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### Violent conflict and unhappiness: evidence from the 2016 'Life in Transition' III survey

Maksym Obrizan  
*Kyiv School of Economics, Kyiv, Ukraine*

#### Abstract

This paper investigates the effect of violence on happiness in 14 countries affected by recent conflicts, using data from the 'Life in Transition' III survey conducted in 2016 by the European Bank for Reconstruction and Development and the World Bank in all transition countries from a former Eastern Bloc (except for Turkmenistan). Out of 19,081 observations with non-missing responses, 2,605 (or 13.7%) households have been affected by some form of violence. When each of the three violence indicators – physical injury, having a household member killed or living in a household displaced due to a conflict – is entered separately, the probability of being happy reduces by 6.3-8.2% points depending on the type of violence. When three violence indicators are added at once, and also in some robustness checks, it is only forced displacement that has a statistically significant negative effect on happiness. These results indicate that violence has a prolonged and substantial negative effect on life satisfaction, given that many of the conflicts started 20 years ago or more.

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**Contact:** Maksym Obrizan - [mobrizan@gmail.com](mailto:mobrizan@gmail.com)

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## 1. Introduction

This paper studies the effect of conflict-related violence on life satisfaction in a sample of 14 transition countries with recent conflicts, which include Armenia, Azerbaijan, Bosnia and Herzegovina, Croatia, Georgia, Kosovo, Kyrgyz Republic, Macedonia FYR, Montenegro, the Russian Federation, Serbia, Slovenia, Tajikistan and Ukraine. While the number of military conflicts is growing, there is still limited empirical evidence of their effect on subjective well-being. It is important to understand the degree of the effect of a conflict on happiness (and whether it is significant or not) because life satisfaction is a standard non-monetary measure of utility. Such an analysis would help to prioritize which of the pressing world problems (conflict, inequality, environment, etc.) have to be addressed in the first place.

Specifically, Welsch (2008) shows in cross-sectional data for 44 countries that as the intensity of the war (the number of victims per 1000 inhabitants) increases, the average happiness in a country goes down. Van Praag et al. (2010) do not find a significantly different level of happiness among Jews and Arabs who were asked about their life satisfaction during or after the 34-day 2006 Israel-Lebanese conflict versus those who were asked before the war. Shemyakina and Plagnol (2013) show that several years after the end of the war in Bosnia and Herzegovina, people living in municipalities heavily affected by the conflict are not less satisfied with their life than people living in municipalities that were not heavily affected. On the other hand, Shemyakina and Plagnol (2013) find that respondents who live in houses that are still suffering from war damage or who still think a lot about the war are less satisfied with life. Djankov et al. (2016) use the ‘Life in Transition’ (LiTS) survey II and find no significant effect of whether or not a respondent or her parents/grandparents were killed, injured or displaced during World War II on the respondent’s life satisfaction in 2010. Finally, Coupe and Obrizan (2016) identified a substantial reduction in happiness in conflict-affected region of Donbas but not in other parts of Ukraine.

The advantage of the current paper is the use of individual- and household-level data from the ‘Life in Transition’ survey III, which was conducted by the European Bank for Reconstruction and Development (EBRD 2016) and the World Bank. The ‘Life in Transition’ survey III covers all 29 transition countries from a former Eastern Bloc (except for Turkmenistan) in a 2016 round of nationally representative surveys with about 1,500 households from each country.

A study by Djankov et al. (2016) also uses data from a sample of transition countries, but they consider experience of violence during World War II based on LiTS II, whereas here the focus is on more recent conflicts using LiTS III. Three measures of violence are defined to give different points of view on post-conflict well-being and each measure characterises a substantial number of respondents, making results trustworthy. Finally, ‘Life in Transition’ III contains many potential correlates of happiness and this paper employs a standard econometric model of life satisfaction from Guriev and Melnikov (2018) who also use LiTS III, but they study transition happiness gap and do not include violence indicators.

The rest of paper is organised as follows. Section 2 introduces the ‘Life in Transition’ survey III and describes the methodology to measure transition gaps. Section 3 provides the descriptive statistics on outcome variables and covariates and then discusses the results of regression analyses and robustness checks. The last section concludes.

## 2. Data and Methods

Three violence-related questions were asked in 14 countries with recent conflicts in the ‘Life in Transition’ III survey.<sup>1</sup> An indicator variable ‘Physical injury’ takes the value of 1 if a respondent or any household member was physically injured as a result of the conflict and 0 otherwise (excluding respondents who did not know or refused to answer). Similarly, two other indicator variables – ‘HH member killed’ and ‘Moved due to conflict’ – take value of 1 if a household member was killed or household had to move because of the conflict and 0 otherwise.<sup>2</sup>

For better comparison with previous research, this paper employs a standard model very similar to Guriev and Melnikov (2018) but with added violence indicators. Specifically, the main outcome variable ‘Happy’ is a dummy variable taking value of 1 if a respondent agrees or strongly agrees with the statement “*All things considered, I am satisfied with my life now*”.<sup>3</sup> The list of covariates includes similar demographic and socio-economics variables as in Guriev and Melnikov (2018) except for a transition dummy because all countries in the final sample are transition. Although ‘happiness’ and ‘life satisfaction’ do not perfectly correlate in the data (Coupe and Obrizan, 2016) this paper follows the common approach in the literature and uses the terms interchangeably.

To assess the effect of violence on life satisfaction, a standard econometric model is used

$$Happy_I = \alpha + X_I'\beta + Z_I\gamma + \varepsilon_I, \quad (1)$$

where the measure of happiness for individual  $I$  is regressed on a vector  $X_I$  of individual characteristics that captures the conventional determinants of happiness (Guriev and Melnikov, 2018). However, unlike in previous studies, the main focus is on the indicator  $Z_I$ , which captures different forms of violence. In addition, models control for the number of years since the first conflict (because some countries have more than one conflict) and whether conflict was still ongoing in 2015 or 2016 (measured by any conflict-related casualties). The models apply cluster-robust standard errors (where clusters are Primary Sampling Units) following Habibov and Cheung (2017), who used the ‘Life in Transition’ II survey to study the determinants of informal payments in healthcare.

## 3. Results

Table 1 shows the distribution of conflict-related violence across households in the final sample. The share of population with any self-reported violence ranges from 3.7% in Macedonia, FYR and Slovenia to 49.8% in Bosnia and Herzegovina. Overall, 8.8% report physical injury, 5.1% having a household member killed and 7.4% had to move because of the conflict. The relationship between three forms of violence is far from perfect in the final sample: correlation is 50.4% between physical injury and having a household member killed,

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<sup>1</sup> Notice that four more countries (Bulgaria, Kazakhstan, Mongolia, and Romania) have households with a positive answer to a question about conflict-related violence but did not have a recent internal conflict on a major scale. The results remain robust if these countries are kept in the sample.

<sup>2</sup> The exact question formulations are: "Were you or any member of your household physically injured...?" "Was any member of your household killed...?" "Did your household have to move...?" as a result of the conflict in [COUNTRY] (from [DATE] to [DATE])?"

<sup>3</sup> Similar results obtained in robustness checks with a five-point scale for the degree of life satisfaction or re-defining a binary variable ‘Happy’ to take the value of 1 only for those who strongly agree with the statement “*All things considered, I am satisfied with my life now*”.

40.5% between physical injury and being forced move and 35.6% between having a household member killed and forced move. Finally, 7.8% had experienced one form of violence, 3.6% had experienced two forms of violence and 2.0% had suffered from all three forms of violence.

Table 1. Share of households affected by violence in the final sample

Country	Not affected	Affected	Any violence	Physical injury	HH member killed	Moved due to conflict
Armenia	1,293	224	14.8%	10.4%	4.6%	4.8%
Azerbaijan	1,115	122	9.9%	6.3%	3.7%	4.1%
Bosnia and Herzegovina	637	632	49.8%	34.1%	23.5%	28.9%
Croatia	1,110	310	21.8%	11.6%	7.2%	12.1%
Georgia	1,430	61	4.1%	1.9%	0.5%	2.1%
Kosovo	770	551	41.7%	24.3%	13.1%	33.7%
Kyrgyz Republic	1,430	59	4.0%	3.2%	2.2%	1.6%
Macedonia, FYR	1,262	49	3.7%	2.9%	1.6%	2.2%
Montenegro	1,074	89	7.7%	4.8%	2.4%	4.0%
Russian Federation	1,158	78	6.3%	4.9%	1.9%	2.5%
Serbia	1,190	117	9.0%	5.4%	3.7%	5.1%
Slovenia	1,389	53	3.7%	2.1%	1.0%	1.6%
Tajikistan	1,203	178	12.9%	10.5%	6.2%	2.6%
Ukraine	1,415	82	5.5%	4.4%	2.2%	2.3%
Overall	16,476	2,605	15.8%	8.8%	5.1%	7.4%

Notes: Author's calculations based on LiTS III survey. Data bars are based on the entire table for better comparability.

To summarise, relatively high reported rates of conflict-related violence as well as their weak correlation make LiTS III data well-suited to assess the association between different forms of violence and happiness in 14 transition countries that have experienced recent conflict. In terms of the outcome variable, the average share of happy respondents is 47.9% among those who did not experience any form of violence. The share of happy respondents among those who suffered physical injury is 45.0%, having a household member killed is 43.9% and among those who had to move due to conflict is 45.6%. Five countries – Armenia, Bosnia and Herzegovina, Croatia, Kosovo and Tajikistan – have more than 10% of the households in the sample affected by some conflict-related violence.

It is possible that respondents affected by the violence come from households which are different from those in which respondents are not affected. Table A1 in the Appendix substantiates this claim by showing statistically significant differences in means of many included covariates in subsamples divided by whether household was affected or not by a specific form of violence. Hence, the paper next turns to regression analysis controlling for many potential correlates of happiness.

Table 2 presents the results of the linear probability model for an indicator variable 'Happy' which are, in general, consistent with the previous literature. Self-reported life satisfaction is higher for more affluent households, females, better educated respondents and married respondents relative to a reference group of never married and households with more

children. Life satisfaction is lower for older respondents (but at a decreasing scale) and for urban households.<sup>4</sup>

Most importantly, respondents who experienced some violence due to a conflict are less satisfied with their life: those who experienced physical injury report 6.3% points lower probability of being happy; those having a household member killed are 7.0% points less likely to be happy and, finally, respondents from households that were forced to move have 8.2% points lower probability of being happy. These are sizable effects of violence on happiness comparable to twice the effect of being single or male. These findings are also consistent with recent studies on the negative effects of violent conflict on well-being, for example, happiness in Ukraine (Coupe and Obrizan, 2016) and job market outcomes in Georgia (Torosyan, Pignatti and Obrizan, 2018).

In addition to these individual negative effects of the conflict there are also country-wide negative effects on life satisfaction in countries with ongoing military conflicts (measured by an indicator variable taking value of 1 if any war casualties were reported in 2015 or 2016 and 0 otherwise). Specifically, in these countries the reported probability of being happy is lower by more than 10% points. This negative effect will be mitigated for conflicts which started earlier with a statistically significant effect of 0.5% higher average happiness in a country for each additional year since the conflict started.

Table 2 also reports the results from a few robustness checks: a model with all three violence indicators included at once, a model with a single indicator variable for any violence act and a model with count of violence acts. The results in these robustness checks also indicate the negative effects of violence.<sup>5</sup> In a model with all three violence indicators, the coefficients remain negative, but only the coefficient on displaced households remains statistically significant (at 1%). This is not surprising given a somewhat smaller sample due to missing observations and also potential collinearity between the three violence indicators. The model with a single indicator for any form of violence shows that affected respondents are 6.6% points less likely to be happy. Finally, the model with count of violence acts from 0 to 3 indicates that each additional act of violence is associated with 4.0% points reduction in the probability of being happy. Thus, 2% of respondents who suffered from all three forms of violence could be as much as 12.0% points less likely to be satisfied with life.

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<sup>4</sup> The only surprising result is a negative and significant effect of log GDP per capita on life satisfaction. However, this can be explained by higher probability of self-reported violence in relatively richer transition countries. In a complementary linear probability model for any violence act with the same covariates as in the main model, the coefficient on log GDP per capita is 0.021 with p-value of 0.051. The results of this regression are not reported in order to save space, but are available upon request.

<sup>5</sup> When models are run separately for each country, some violence coefficients remain significant in 5 countries (Armenia, Kyrgyz Republic, Montenegro, Serbia and Tajikistan), while all violence indicators become insignificant in 6 other countries (Azerbaijan, Croatia, Kosovo, Macedonia FYR, Russian Federation and Slovenia). In three countries (Bosnia and Herzegovina, Georgia and Ukraine), some violence coefficients turn out to be positive and significant. This can happen due to a very small number of observations affected by violence in some countries. In addition, many of the important macro-level variables (years from the start of the conflict, whether conflict is still ongoing and others) cannot be included in country-level regressions, leading to a potential omitted variable bias. These issues should be addressed in future research focusing on country specific regressions.

Table 2. Regression results from a linear probability model for a binary outcome “Happy”

	Happy (1 if 'Agree' or 'Strongly Agree' and 0 otherwise)					
Can Afford Meat and Holiday	0.196*** (0.012)	0.197*** (0.012)	0.194*** (0.012)	0.195*** (0.012)	0.198*** (0.012)	0.195*** (0.012)
Can Meet Unexpected Expenditures	0.156*** (0.013)	0.155*** (0.013)	0.157*** (0.013)	0.156*** (0.013)	0.154*** (0.013)	0.156*** (0.013)
Female	0.032*** (0.009)	0.033*** (0.009)	0.032*** (0.009)	0.033*** (0.009)	0.032*** (0.009)	0.033*** (0.009)
Age/10	-0.132*** (0.016)	-0.131*** (0.016)	-0.130*** (0.016)	-0.132*** (0.016)	-0.130*** (0.016)	-0.132*** (0.016)
Age squared/100	0.013*** (0.002)	0.013*** (0.002)	0.012*** (0.002)	0.013*** (0.002)	0.012*** (0.002)	0.013*** (0.002)
Primary Education	0.115*** (0.032)	0.118*** (0.031)	0.112*** (0.031)	0.114*** (0.032)	0.112*** (0.031)	0.115*** (0.032)
Secondary education	0.145*** (0.032)	0.145*** (0.031)	0.136*** (0.031)	0.140*** (0.033)	0.137*** (0.031)	0.141*** (0.032)
Tertiary education	0.184*** (0.033)	0.184*** (0.033)	0.178*** (0.033)	0.181*** (0.034)	0.177*** (0.033)	0.182*** (0.034)
# of children under 18	0.010** (0.005)	0.011** (0.005)	0.010** (0.005)	0.010* (0.005)	0.010** (0.005)	0.010* (0.005)
Married	0.035** (0.015)	0.032** (0.015)	0.033** (0.015)	0.036** (0.015)	0.033** (0.015)	0.036** (0.015)
Urban	-0.039*** (0.015)	-0.036** (0.015)	-0.037** (0.015)	-0.036** (0.015)	-0.036** (0.015)	-0.036** (0.015)
log GDP per capita	-0.065*** (0.013)	-0.067*** (0.013)	-0.064*** (0.013)	-0.064*** (0.013)	-0.066*** (0.013)	-0.064*** (0.013)
Years since 1st war started	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)
Conflict ongoing	-0.103*** (0.017)	-0.104*** (0.017)	-0.107*** (0.017)	-0.107*** (0.017)	-0.106*** (0.017)	-0.107*** (0.017)
Physical injury	-0.063*** (0.017)			-0.028 (0.020)		
HH member killed		-0.070*** (0.022)		-0.031 (0.025)		
Moved due to conflict			-0.082*** (0.019)	-0.063*** (0.021)		
Any violence act					-0.066*** (0.015)	
Count of violence acts (0 to 3)						-0.040*** (0.009)
Constant	0.973*** (0.123)	0.986*** (0.122)	0.972*** (0.122)	0.968*** (0.123)	0.986*** (0.122)	0.972*** (0.123)
Observations	18348	18454	18482	18157	18657	18157
Adjusted R-squared	0.152	0.152	0.153	0.154	0.152	0.154

Notes: Authors' calculations based on LiTS III survey. “Happy” equals 1 for respondents who ‘Agree’ or ‘Strongly Agree’ with the statement “All things considered, I am satisfied with my life now”. All variables are included but only statistically significant are shown to save space. Regressions are weighted by LiTS household weights with robust standard errors clustered at PSU level.

Table A2 in the Appendix provides the results of three additional robustness checks: the main model but without using LiTS III household weights, a model with a five-scale outcome instead of an indicator variable for life satisfaction and a model with an indicator outcome ‘Happy’ being 1 only for those who ‘Strongly Agree’ with the statement “*All things considered, I am satisfied with my life now*”.<sup>6</sup> Most of the results carry over to these additional robustness checks as well. For example, in a model with a five-point scale response physical injury, having a household member killed or being displaced due to a conflict is associated with moving 0.130, 0.128 and 0.226 steps down on the 1-to-5 happiness scale correspondingly. The final model, with a binary life satisfaction taking value of 1 only if respondent strongly agrees with the statement, has much lower predictive power as indicated by an adjusted R-squared. This happens due to a more than five-fold reduction in a share of happy respondents – from 47.6% to just 9.0%. However, even in this case, respondents in households displaced due to a conflict have 2.3 to 2.9% points lower probability of being happy.

#### 4. Conclusions

This paper uses the ‘Life in Transition’ survey III and a standard econometric model for life satisfaction to study the effects of violence on happiness in a sample of 14 transition countries that have experienced a recent conflict. When each of the three violence indicators – physical injury, having a household member killed or living in a household displaced due to conflict – is entered separately, the probability of being happy reduces by 6.3-8.2% depending on the type of violence. When three violence indicators are added at once and also in some robustness checks, only forced displacement remains statistically significant. These results show that conflict-related violence and, especially, being forced to move has a negative effect on life satisfaction, which is persistent in time because many of these conflicts started in the early 1990s.

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<sup>6</sup> Guriev and Melnikov (2018) use clustering at a country level while Habibov and Cheung (2017) argue for clustering at PSU level. When models are clustered at a country level, some violence indicators become less significant but results are, in general, consistent with the main model.

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## Appendix

Table A1. Descriptive statistics by the form of violence.

	Physical injury		HH member killed		Moved due to conflict			
	No	Yes	No	Yes	No	Yes		
Can Afford Meat and Holiday	0.344 (0.475)	0.349 (0.477)	0.344 (0.475)	0.335 (0.472)		0.344 (0.475)	0.352 (0.478)	
Can Meet Unexpected Expenditures	0.261 (0.439)	0.250 (0.433)	0.262 (0.440)	0.233 (0.423)	*	0.261 (0.439)	0.251 (0.433)	
Female	0.571 (0.495)	0.544 (0.498)	** 0.569 (0.495)	0.564 (0.496)		0.571 (0.495)	0.537 (0.499)	**
Age/10	4.735 (1.724)	4.627 (1.663)	** 4.722 (1.724)	4.659 (1.659)		4.731 (1.725)	4.578 (1.657)	***
Age squared/100	25.390 (17.260)	24.171 (16.408)	*** 25.274 (17.229)	24.458 (16.430)		25.359 (17.266)	23.698 (16.129)	***
Primary Education	0.099 (0.299)	0.130 (0.337)	*** 0.099 (0.299)	0.147 (0.354)	***	0.097 (0.295)	0.167 (0.373)	***
Secondary education	0.640 (0.480)	0.631 (0.483)	0.640 (0.480)	0.612 (0.487)	*	0.644 (0.479)	0.577 (0.494)	***
Tertiary education	0.244 (0.429)	0.209 (0.406)	*** 0.243 (0.429)	0.203 (0.403)	***	0.243 (0.429)	0.208 (0.406)	***
Unemployed	0.039 (0.193)	0.045 (0.207)	0.039 (0.194)	0.040 (0.197)		0.038 (0.191)	0.051 (0.219)	**
# of children under 18	0.759 (1.111)	0.884 (1.196)	0.765 (1.115)	0.847 (1.179)	**	0.764 (1.115)	0.835 (1.160)	**
Married	0.620 (0.485)	0.651 (0.477)	** 0.622 (0.485)	0.620 (0.486)		0.619 (0.486)	0.651 (0.477)	**
Widowed	0.137 (0.343)	0.130 (0.337)	0.134 (0.341)	0.155 (0.363)	*	0.137 (0.344)	0.119 (0.324)	*
Divorced/Separated	0.067 (0.250)	0.049 (0.215)	*** 0.066 (0.248)	0.053 (0.224)		0.067 (0.250)	0.044 (0.205)	***
Urban	0.534 (0.499)	0.541 (0.498)	0.533 (0.499)	0.565 (0.496)	*	0.534 (0.499)	0.552 (0.498)	
log GDP per capita	8.361 (0.866)	8.319 (0.714)	* 8.360 (0.859)	8.321 (0.716)		8.351 (0.870)	8.451 (0.563)	
Observations	17106	1649	17899	965		17492	1405	

Notes: Author's calculations based on LiTS III survey. Difference in means significance:

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .



Table A2. Results of the robustness checks

	Happy (1 if 'Agree' or 'Strongly Agree' and 0 otherwise) not weighted					
Physical injury	-0.057***					-0.031*
	(0.016)					(0.018)
HH member killed		-0.055***				-0.016
		(0.021)				(0.023)
Moved due to conflict			-0.071***	-0.054***		
			(0.017)	(0.019)		
Any violence act					-0.054***	
					(0.013)	
Count of violence acts (0 to 3)						-0.035***
						(0.008)
Observations	18348	18454	18482	18157	18657	18157
Adjusted R-squared	0.139	0.139	0.140	0.141	0.139	0.141
	Happy (five-point scale 1-2-3-4-5 with 5 'Strongly Agree')					
Physical injury	-0.130***					-0.040
	(0.040)					(0.046)
HH member killed		-0.128**				-0.030
		(0.052)				(0.059)
Moved due to conflict			-0.226***	-0.206***		
			(0.046)	(0.050)		
Any violence act					-0.158***	
					(0.035)	
Count of violence acts (0 to 3)						-0.092***
						(0.021)
Observations	18348	18454	18482	18157	18657	18157
Adjusted R-squared	0.181	0.180	0.183	0.183	0.181	0.183
	Happy (1 if 'Strongly Agree' and 0 otherwise)					
Physical injury	0.000					0.003
	(0.010)					(0.012)
HH member killed		0.009				0.017
		(0.013)				(0.015)
Moved due to conflict			-0.023***	-0.029***		
			(0.009)	(0.010)		
Any violence act					-0.005	
					(0.008)	
Count of violence acts (0 to 3)						-0.004
						(0.005)
Observations	0.599***	0.603***	0.605***	0.595***	0.605***	0.600***
Adjusted R-squared	(0.082)	(0.081)	(0.081)	(0.082)	(0.081)	(0.082)

Notes: Author's calculations based on LiTS III survey. All models include the same covariates as the main model but coefficients are not shown to save space. The first regression is the same as the main model but not using LiTS III household weights. The second model uses a five-scale scale for the degree of life satisfaction from 1 to 5 where 5 means 'Strongly Agree' with the statement "All things considered, I am satisfied with my life now". The last model redefines the indicator variable 'Happy' to include only those who 'Strongly agree' with the statement "All things considered, I am satisfied with my life now". All regressions use robust standard errors clustered at Primary Sampling Unit (PSU) level.