,290.725	-5,913.298	-5,871.867	-5,872.291	-5,331.494
Akaike Inf. Crit.	12,589.440	12,587.450	11,884.600	11,751.730	11,750.580	10,720.990
Note:	*p<0.1; **p<0.05; ***p<0.01					