

Tuki, Daniel

Article — Published Version

Violent conflict and expectation about the economy's performance: Evidence from Nigeria

Economics Letters

Provided in Cooperation with:

WZB Berlin Social Science Center

Suggested Citation: Tuki, Daniel (2024) : Violent conflict and expectation about the economy's performance: Evidence from Nigeria, Economics Letters, ISSN 1873-7374, Elsevier, Amsterdam, Vol. 241, pp. 1-4,
<https://doi.org/10.1016/j.econlet.2024.111808>

This Version is available at:

<https://hdl.handle.net/10419/311928>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<http://creativecommons.org/licenses/by/4.0/>



Violent conflict and expectation about the economy's performance: Evidence from Nigeria

Daniel Tuki

Migration, Integration and Transnationalization Research Unit, WZB Berlin Social Science Center, Reichpietschufer 50, Berlin 10785, Germany

ARTICLE INFO

JEL classification:

D01
D74
O40
E66

Keywords:

Violent conflict
Terrorism
Expectation
Economy
Kaduna State
Nigeria

ABSTRACT

This study examines how exposure to violent conflict influences individuals' expectations about Nigeria's future economic performance. It employs forest cover as an instrumental variable to identify the causal effect of violent conflict on expected economic performance. The regression results reveal that violent conflict makes people pessimistic about the economy's future performance. This might be because conflict disrupts socioeconomic activities and causes psychological distress, making people less hopeful about the future.

1. Introduction

Violent conflicts continue to be a persistent issue in Nigeria. In the 2024 Global Terrorism Index (GTI), Nigeria was ranked the eighth least peaceful country globally. Within Africa, it ranked fourth. Only Burkina Faso, Mali, and Somalia performed worse (Institute for Economics and Peace, 2024). Data obtained from the Armed Conflict Location and Event Data Project (Raleigh et al., 2010) shows that between 2010 and 2023, Nigeria recorded 20,421 violent conflict incidents and 90,986 fatalities.¹

Although several studies have examined the impact of conflict on economic outcomes (e.g., Odozi and Oyelere, 2019; Barra et al., 2018; Serneels and Verpoorten, 2015), there is a lack of research on how conflict affects people's expectations regarding the economy's future performance. This study aims to address that gap using novel survey data collected from the northern Nigerian state of Kaduna. Kaduna is a suitable case study for investigating this relationship because it has the second highest incidence of violent conflict out of Nigeria's 36 states. Between 2010 and 2023, Kaduna experienced 1,675 violent conflict incidents, resulting in 7,222 fatalities.

This study finds that exposure to violent conflict makes people have a

negative economic outlook. Keeping all covariates at their mean levels, a one unit increase in the predicted value of violent conflict increases the probability of respondents choosing the "much worse" response category by 3.6 %, when asked about their expectations regarding the economy's future performance. Conversely, it reduces the probability of them choosing the "much better" response category by the same magnitude. The remainder of this study is organized as follows: Section 2 operationalizes the variables that will be used to estimate the regression models and discusses the empirical strategy. Section 3 presents the regression results and discusses them, while Section 4 concludes.

2. Data and methodology

This study is based on novel survey data collected from the northern Nigerian state of Kaduna in 2021 as part of the Transnational Perspectives on Migration and Integration (TRANSMIT) research project.² A total of 1,353 respondents were interviewed. Section B in the appendix discusses the sampling strategy, while Table A2 in the appendix reports the summary statistics.

E-mail address: daniel.tuki@wzb.eu.

¹ Violent conflicts are incidents categorized as Battles, Violence against civilians, and Explosions/Remote violence.

² For more information on the TRANSMIT project visit: <https://www.projekte.hu-berlin.de/en/transmit>

2.1. Operationalization of the variables

2.1.1. Dependent variable

The dependent variable—*economy improve*—measures respondents' expectations regarding the future performance of Nigeria's economy. It is based on the question, "What do you think will be the economic situation in Nigeria during the next five years?" The responses are on a five-point ordinal scale ranging from "1 = much worse" to "5 = much better." 52 % of the respondents believe the economy will be either "somewhat better" or "much better," 38 % of them believe it will be either "somewhat worse" or "much worse," while the remaining 10 % believe the economy will not change.

2.1.2. Explanatory variable

The explanatory variable—*violent conflict*—measures the total number of violent conflict incidents that occurred from 2015 to 2020 within a buffer with a radius of 30 km drawn around the respondents' dwellings. Using data obtained from ACLED (Raleigh et al., 2010), I define violent conflict as incidents classified as Battles, Violence against civilians, and Explosions/Remote violence.³ Using QGIS software, I developed this variable by integrating the geocoded ACLED and TRANSMIT datasets. 99 % of the respondents had at least one conflict incident within the 30 km buffer. 54 % of them had at least 20 incidents within the buffer.

2.1.3. Control variables

This includes the temperature around the respondents' dwellings (Harris et al. 2020), their socioeconomic status, educational level, and demographic characteristics.⁴ Socioeconomic status measures the capacity of the households' incomes to meet the needs of their members on a scale with five ordinal categories ranging from, "money is not enough for food" to "we can afford to buy almost anything." Educational level is measured on a scale with four ordinal categories ranging from "no formal schooling" to "tertiary education." Gender is coded as 1 for female and 0 for male. Marital status is coded as 1 if a respondent is married or has previously been married, and 0 otherwise. Age is measured in years.

2.2. Empirical strategy

The general form of the regression model can be expressed thus:

$$\gamma_{ij} = \beta_0 + \beta_1 \text{violent conflict}_{2015-2020} + \beta_2 \lambda'_i + \delta_i \quad (1)$$

where γ_{ij} measures expectation regarding the economy's future performance for respondent i who resides in local government area (LGA) (i.e., municipality) j , λ'_i is a vector of control variables discussed earlier, β_0 is the intercept, β_1 and β_2 are the coefficients of the explanatory and control variables respectively, and δ_i is the error term.

Although this study examines the effect of violent conflict on expected economic performance, it is possible that people's expectation about the economy's future performance could influence the incidence of violent conflict. For instance, individuals who are pessimistic about the economy's future performance and who live in poverty might be more inclined to join a rebel group for financial gain, thus increasing the risk of conflict. To address this potential problem of reverse causation, I lagged the explanatory variable by considering only conflict incidents that occurred before the year in which the survey was conducted (i.e., 2021). It is implausible that economic expectations in the present would influence violent conflicts in the past. However, omitted variable bias might still pose a problem. To address this, I estimated the model using an instrumental variable ordered probit (IVOProbit) regression, which is

based on maximum likelihood estimation. A benefit of using the IVOprobit model is that it respects the ordered nature of the dependent variable, allowing me to determine the effect of violent conflict on each response category of the dependent variable.

Causal identification stems from using forest cover (Buchhorn et al., 2020) as an instrumental variable (IV) for violent conflict.⁵ The IV model is underpinned by the assumption that forest cover has no direct impact on expected economic performance, except through the mechanism of violent conflict. Research indicates that forest cover can increase the likelihood of conflict by providing strategic military advantages to rebel groups (e.g., Schaub and Auer, 2023; Chow and Han, 2023). In the state of Kaduna, armed groups (especially bandits and Boko Haram terrorists) often launch attacks on civilian populations, take hostages for ransom, and retreat into forests. The bandits' familiarity with the physical terrain of the forests has made them elusive to Nigeria's security forces (Associated Press, 2024; Ejike et al., 2022). This prompted the state's former governor to call for the bombardment of the forests in the state to eliminate terrorists hiding there (Sunday, 2022). One could argue that forest cover could influence economic expectations through its relationship with climatic conditions. For instance, poor climatic conditions like droughts may reduce forest cover and, at the same time, be associated with reduced agricultural output, which might lead to poor economic expectations. This is especially relevant in the case of Kaduna where most households are engaged in crop agriculture (Kaduna State Bureau of Statistics, 2016). To address this, I controlled for the temperature around the respondents' dwellings in the regression model.

3. Results and discussion

I begin with a simple correlational analysis (i.e., models 1 and 2), after which I conduct the instrumental variable analysis (i.e., models 3–7). Table 1 reports the results. In model 1 where I regress expected economic performance on violent conflict using ordered probit (Oprobit) regression, violent conflict carries a negative sign and is statistically significant at the 1 % level. This suggests that exposure to violent conflict reduces the likelihood of people being optimistic about the economy's future performance. However, this result is not robust to the inclusion of control variables, as shown in model 2. Among the control variables, household income, educational level, age and temperature are significant. All the four categories of household income carry positive signs and are statistically significant—except for the "cannot buy durable goods" category. This suggests that being in a good socioeconomic position generally increases the likelihood of being optimistic about the economy's future performance. All three categories of educational level carry negative signs and are statistically significant. Moreover, the size of the coefficient increases with the level of education. This indicates that compared to the uneducated, people who are educated are more likely to have a negative economic outlook. Moreover, their pessimism increases the more education they acquire. The negative sign accompanying age suggests that people tend to become more pessimistic about the economy the older they get. However, these results are only correlational.

To move towards a causal claim, I estimate IVOProbit regressions. In the first stage regression (i.e., Model 3) where violent conflict is regressed on forest cover, forest cover carries the expected positive sign and is significant at the 1 % level. This suggests that the presence of forests increases the likelihood of violent conflicts.⁶ The second stage regression (i.e., Model 4) shows that the predicted values of violent conflict negatively impact people's expectations about the economy's future performance. This finding is robust to the inclusion of control

³ To access the ACLED dataset visit: <https://acleddata.com/>

⁴ I discuss the temperature variable in detail in the appendix.

⁵ The forest cover variable is discussed in detail the appendix.

⁶ In the first-stage regression, I treated forest cover and violent conflict as continuous variables.

Table 1
Regression results.

Dependent variables:	Economy improve		Violent conflict	Economy improve			
	Correlational analysis			First-stage	Second-stage		
	(1) OProbit	(2) OProbit			(4) IVOProbit	(5) IVOProbit	(6) IVOProbit
Violent conflict	−0.002*** (0.001)	−0.001 (0.001)		−0.02*** (0.001)	−0.017*** (0.003)	−0.022*** (0.001)	
Forest ratio			1.885*** (0.339)				
Temperature		0.127** (0.051)			0.031 (0.037)	0.019 (0.018)	
<u>Household income</u>							
Can't buy food (Reference)							
Can buy food		0.152** (0.075)			0.085 (0.052)	0.03* (0.018)	
Can buy basic goods		0.264*** (0.09)			0.158** (0.07)	0.05* (0.026)	
Can buy durable goods		0.046 (0.153)			0.011 (0.116)	0.00 (0.035)	
Can buy almost anything		0.485*** (0.182)			0.272* (0.159)	0.083 (0.053)	
<u>Educational level</u>							
No education (Reference)							
Primary education		−0.228** (0.101)			−0.117 (0.075)	−0.036 (0.024)	
Secondary education		−0.449*** (0.091)			−0.247*** (0.087)	−0.078** (0.033)	
Tertiary education		−0.552*** (0.108)			−0.32*** (0.106)	−0.097** (0.04)	
<u>Demographics</u>							
Age		−0.013*** (0.003)			−0.008*** (0.003)	−0.002** (0.001)	
Female		0.016 (0.068)			0.016 (0.044)	0.005 (0.014)	
Married		0.085 (0.088)			0.045 (0.059)	0.013 (0.018)	
Constant			13.246* (6.785)				
Intercept 1	−0.621*** (0.05)	2.136 (1.304)		−1.231*** (0.039)	−0.707 (0.939)	−0.829* (0.468)	
Intercept 2	−0.398*** (0.049)	2.371* (1.304)		−1.116*** (0.047)	−0.551 (0.955)	−0.782* (0.472)	
Intercept 3	−0.159*** (0.049)	2.619** (1.304)		−0.992*** (0.066)	−0.386 (0.973)	−0.731 (0.477)	
Intercept 4	0.424*** (0.05)	3.216** (1.306)		−0.694*** (0.126)	0.009 (1.019)	−0.611 (0.49)	
LGA Fixed effects	No	No	No	No	No	Yes	
Observations	1298	1298	1353	1298	1298	1298	
Log likelihood	−1919.863	−1881.028		−8717.309	−8690.986	−8674.827	
Pseudo R ²	0.003	0.023					
R-squared			0.012				
Error terms correlation				0.863***	0.752***	0.98***	

Note: Robust standard errors are in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Models 1 and 2 are estimated using ordered probit (OProbit) regression, model 3 is estimated using ordinary least squares (OLS) regression, and models 4, 5, and 6 are estimated using instrumental variable ordered probit (IVOProbit) regression.

variables (model 5), and fixed effects for the local government area (LGA) (i.e., municipality) in which respondents reside (model 6). Suffice it to add that the results reported in Table 1 are robust to an alternative operationalization of violent conflict in which I use data on terrorist incidents obtained from the Global Terrorism Database (GTD) (National Consortium for the Study of Terrorism and Responses to Terrorism, 2022). Table A1 in the appendix reports these results.

To illustrate the effect of violent conflict on the five categories of expected economic performance, I plot the predicted probabilities. As shown in Fig. 1, the effect of violent conflict on expected economic performance is most pronounced at the extreme response categories of the dependent variable—i.e., “much worse” and “much better.” Keeping all covariates at their mean levels, a one unit increase in the predicted value of violent conflict increases the probability of respondents choosing the “much worse” response category by 3.6 %, when asked about their expectations regarding the Nigerian economy’s future performance. Conversely, it reduces the probability of them choosing the

“much better” response category by the same magnitude.

4. Conclusion

Using novel survey data collected from the northern Nigerian state of Kaduna, this study investigated the effect of violent conflict on people’s expectations regarding the economy’s future performance. The regression results showed that exposure to violent conflict makes people pessimistic about the economy’s future performance. This might be because conflict disrupts socioeconomic activities and causes psychological distress, which can diminish people’s optimism about the future.

Data availability statement

The dataset and do-files underlying this study are available in the Harvard Dataverse: <https://doi.org/10.7910/DVN/XHHCRA>.

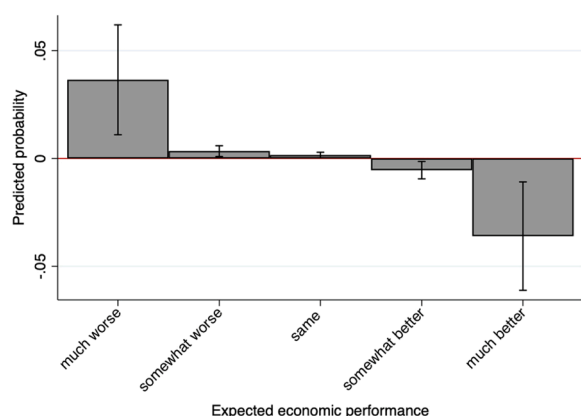


Fig. 1. Average marginal effects of violent conflict on expected economic performance. Note: The figure is based on model 6 in Table 1. Confidence intervals are at the 95 % level.

Funding

Financial support from the German Federal Ministry for Family Affairs, Senior Citizens, Women and Youth (BMFSFJ) is gratefully acknowledged. Open Access funding was provided by the WZB through the DEAL-Consortium.

Ethical approval

Ethical approval for the survey conducted in Nigeria was granted by the WZB Berlin Social Science Center Ethics Review Committee (Application No.: 2020/3/101) and the National Health Research Ethics Committee of Nigeria (NHREC).

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

I thank the handling editor, Prof. Audra Bowlus, one anonymous

referee, and Daniel Meierrieks for their helpful comments.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.econlet.2024.111808](https://doi.org/10.1016/j.econlet.2024.111808).

References

- Associated Press, 2024. Nigerian families cope with trauma of more school kidnappings. Voice Am. <https://www.voanews.com/a/nigerian-families-cope-with-trauma-of-more-school-kidnappings-/7567032.html> (Accessed 14 May 2024).
- Barra, F., Berg, C., Verwimp, P., 2018. Violent Conflict, Transport Costs, and Poverty: An Instrumental Variables Approach with Geospatial Data for Nigeria (Working Paper No. 278). Households in Conflict Network. <https://hcn.org/wp-content/uploads/2018/10/HICN-WP-278.pdf>.
- Buchhorn, M., Smets, B., Bertels, L., De Roo, B., Lesiv, M., Tsendbazar, N.E., Herold, M., Fritz, S., 2020. Copernicus Global Land Service: Land Cover 100m: Collection 3: Epoch 2019: Globe 2020. <https://doi.org/10.5281/zenodo.3939050>.
- Chow, W., Han, E., 2023. Rugged terrain, forest coverage, and insurgency in Myanmar. *Confl Manag Peace Sci* 1–20. <https://doi.org/10.1177/07388942231171334>.
- Ejike, E., Benjamin, I., Abimaje, A., 2022. 85 days after Kaduna train attack: 50 remaining hostages threatened by snakes, scorpions, 9 feared dead. *Leadersh News*. <https://leadership.ng/85-days-after-kaduna-train-attack-50-remaining-hostage-s-threatened-by-snakes-scorpions-9-feared-dead/> (Accessed 14 May 2024).
- Harris, I., Osborn, T.J., Jones, P., Lister, D., 2020. Version 4 of the CRU TS monthly high-resolution gridded multivariate climate dataset. *Sci Data* 7 (1), 1–18. <https://doi.org/10.1038/s41597-020-0453-3>.
- Institute for Economics and Peace, 2024. Global Terrorism Index 2024: Measuring the Impact of Terrorism. Institute for Economics and Peace, Sydney. <http://visionofhumanity.org/resources>.
- Kaduna State Bureau of Statistics, 2016. Kaduna Agricultural Structure Survey. KDBS, Kaduna. <https://kdbns.ng/publications/kaduna-agriculture-structure-survey/>.
- National Consortium for the Study of Terrorism and Responses to Terrorism, 2022. Global Terrorism Database 1970–2020 [data file]. <https://www.start.umd.edu/gtd>.
- Odozi, J.C., Oyeler, R.U., 2019. *Violent Conflict Exposure in Nigeria and Economic Welfare* (Working Paper No. 12570). <https://doi.org/10.2139/ssrn.3445836>. IZA Discussion Paper.
- Raleigh, C., Linke, A., Hegre, H., Karlsen, J., 2010. Introducing ACLED – armed conflict location and event data. *J Peace Res* 47 (5), 651–660. <https://doi.org/10.1177/0022343310378914>.
- Schaub, M., Auer, D., 2023. Rebel recruitment and migration: theory and evidence from Southern Senegal. *J Confl Resol* 67 (6), 1155–1182. <https://doi.org/10.1177/00220027221118258>.
- Serneels, P., Verpoorten, M., 2015. The impact of armed conflict on economic performance: evidence from Rwanda. *J Confl Resol* 59 (4), 555–592. <https://doi.org/10.1177/0022002713515409>.
- Sunday, O., 2022. Why we can't bomb bandits in forests – FG. *Daily Post*. <https://dailypost.ng/2022/04/10/why-we-cant-bomb-bandits-in-forests-fg/> (Accessed 9 March 2024).