Linking armed conflicts and children undernutrition in Nigeria: the mitigating effects of maternal bargaining power

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Introduction

Context and motivation

- Research consistently indicates that children are at a higher risk of experiencing undernutrition in the context of armed conflict (Mansour and Rees, 2012; Minoiu and Shemyakina, 2014; Ekhator-Mobayode and Asfaw, 2019).
- Since 2009, Nigeria has faced the **Boko Haram** (BH) insurgency, which has led to:
  - decreased total agricultural output (Adelaja and George, 2019)
  - increased food insecurity (Kaila and Azad, 2023), particularly affecting children (Ekhator-Mobayode and Asfaw, 2019);
  - reduced access to maternal healthcare services (Chukwuma and Ekhator Mobayode, 2019).
- Certain flaw due to the heterogeneity of the studied population.

Context and motivation

- Out of the various factors contributing to heterogeneity, the level of Bargaining Power (BP) held by mothers of the children is particularly **important** (Duflo, 2003; Qian, 2008; Lépine and Strobl, 2013).
  - the effect of conflict exposure on children's nutrition would be expected to differ between those born to mothers with high and low BP.

Research question

Can maternal BP play a mitigating role that could reduce the negative effect of the BH conflict exposition on children's undernutrition?

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- It is already known that:
  - conflict exposure increases the risk of undernutrition (Minoiu and Shemyakina, 2014; Ekhator-Mobayode and Asfaw, 2019);
  - maternal BP promotes child nutrition in a context without conflict (Duflo, 2003; Qian, 2008; Lépine and Strobl, 2013).
- The contributions of this paper:
  - analyzing one source of heterogeneity $\Longrightarrow$ the role of maternal BP;
  - investigating the role of maternal BP during an ongoing crisis;
  - enhancing the understanding of the channels through which maternal BP promotes children's nutrition during conflict. $\Longrightarrow$ mechanism.

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Data sources and methodology

Data sources and exposure variable

- Data on the BH conflict were collected from the Armed Conflict Location and Event Data (ACLED) database. map
- Individual characteristics are drawn from three rounds of the Nigerian Demographic and Health Survey (NDHS) collected in 2008, 2013 and 2018:
  - the sample is composed of 36,730 children (aged between 0 and 5 years) born to 23,521 mothers.
- Outcome variables include children's anthropometric indicators (WHZ,WAZ,HAZ) summary.
- **Exposition variable**: nbr. of conflict related to BH which happen between the child date of birth till the day of the interview within a buffer zone of 10 km of the hh.'s cluster (4.45% of the children are affected for an average of 20 conflicts.).

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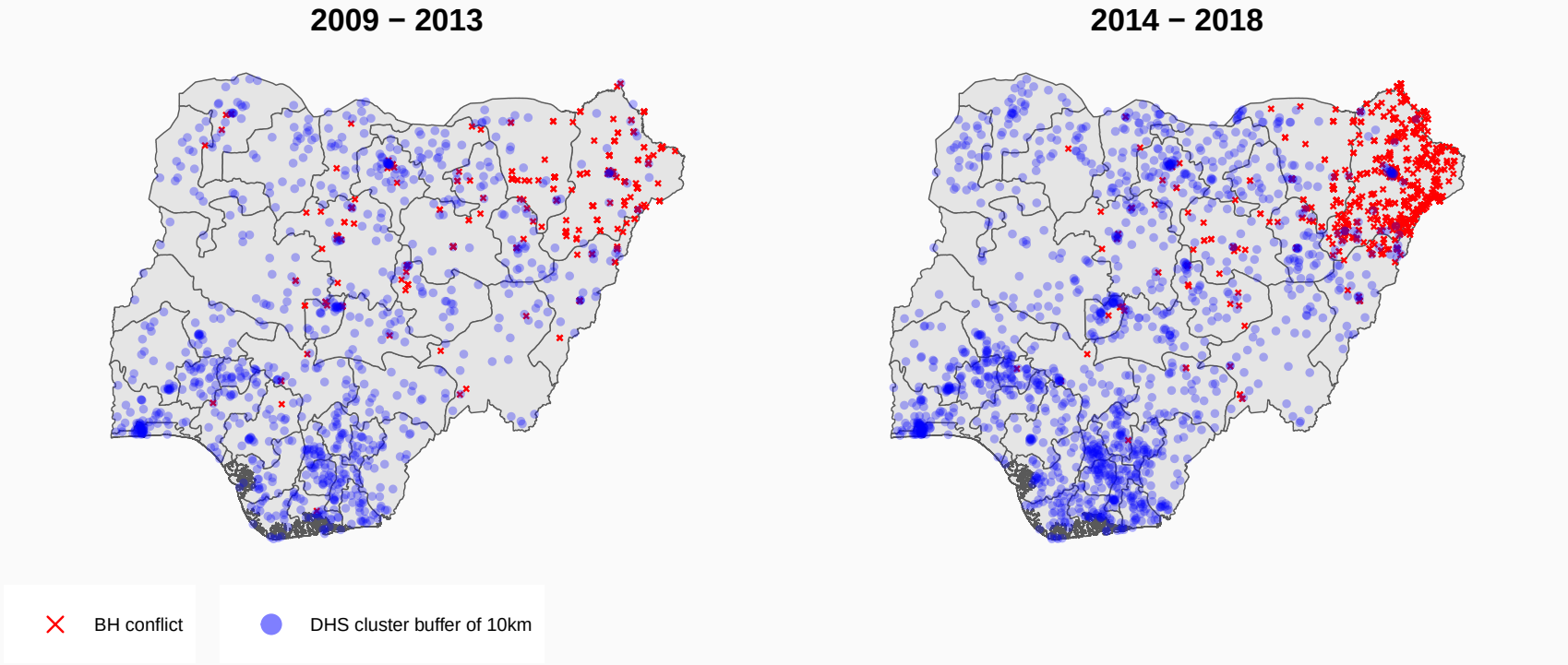
BH conflict in Nigeria



Data sources: NDHS and ACLED (Author's own calculation).

How can maternal BP be defined ?

- Various proxies are used in the literature to assess women's BP in the household:
  - direct: decision making ability on major hh. purch., daily expenditures (Shroff et al. 2011; Story and Burgard, 2012);
  - indirect: spouses age gap, gap in education, working status, earnings (Duflo, 2003; Maitra, 2004);
  - combined: using both **direct** and **indirect** proxies (Lépine and Strobl, 2013; Malapit and Quisumbing, 2015).
- This study uses financial resource access proxies:
  - decision making ability on maj. hh. purch.;
  - aut. own. earn;
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- These proxies are not correlated to the conflict. ▸ table

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Identification strategy

OLS with fixed effects

A baseline model

$$Y_{imc} = \alpha_1 nbrEvents_{ic} \times highBP_{im} + \alpha_2 nbrEvents_{ic} + \alpha_3 highBP_{im} + \alpha_4 X_{imc} + \mu_i^M + \mu_i^Y + \mu_{imc}^{SY} + \mu_{imc}^c + \mu_c^{IM} + \epsilon_{imc}$$

- Y_{imc} represents child i's anthropometric indicators (WAZ);
- $nbrEvents_{ic}$ is the count of armed conflicts related to BH within a 10 km radius experienced by child i from birth until the interview day;
- $highBP_{im}$ is the child i's mother m BP level dummy (low or high);
- X_{imc} are child i's and mother m's characteristics;
- μ_{im}^c is the cluster FE;
- μ_i^M is the child i's month of birth FE;
- μ_i^Y is the child i's year of birth FE;
- μ_i^{SY} is the child i's survey year FE;
- μ_c^{IM} represents the cluster c's month of interview FE.

This model has a limitation due to unobservable heterogeneity (such as women's health and nutrition knowledge, genetic predispositions, care practices, and hygiene) $\Longrightarrow$ sibling model.

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OLS with fixed effects

A sibling model

$$Y_{imc} = \beta_1 \, nbrEvents_{ic} \times highBP_{im} + \beta_2 \, nbrEvents_{ic} + \beta_3 X_{ict} + \mu_{im}^{m} + \mu_{i}^{M} + \mu_{i}^{Y} + \mu_{c}^{IM} + \epsilon_{imc}$$

- Y_{imc} represents sibling i's anthropometric indicators (WAZ);
- $nbrEvents_{ic}$ is the count of armed conflicts related to BH within a 10 km radius experienced by the sibling i from birth to the interview day;
- $highBP_{im}$ is the sibling i's mother m BP level dummy (low or high);
- X_{ic} are sibling i's characteristics;
- μ_{im}^{m} is the sibling i's mother m's FE;
- μ_{i}^{M} is the sibling i's month of birth FE;
- μ_{i}^{Y} is the sibling i's year of birth FE;
- μ_{c}^{IM} represents the cluster c's month of interview FE.

Results

First estimates

Table 1: The estimated effect of a single BH conflict on WAZ.

	Specification:						
	Baseline						Sibling
	(1)	(2)	(3)	(4)	(5)	(6)	(1)
		aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.		
Nbr events	−0.31***	−0.31***	−0.32***	−0.31***	−0.31***	−0.58***	−0.58***
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.22)	(0.22)
High bargaining		3.20	−5.38***	0.12	−2.19		
		(1.95)	(1.82)	(1.88)	(3.20)		
Mean outcome*100	−103	−103	−103	−103	−103	−103	−104
Cluster fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	No
Mother fixed effects	No	No	No	No	No	Yes	Yes
Observations	36,730	36,730	36,730	36,730	36,730	36,730	23,616
R^2	0.22	0.22	0.22	0.22	0.22	0.84	0.75

* *Note*: the estimated model is an OLS model. The baseline regressions include controls for mother ethnicity, her age and age squared, mother and father number of years of education, their working in agriculture sector binaries, the sexe of the head, the number of household members and under five children and the NDHS poverty quintile. The two specifications (baseline and sibling) include controls for child characteristics, such as a binary variable for twin status and sex, child birth order, and current age. The birth month and year of the child and interview's month FE are included in all regressions. Standard errors in parentheses are clustered at the NDHS cluster level. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

First estimates

Table 2: The estimated effect of a single BH conflict on WAZ.

	Specification:							
	Baseline				Sibling			
	(1) aut. maj. hh purch.	(2) aut. own earn.	(3) aut. on husb. earn.	(4) earn. more than husb.	(1) aut. maj. hh purch.	(2) aut. own earn.	(3) aut. on husb. earn.	(4) earn. more than husb.
Nbr events	−0.31***	−0.22*	−0.30**	−0.29**	−0.67***	−1.14***	−0.74***	−0.68***
	(0.12)	(0.12)	(0.13)	(0.12)	(0.26)	(0.30)	(0.23)	(0.23)
Nbr events * High bargaining	0.01	−0.19	−0.06	−0.34	0.29	0.98***	0.72**	0.91**
	(0.19)	(0.20)	(0.16)	(0.23)	(0.34)	(0.30)	(0.31)	(0.37)
High bargaining	3.19	−5.20***	0.16	−1.95				
	(1.95)	(1.81)	(1.88)	(3.21)				
*Nbr events + Nbr events * High bargaining*	−0.3	−0.41*	−0.36***	−0.63**	−0.32	−0.12	−0.02	0.22
Mean outcome*100	−103	−103	−103	−103	−104	−104	−104	−104
Cluster fixed effects	Yes	Yes	Yes	Yes	No	No	No	No
Mother fixed effects	No	No	No	No	Yes	Yes	Yes	Yes
Observations	36,730	36,730	36,730	36,730	23,616	23,616	23,616	23,616
R^2	0.22	0.22	0.22	0.22	0.74	0.74	0.74	0.74

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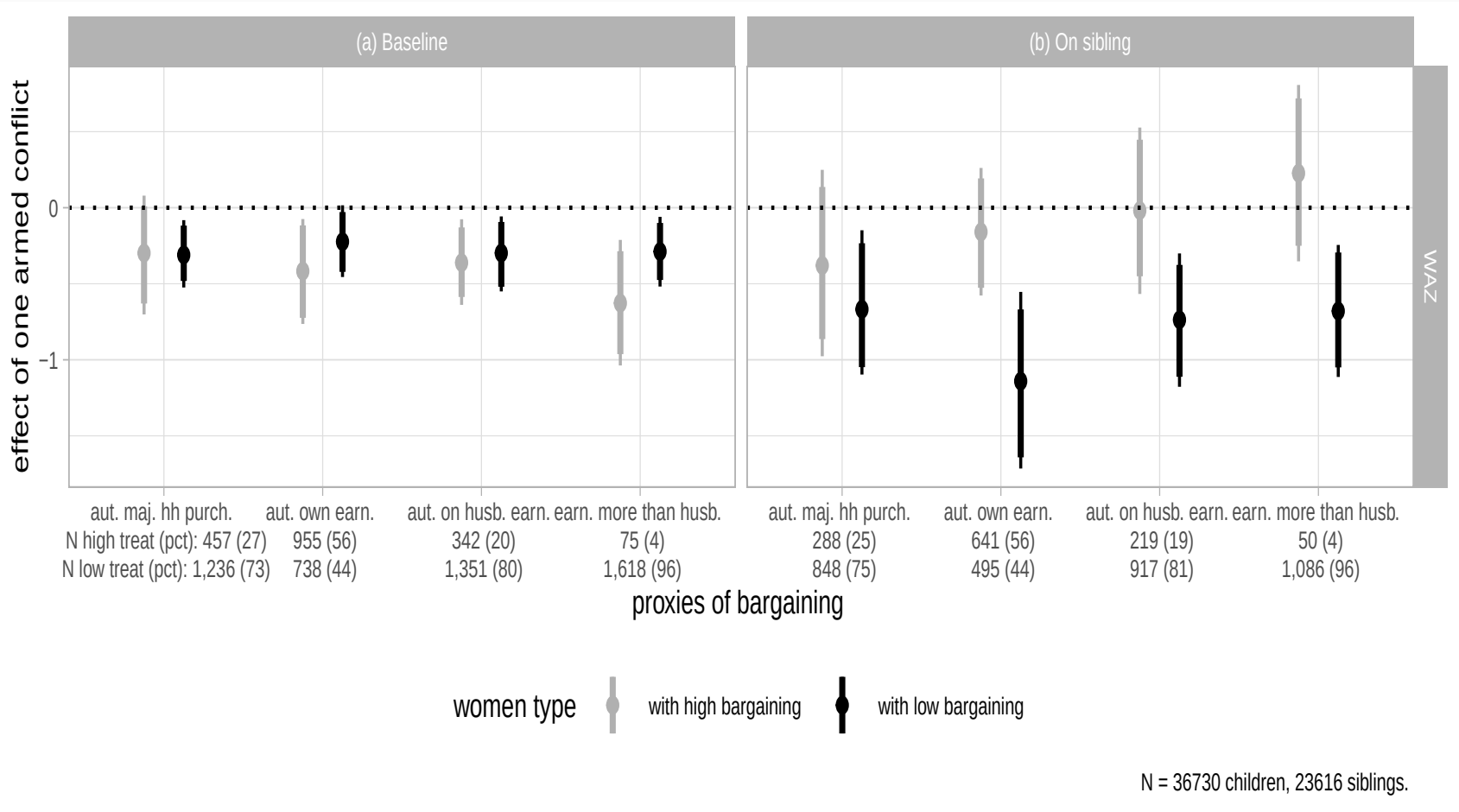

Heterogeneity and mechanisms

- Heterogeneity:
  - the mitigation is not gender-specific, age-specific, nor related to birth order. ▸ Gender ▸ Age ▸ Birth order.
- Mechanisms :
  - infant and young child feeding practices (for children aged 6 to 23 months):
    1. minimum meal frequency ✓ ▸ table
    2. minimum dietary diversity ✗ ▸ table
    3. minimum acceptable diet ✗ ▸ table
  - healthcare services:
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Sensibility analysis

Sensibility analysis :

- intrauterine exposure ✓ ▸ figure
- non migrant ✓ ▸ figure
- sensibility to the exposition variable (all types of conflicts and dist. to the event) ✓ ▸ figures
- control for rainfall shocks ✓ ▸ figure
- multidimensional index of maternal BP ✓ ▸ figure
- extensive margin ✗ ▸ table

Conclusion

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This paper:

- build an intensity-based measure of exposure to the BH insurgency;
- use several proxies to define maternal BP;
- exploit within-family variation in BH conflict exposure.

√ Findings indicate that:

- children born to women with high bargaining power are less likely to be affected by conflict induced-undernutrition;
- the accessibility of healthcare services and the frequency of meals are important **drivers of the results**;
- results remain consistent across several alternative specifications and are not driven by **rainfall shocks**.

√ Policies can leverage maternal bargaining power as a tool for protecting children from the harmful effects of conflict exposure.

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Thank you for your attention!

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Appendix

Stylized facts

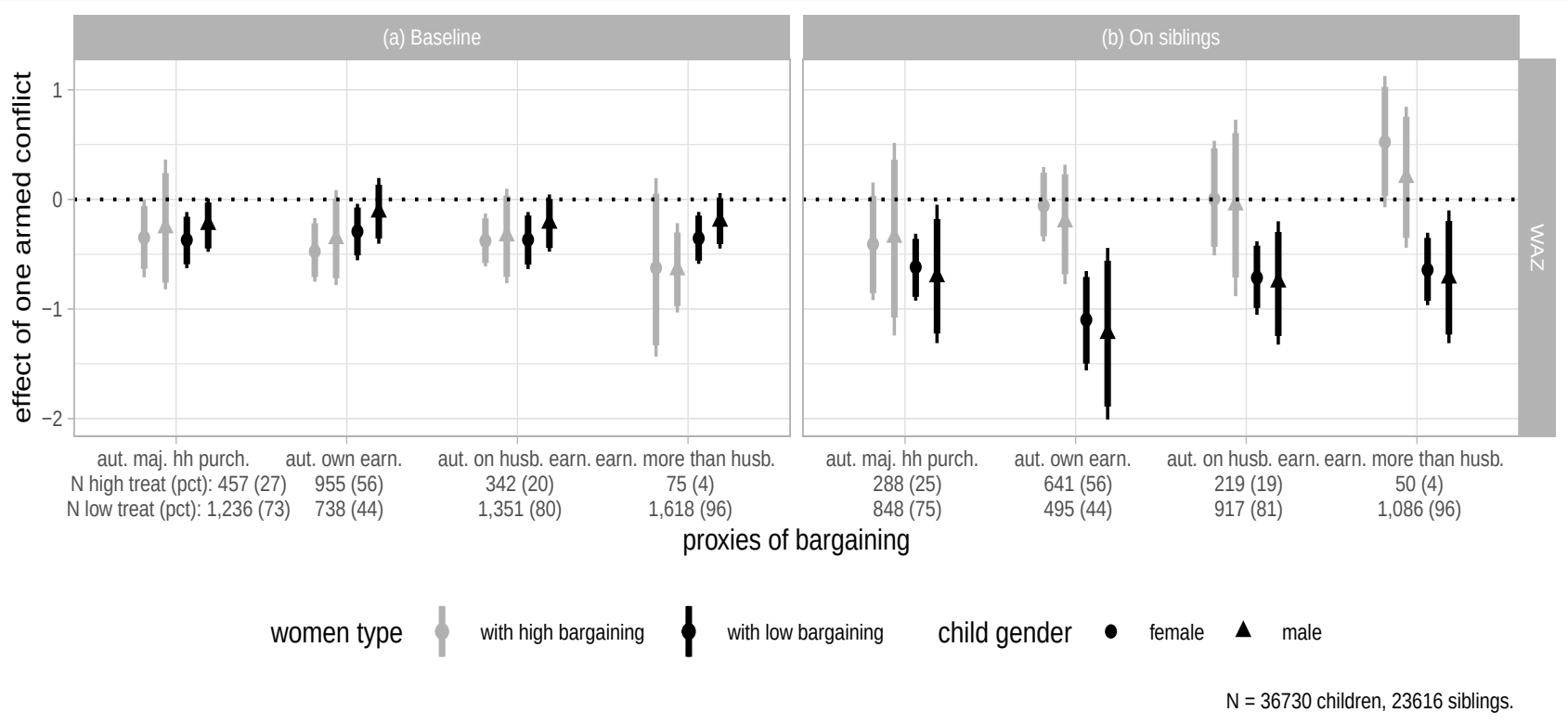
Characteristics of children	**Baseline**, N = 36730			**Sibling**, N = 23616		
	No conflict 10 km around N = 35,037[1]	**At least one conflict 10 km around** N = 1,693[1]	**p-value**[2]	**No conflict 10 km around** N = 22,480[1]	**At least one conflict 10 km around** N = 1,136[1]	**p-value**[2]
Child anthropometric						
WHZ	-0.352 (1.520)	-0.935 (1.689)	<0.001***	-0.361 (1.499)	-0.967 (1.711)	<0.001***
WAZ	-1.007 (1.359)	-1.454 (1.465)	<0.001***	-1.021 (1.344)	-1.464 (1.472)	<0.001***
HAZ	-1.305 (1.924)	-1.410 (1.951)	0.031*	-1.307 (1.904)	-1.374 (1.957)	0.3

* *Note* : [1] n (%); Mean, [2] Fisher's Exact Test for Count Data; Welch Two Sample t-test. WAZ : Weight for Age Z-score; HAZ : Height for Age Z-score; WHZ : Weight for Height Z-score. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

▶ (back)

Heterogeneity

Figure 2: The effect of a single BH conflict by sex.



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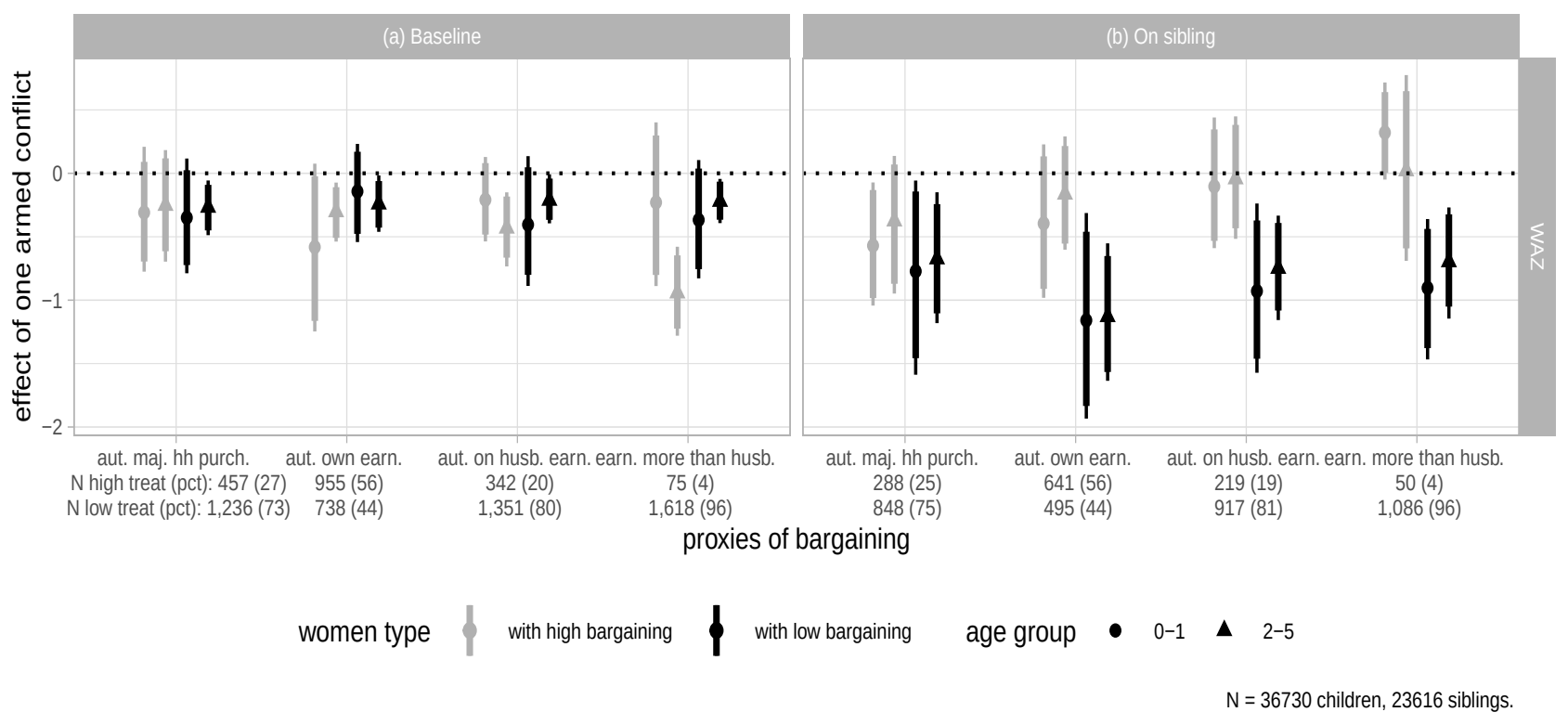
Heterogeneity

Figure 3: The effect of a single BH conflict by age group.



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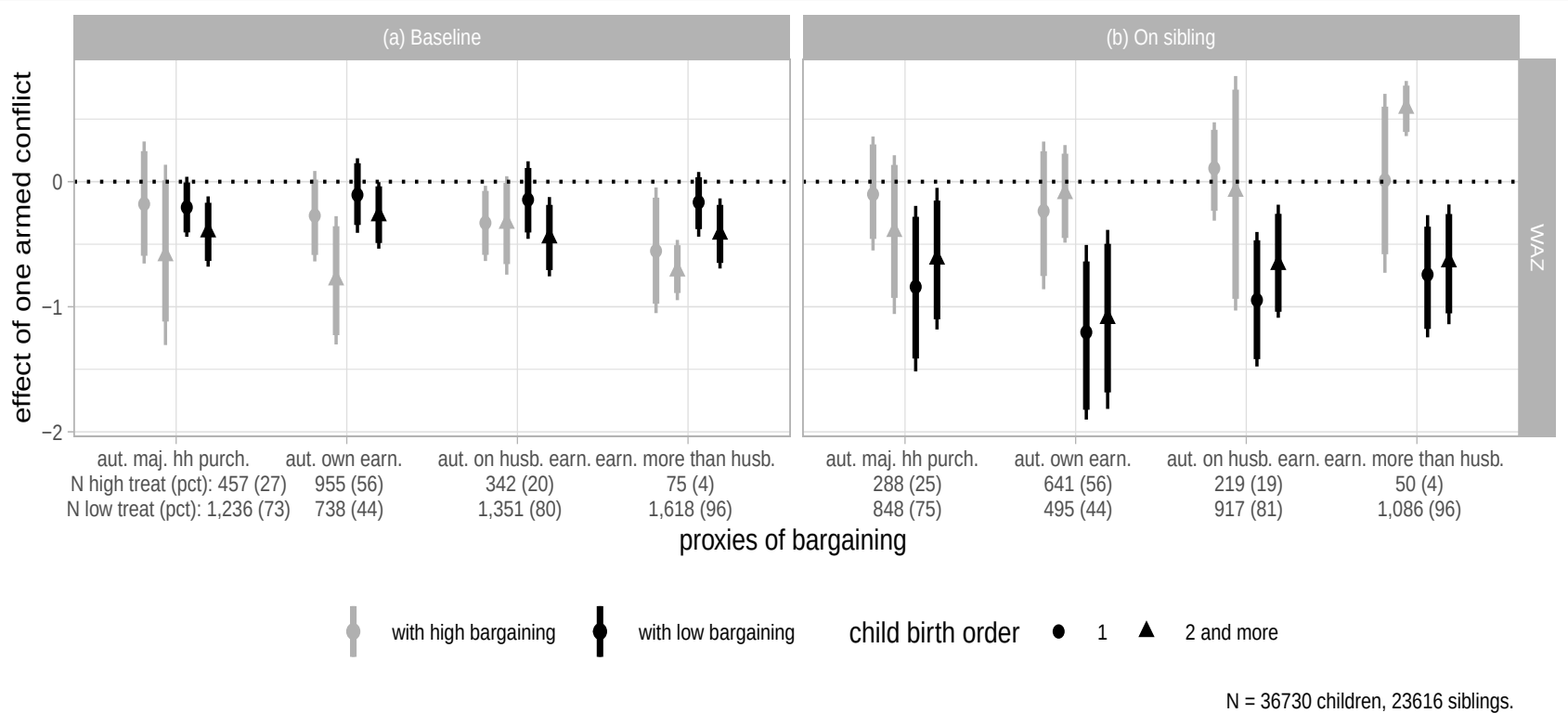
Heterogeneity

Figure 4: The effect of a single BH conflict by birth order.



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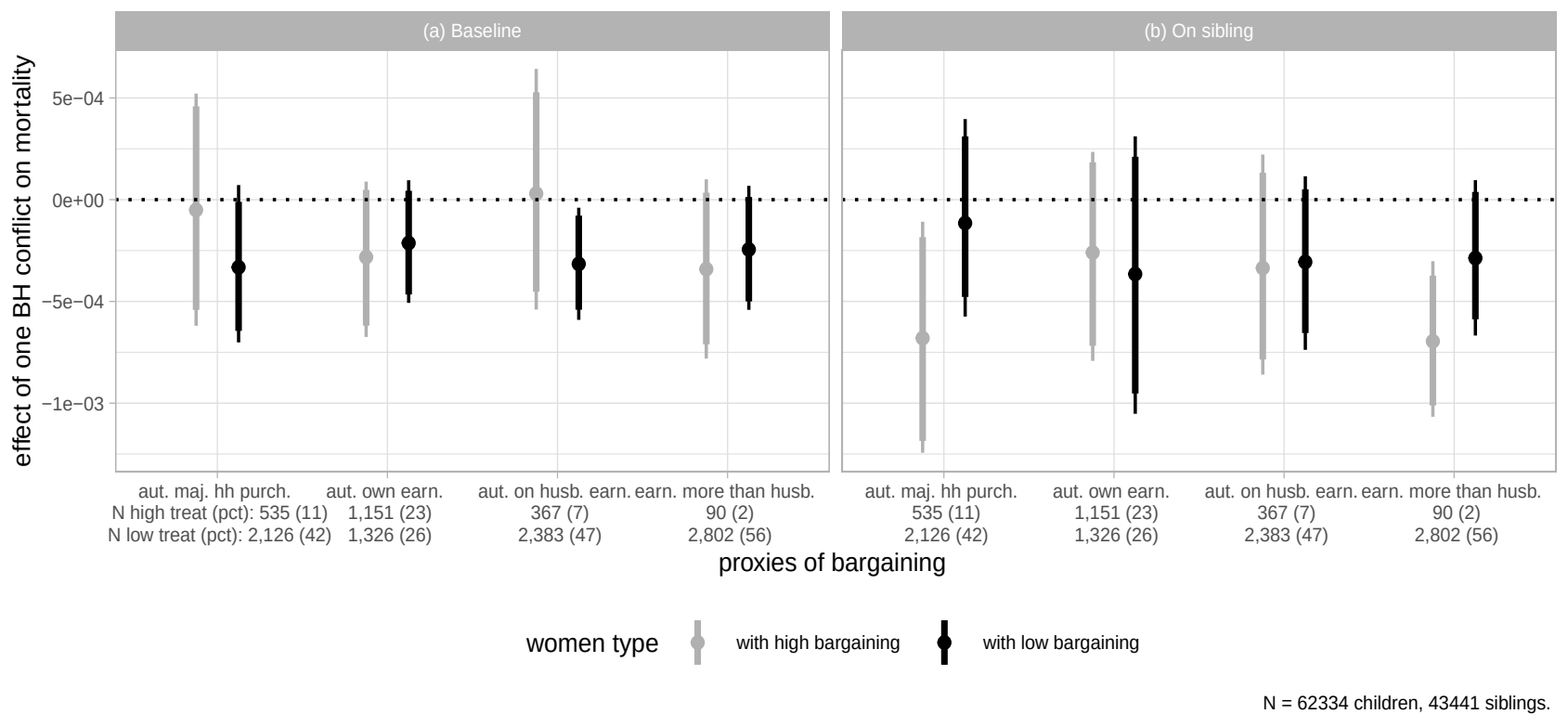
Threats to identification

Figure 5: The effect of a single BH conflict on infant mortality



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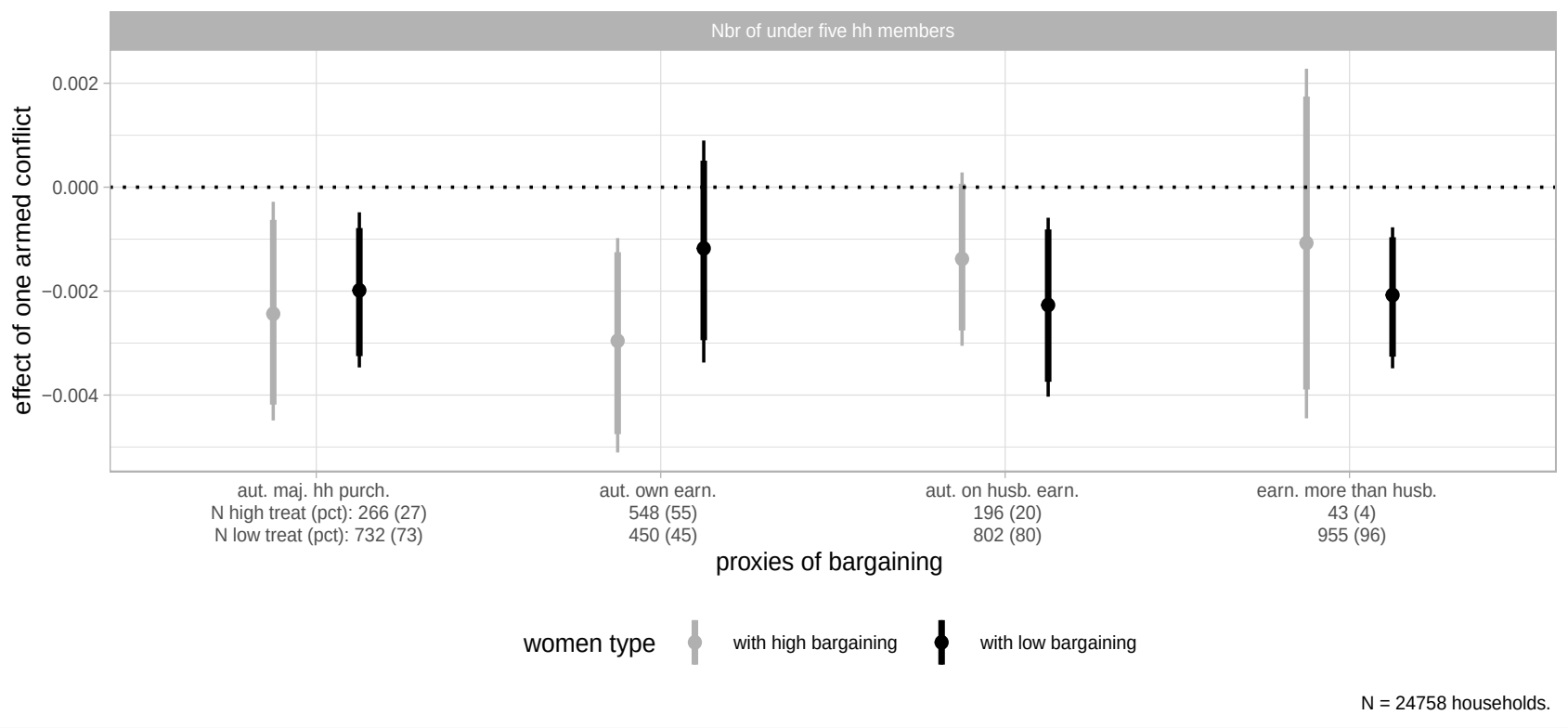
Threats to identification

Figure 6: The effect of one additional BH conflict on the probability of having an alive under five child.



▸ (back)

Threats to identification

Table 4: The effect of a single BH conflict on BP.

	Outcome variables:			
	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.
Nbr Events	0.0007	−0.0011	0.0009	−0.0018
	(0.0012)	(0.0011)	(0.0013)	(0.0018)
Prop. of women[1]	43.9%	54.23%	32.24%	7.15%
Observations	23521	23521	23521	23521
Pseudo R^2	0.1918	0.0989	0.1302	0.0768

Note: [1] prop. of women with high BP in the full sample. The outcome variable is a binary for each proxy of BP. The regressions include controls for woman ethnicity, her age and age squared, woman and husband number of years of education, their working in agriculture sector binaries, the sexe of the head, the number of household members and under five children and the NDHS poverty quantile. Survey year and state fixed effects have been included. Standard errors in parentheses are clustered at the NDHS cluster level. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

▸ (back)

Threats to identification

Table 5: The estimated effect of a single BH conflict on migration.

	Outcome variable: migrant (Yes = "1", No="0")			
	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.
Nbr Events	0.0029	0.0009	0.0032	0.0034
	(0.0018)	(0.0020)	(0.0019)	(0.0018)
Nbr Event * High bargaining	0.0015	0.0051*	0.0017	-0.0008
	(0.0024)	(0.0020)	(0.0019)	(0.0057)
High bargaining	-0.1393*	-0.0736	0.0193	0.0396
	(0.0700)	(0.0675)	(0.0677)	(0.1012)
*Nbr events + Nbr events * High bargaining*	0.0044	0.006	0.0049	0.0026
Prop. of migrant[1]	8.6%	8.6%	8.6%	8.6%
Observations	24524	24524	24524	24524
Pseudo R^2	0.4494	0.4496	0.4492	0.4491

Note: [1] proportion of migrant household. The regressions include controls for woman ethnicity, her age and age squared, woman and husband number of years of education, their working in agriculture sector binaries, the sexe of the head, the number of household members and under five children and the NDHS poverty quantile. Survey year and state fixed effects have been included. Standard errors in parentheses are clustered at the NDHS cluster level.*Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

▸ (back)

Threats to identification

Table 6: The effect of one BH conflict on the proba. of WAZ being missing.

	Outcome variable: WAZ is missing (Yes = "1", No="0")			
	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.
Nbr Events	-0.00	-0.01	-0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Nbr Events * High bargaining	-0.14	-0.00	-0.22	-10.55***
	(0.11)	(0.01)	(0.15)	(0.94)
High bargaining	0.12	-0.26***	0.08	-0.09
	(0.08)	(0.08)	(0.08)	(0.16)
*Nbr events + Nbr events * High bargaining*	-0.14	-0.01	-0.22	-10.54***
Prop. of missing[1]	2.17%	2.17%	2.17%	2.17%
Observations	56310	56310	56310	56310
Pseudo R^2	0.06	0.06	0.06	0.06

Note: [1] proportion of missing information. The outcome is a binary for WAZ being missing. The regressions include controls for mother ethnicity, her age and age squared, mother and father number of years of education, their working in agriculture sector binaries, the sexe of the head, the number of household members and under five children and the NDHS poverty quantile. They also include controls for child characteristics, such as a binary variable for twin status and gender, child birth order, and current age. Standard errors in parentheses are clustered at the NDHS cluster level. Survey year and state fixed effects have been included. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

▸ (back)

Mechanisms

Mechanisms

$$log\frac{P_{mhc}}{1-P_{mhc}} = \boldsymbol{\alpha_1} nbrEvents_{hc} \times highBP_m + \boldsymbol{\alpha_2} nbrEvents_{hc} + \alpha_3 highBP_m + \alpha_4 X_{mhc} + \mu^{SY}_{mhc} + \mu^{St}_{mhc} + \epsilon_{mhc}$$

- P_{mhc} is the probability of a mother m from household h in cluster c engaging in a specific mechanism,
- $nbrEvents_{hc}$ is the count of armed conflicts related to BH within a 10km radius experienced by the household from **2009 to the interview day**;
- $highBP_m$ is the mother m BP level dummy (low or high);
- X_{mhc} are mother's m and household's h characteristics;
- μ^{SY}_{mhc} is the survey year FE (account for the survey's year-specific characteristics);
- μ^{St}_{mhc} is the state FE (account for the state's specific characteristics);

▸ (back)

Mechanisms

Table 7: The effect of a single BH conflict on child vaccination.

	Outcome: child vaccination (1 = «Yes» and 0 = «No»)			
	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.
Nbr events	0.0014	0.0004	0.0014	0.0016
	(0.0025)	(0.0013)	(0.0029)	(0.0021)
Nbr events * High bargaining	−0.0012	0.0015	−0.0011	0.0253
	(0.0023)	(0.0018)	(0.0034)	(0.0519)
High bargaining	0.0083	0.2021***	0.0309	0.0253
	(0.0509)	(0.0468)	(0.0535)	(0.0519)
*Nbr events + Nbr events * High bargaining*	0.0002	0.0019	0.0003	0.0269
Prop. of children[1]	50.7%	50.7%	50.7%	50.7%
Observations	36730	36730	36730	36730
Pseudo R^2	0.0219	0.0234	0.0219	0.0219

Note:[1] proportion of vaccinated children. The vaccines include diphtheria, tetanus, polio (DTP), measles, BCG, and vitamin A. The regressions incorporate controls for mother's ethnicity, her age and age squared, mother and father's number of years of education, their working status in the agriculture sector (binary), the sex of the head of the household, the number of household members, the count of under-five children and the NDHS poverty quantile. They also include controls for child characteristics, such as a binary variable for twin status and gender, child birth order, and current age. Standard errors in parentheses are clustered at the NDHS cluster level. Survey year and state fixed effects have been included. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

▸ (back)

Mechanisms

Table 8: The effect of a single BH conflict on maternal care.

	Outcome: maternal care (1 = «Yes» and 0 = «No»)			
	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.
Nbr Events	-0.0001	-0.0017*	-0.0002	0.0003
	(0.0010)	(0.0007)	(0.0010)	(0.0009)
Nbr Events * High bargaining	0.0008	0.0057***	0.0035*	-0.0055***
	(0.0007)	(0.0014)	(0.0014)	(0.0007)
High bargaining	0.2580***	0.1982***	0.2536***	0.3111**
	(0.0644)	(0.0593)	(0.0753)	(0.1027)
*Nbr events + Nbr events * High bargaining*	0.0007	0.004***	0.0033*	-0.0052***
Prop. of women[1]	74.13%	74.13%	74.13%	74.13%
Observations	23461	23461	23461	23461
Pseudo R^2	0.3166	0.3167	0.3166	0.3159

Note: [1] proportion of women with access to maternal care. Maternal care include postnatal (after child birth) and antenatal care (before child birth). The regressions incorporate controls for mother's ethnicity, her age and age squared, mother and father's number of years of education, their working status in the agriculture sector (binary), the sex of the head of the household, the number of household members, the count of under-five children and the NDHS poverty quantile. Standard errors in parentheses are clustered at the NDHS cluster level. Survey year and state fixed effects have been included. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

▸ (back)

Mechanisms

Table 9: The effect of a single BH conflict on barriers to health.

	Barriers to health (1 = «Yes» and 0 = «No»)			
	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.
Nbr Events	0.0016**	0.0028***	0.0012*	0.0005
	(0.0005)	(0.0004)	(0.0006)	(0.0004)
Nbr Events * High bargaining	-0.0033***	-0.0047***	-0.0041**	0.0029
	(0.0006)	(0.0007)	(0.0016)	(0.0018)
High bargaining	0.0233	-0.1100	-0.0991	-0.0932
	(0.1064)	(0.0667)	(0.0898)	(0.0879)
*Nbr events + Nbr events * High bargaining*	-0.0017**	-0.0019**	-0.0029	0.0034
Prop. of women[1]	55.86%	55.86%	55.86%	55.86%
Observations	23521	23521	23521	23521
Pseudo R^2	0.12	0.12	0.12	0.12

Note: [1] proportion of women who face at least one barrier to health. The regressions incorporate controls for mother's ethnicity, her age and age squared, mother and father's number of years of education, their working status in the agriculture sector (binary), the sex of the head of the household, the number of household members, the count of under-five children and the NDHS poverty quantile. Standard errors in parentheses are clustered at the NDHS cluster level. Survey year and state fixed effects have been included. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

▸ (back)

Mechanisms

Table 10: The effect of a single BH conflict on minimum dietary diversity.

	Outcome: MDD (1 = «Yes» and 0 = «No»)			
	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.
Nbr events	-0.0034	-0.0023*	-0.0038	-0.0030
	(0.0024)	(0.0011)	(0.0022)	(0.0018)
Nbr events * High bargaining	0.0011	-0.0014	0.0038**	-0.0011
	(0.0017)	(0.0017)	(0.0012)	(0.0012)
High bargaining	-0.1364	0.0740	0.0193	0.1611
	(0.0963)	(0.0673)	(0.1092)	(0.1315)
*Nbr events + Nbr events * High bargaining*	-0.0023	-0.0037	0	-0.0041
Prop. of children[1]	23.72%	23.72%	23.72%	23.72%
Observations	22358	22358	22358	22358
Pseudo R^2	0.0695	0.0692	0.0691	0.0692

Note: [1] proportion of children which satisfy the MDD. The regression model includes controls for the woman's ethnicity, her age and age squared, both the woman's and her husband's years of education, binary indicators for working in the agriculture sector, the sex of the household head, the number of household members, the number of children under five, and the NDHS poverty quintile. Survey year and state FE are included in each regression. Standard errors (in parentheses) are clustered at the NDHS cluster level. Survey year and state fixed effects have been included. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

▸ (back)

Mechanisms

Table 11: The effect of a single BH conflict on minimum meal frequency.

	Outcome: MMF (1 = «Yes» and 0 = «No»)			
	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.
Nbr events	-0.0043***	-0.0061***	-0.0022***	-0.0021***
	(0.0006)	(0.0008)	(0.0005)	(0.0004)
Nbr events * High bargaining	0.0050***	0.0061***	-0.0014	-0.0086*
	(0.0005)	(0.0010)	(0.0013)	(0.0034)
High bargaining	0.0071	0.2031***	-0.0386	-0.2698**
	(0.0782)	(0.0546)	(0.0760)	(0.0830)
*Nbr events + Nbr events * High bargaining*	0.0007***	0	-0.0036***	-0.0107***
Prop. of children[1]	48.4%	48.4%	48.4%	48.4%
Observations	22361	22361	22361	22361
Pseudo R^2	0.0424	0.0442	0.0422	0.0430

Note:[1] prop. of children who satisfy the MMF. The regression model includes controls for the woman's ethnicity, her age and age squared, both the woman's and her husband's years of education, binary indicators for working in the agriculture sector, the sex of the household head, the number of household members, the number of children under five, and the NDHS poverty quintile. Survey year and state FE are included in each regression. Standard errors (in parentheses) are clustered at the NDHS cluster level. Survey year and state fixed effects have been included. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

▸ (back)

Mechanisms

Table 12: The effect of a single BH conflict on minimum acceptable diet.

	Outcome: MAD (1 = «Yes» and 0 = «No»)			
	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.
Nbr events	-0.0032	-0.0012*	-0.0027	-0.0026
	(0.0026)	(0.0006)	(0.0021)	(0.0019)
Nbr events * High bargaining	0.0008	-0.0041	-0.0014	-0.0213
	(0.0021)	(0.0064)	(0.0012)	(0.0172)
High bargaining	-0.1245	0.1447	-0.0077	-0.0507
	(0.1215)	(0.0964)	(0.1285)	(0.1437)
*Nbr events + Nbr events * High bargaining*	-0.0024	-0.0053	-0.0041	-0.0239
Prop. of children[1]	11.9%	11.9%	11.9%	11.9%
Observations	22358	22358	22358	22358
Pseudo R^2	0.0353	0.0356	0.0349	0.0351

Note: [1] prop. of children who satisfy the MAD. The regression model includes controls for the woman's ethnicity, her age and age squared, both the woman's and her husband's years of education, binary indicators for working in the agriculture sector, the sex of the household head, the number of household members, the number of children under five, and the NDHS poverty quintile. Survey year and state FE are included in each regression. Standard errors (in parentheses) are clustered at the NDHS cluster level. Survey year and state fixed effects have been included. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

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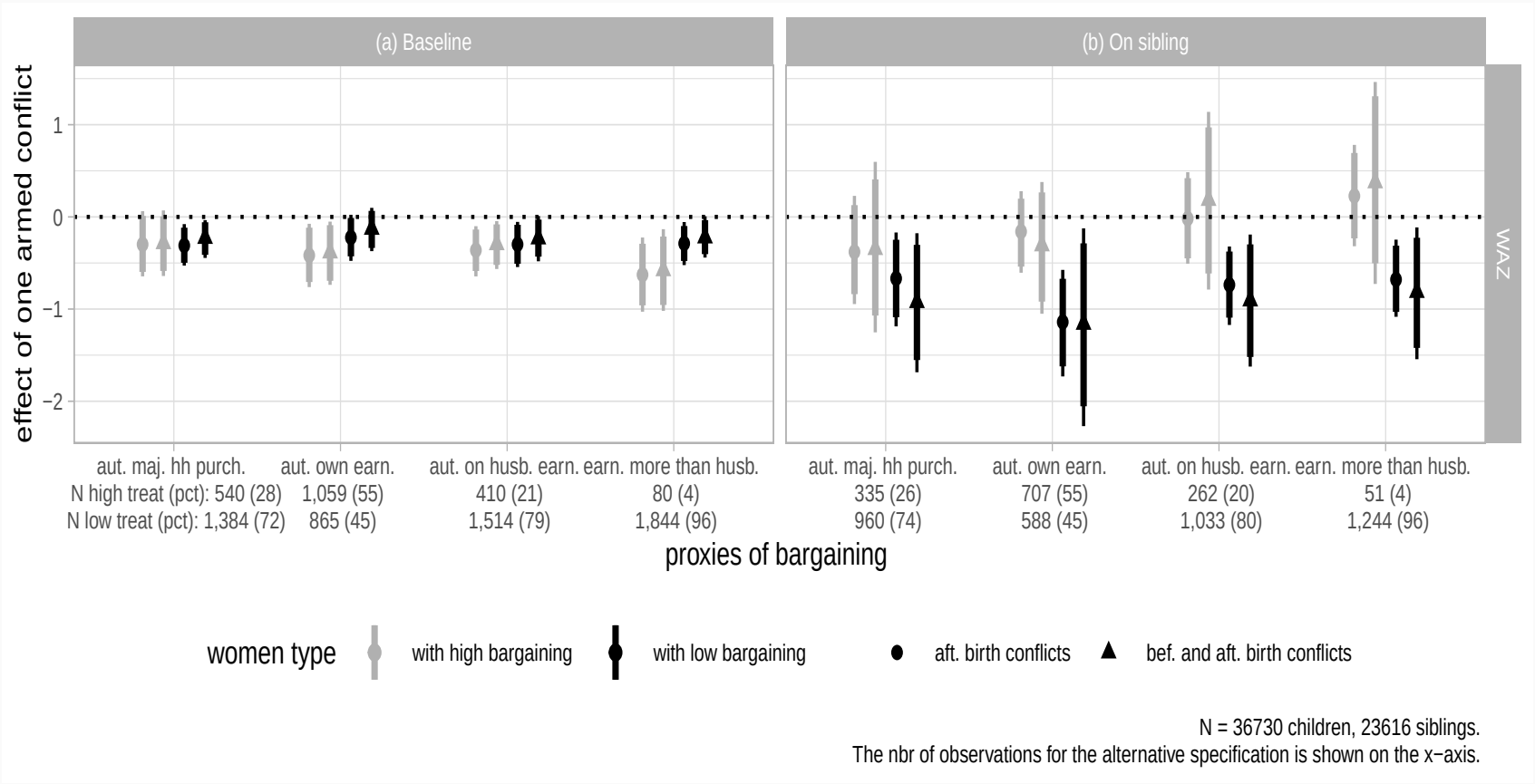
Sensitivity analysis

Figure 7: The effect of a single BH conflict on malnutrition.



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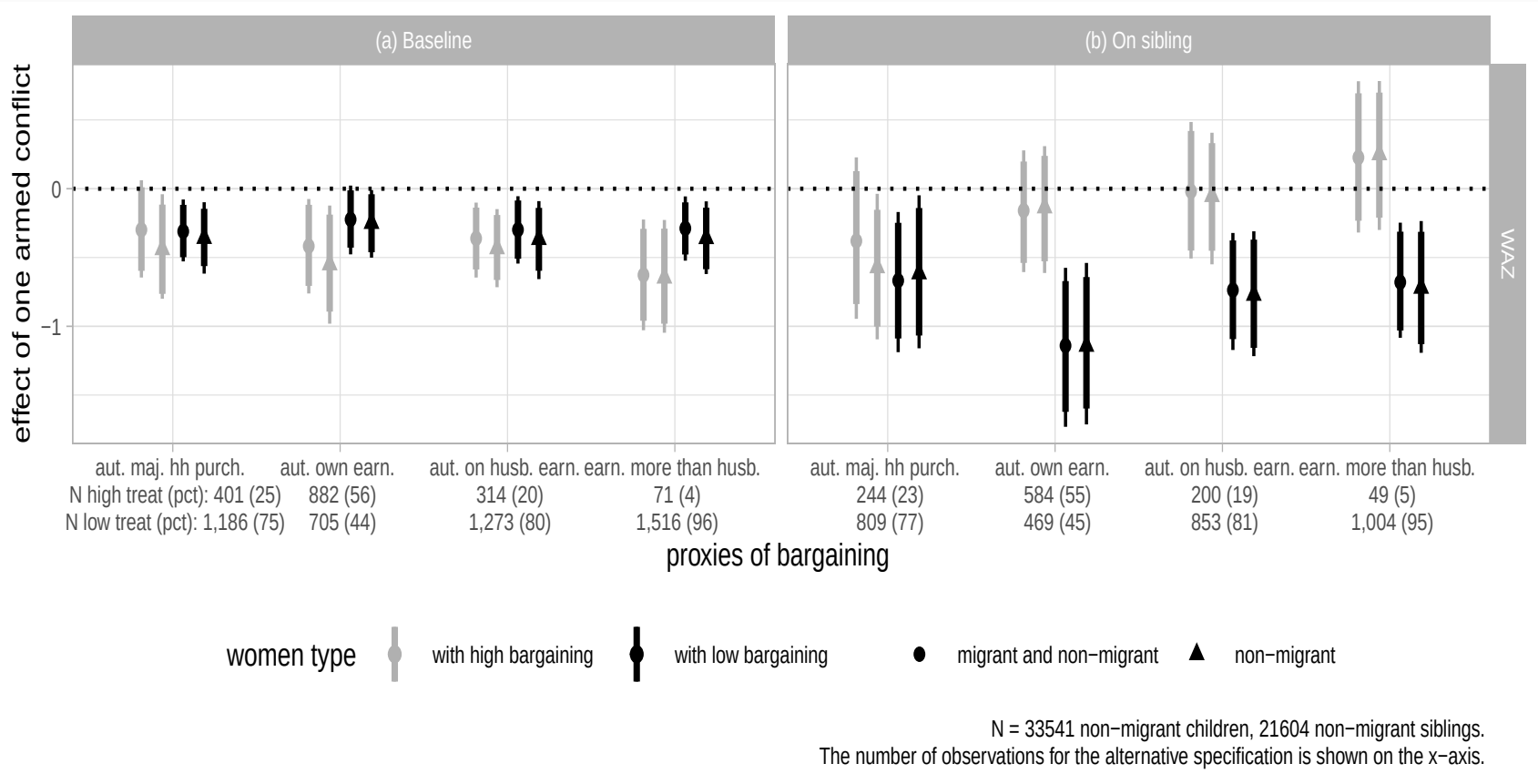
Sensitivity analysis

Figure 8: The effect of a single BH conflict on malnutrition for migrant and non migrant



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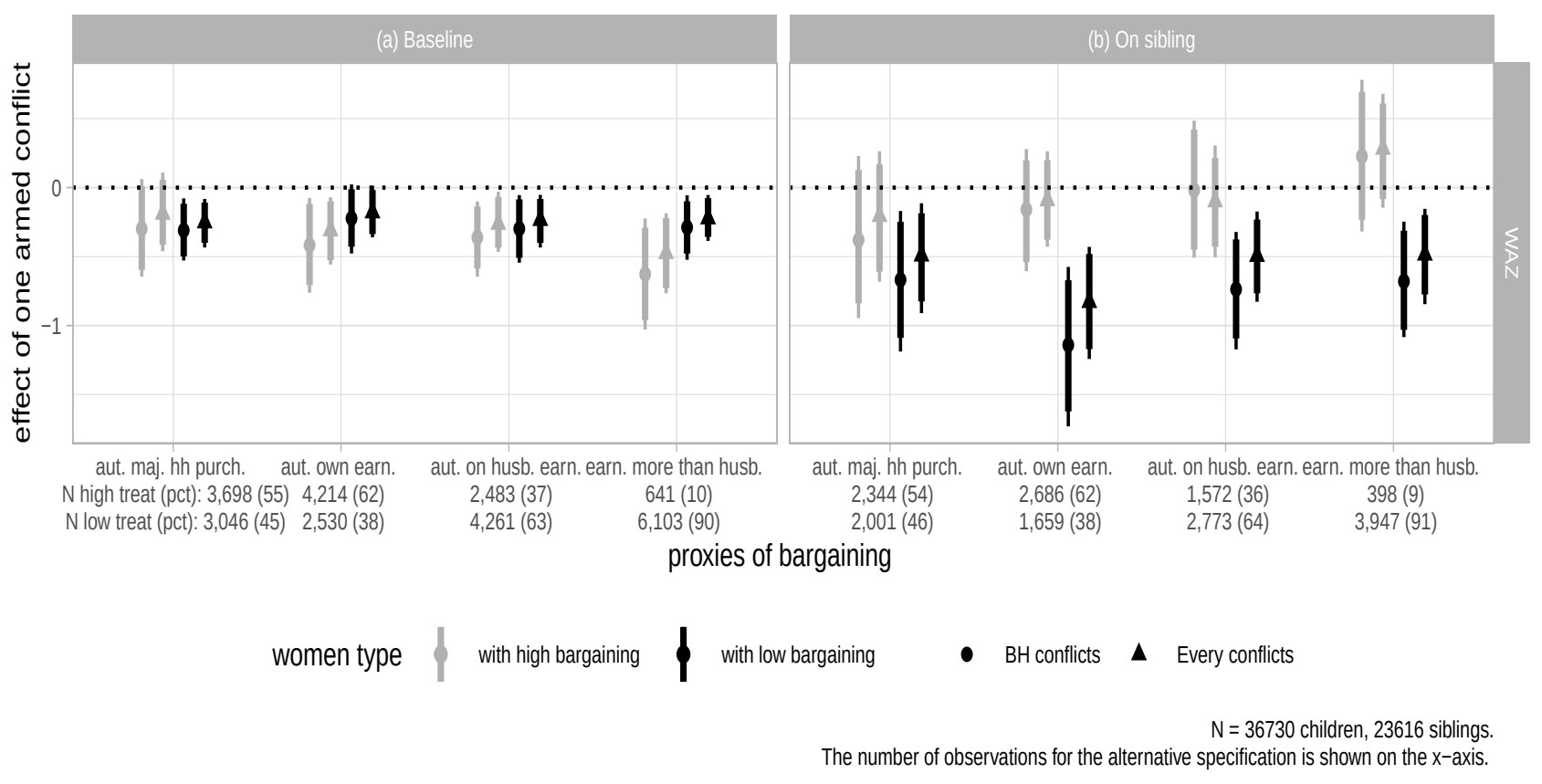
Sensitivity analysis

Figure 9: The effect of a single BH conflict on malnutrition.



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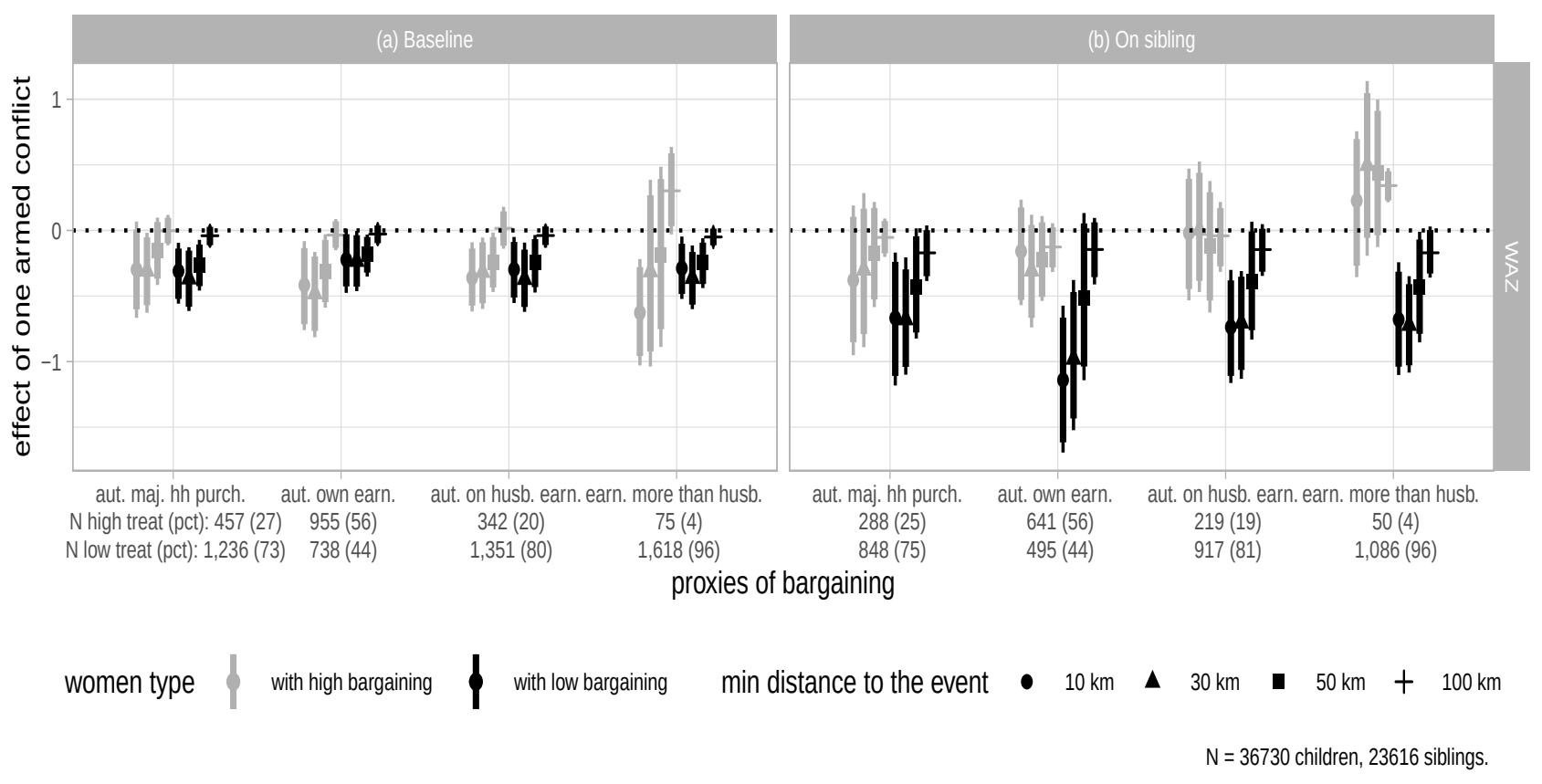
Sensitivity analysis

Figure 10: The effect of a single BH conflict on malnutrition.



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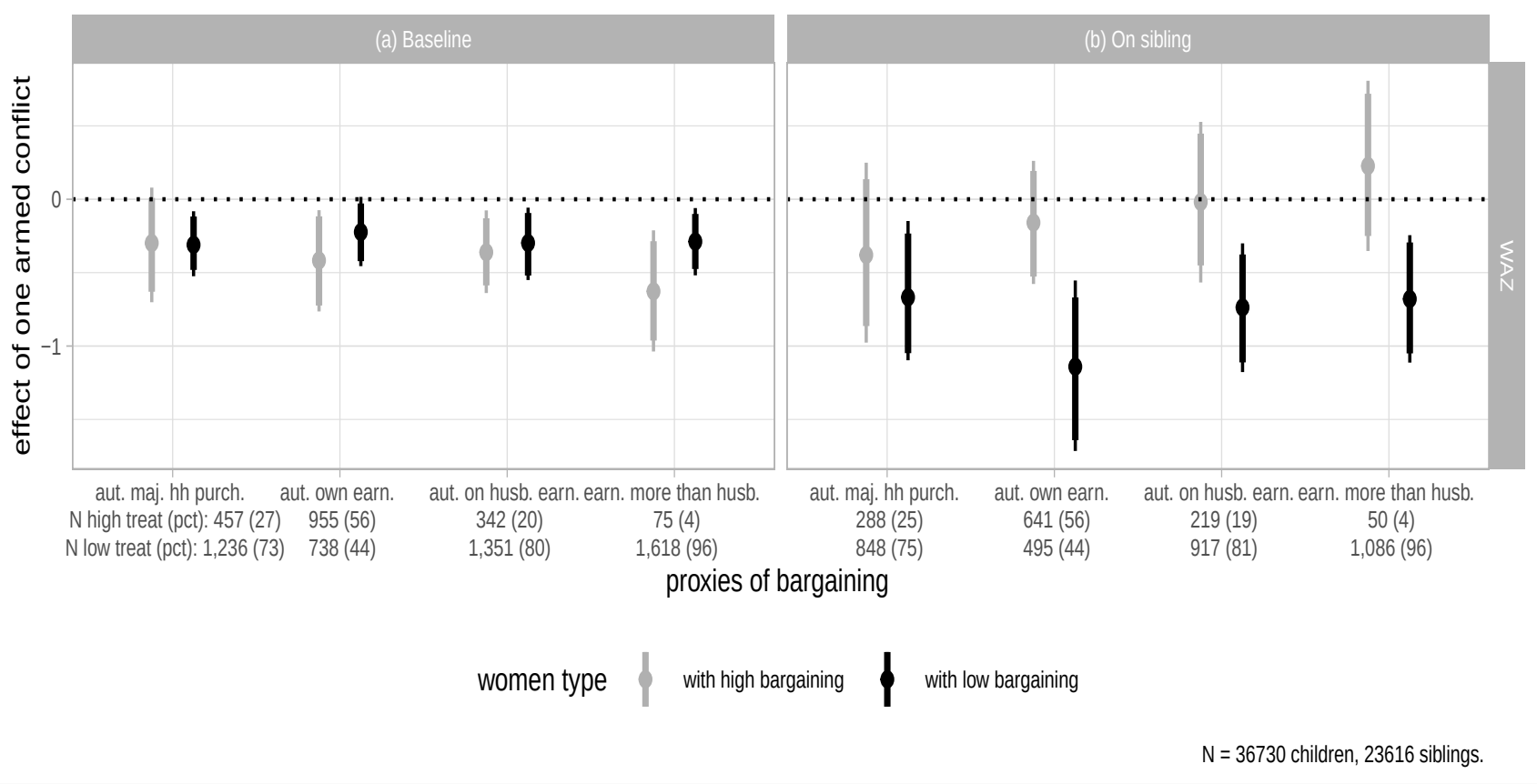
Sensitivity analysis

Figure 11: The effect of a single BH conflict on malnutrition (10 km).



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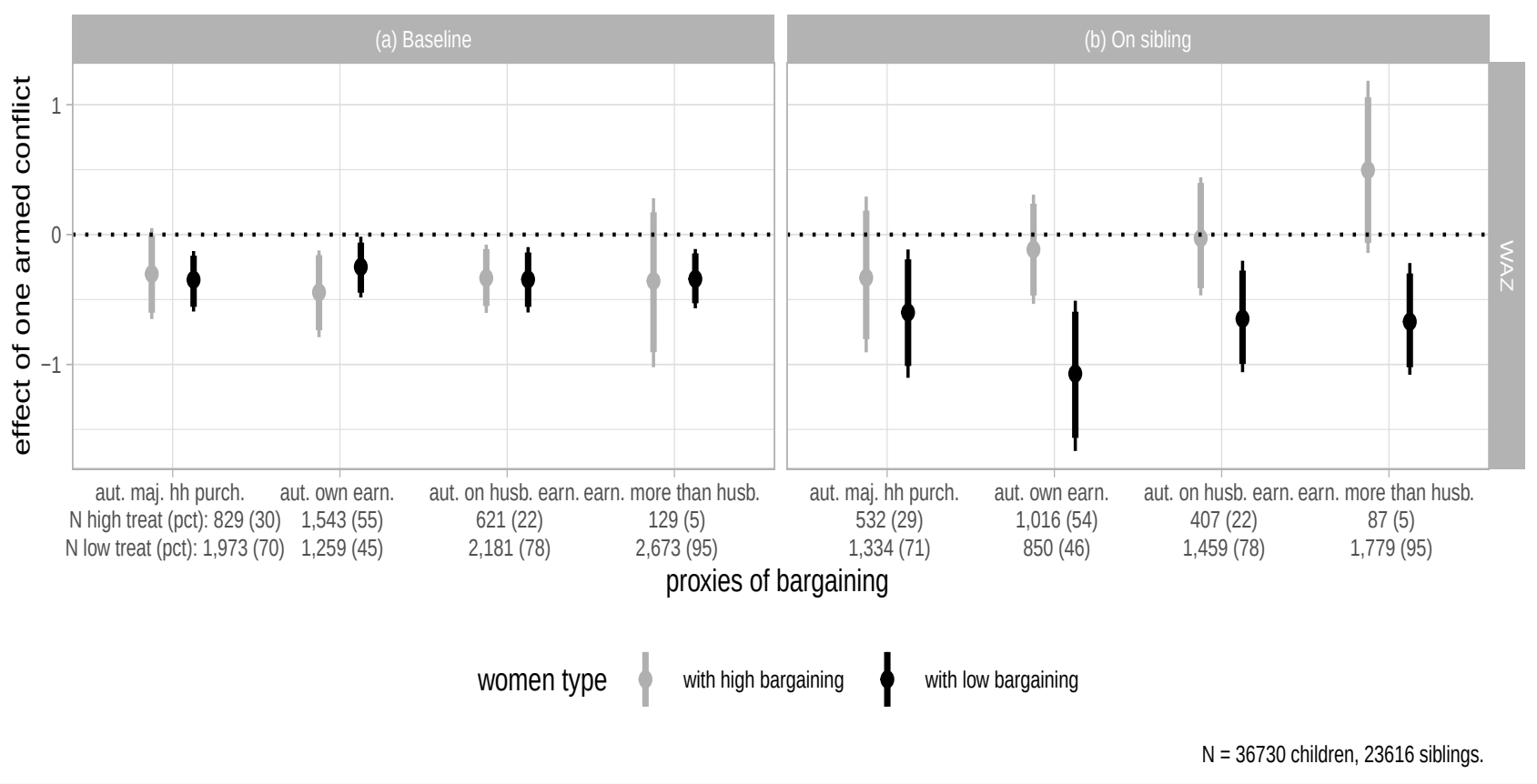
Sensitivity analysis

Figure 12: The effect of a single BH conflict on malnutrition (20 km).



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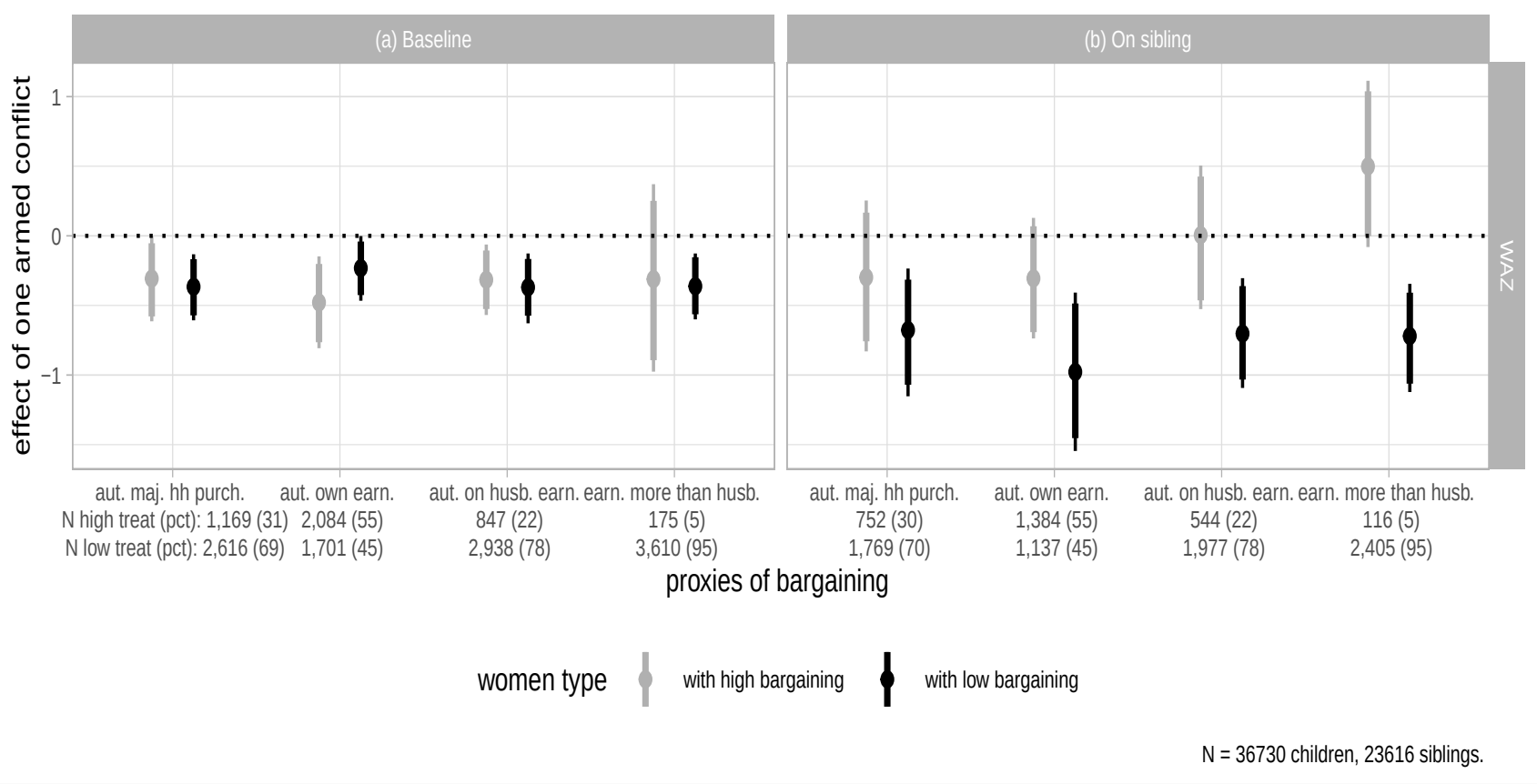
Sensitivity analysis

Figure 13: The effect of a single BH conflict on malnutrition (30 km).



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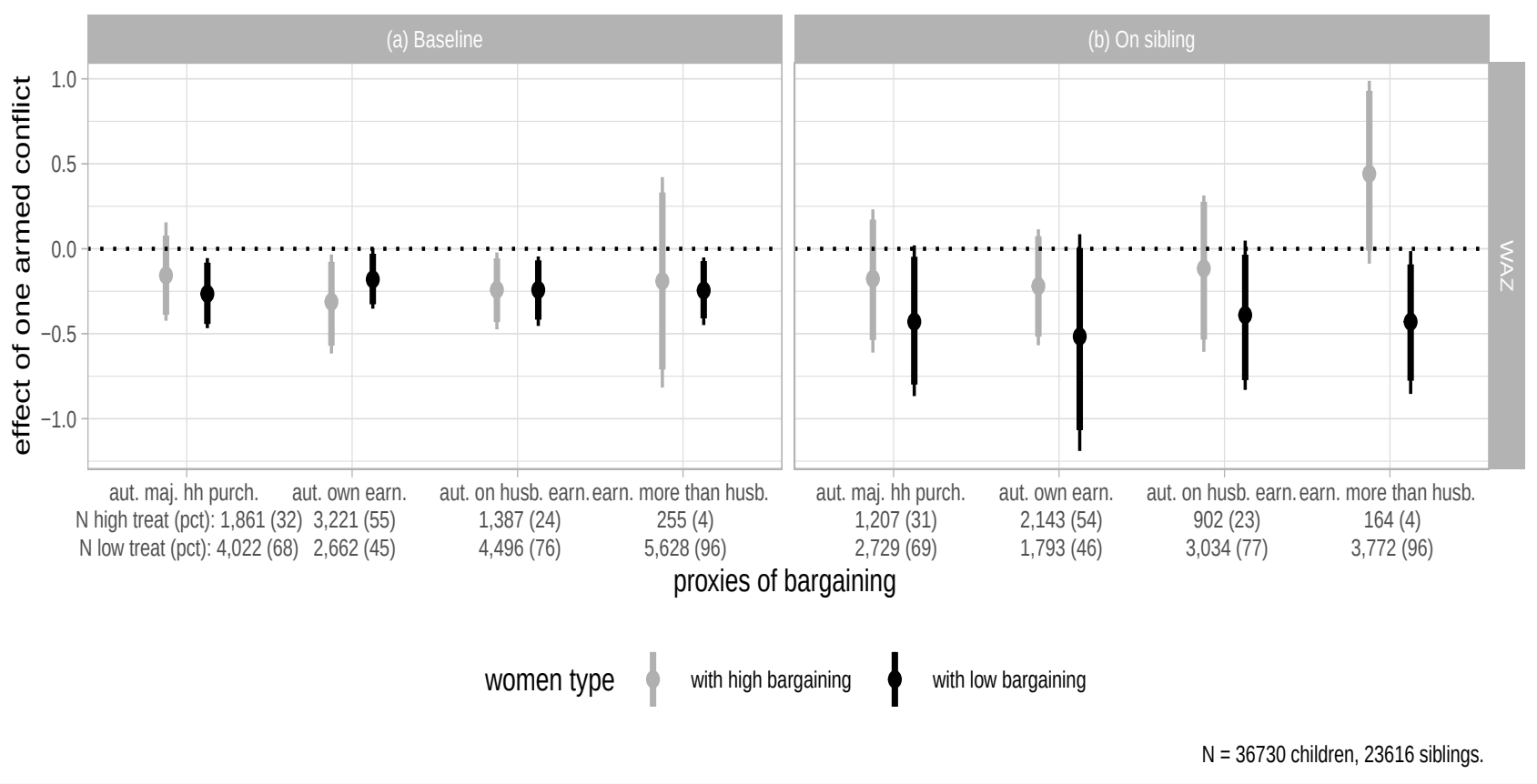
Sensitivity analysis

Figure 14: The effect of a single BH conflict on malnutrition (50 km).



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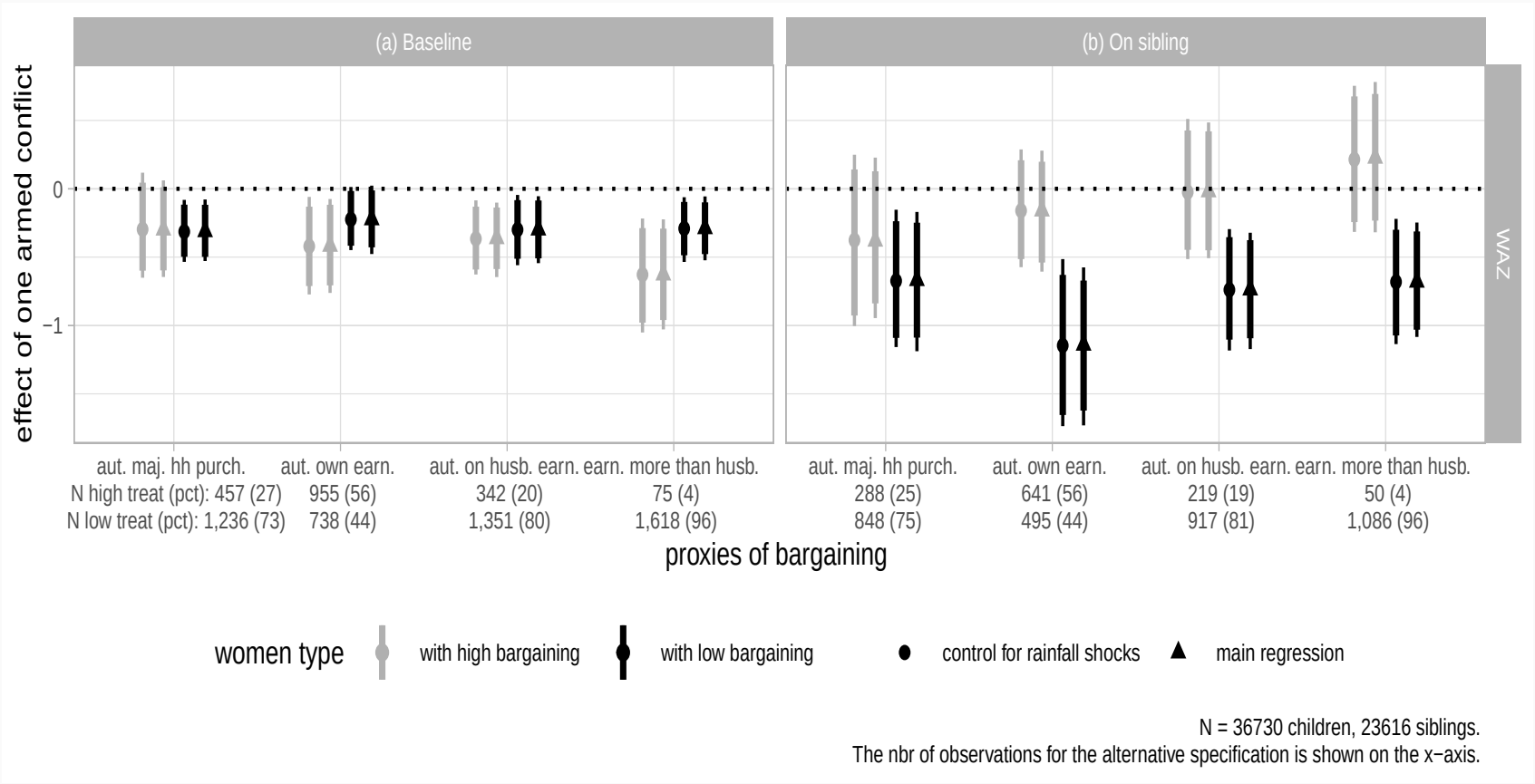
Sensitivity analysis

Figure 15: The effect of a single BH conflict on malnutrition.



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Sensitivity analysis

Table 13: The estimated effect of a single BH conflict on the WAZ.

	Specification:							
	Baseline				Sibling			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.	aut. maj. hh purch.	aut. own earn.	aut. on husb. earn.	earn. more than husb.
Exposed Binary	-6.39	-6.03	-9.38	-8.13	-9.07	-16.15	-8.23	-3.47
	(8.44)	(9.33)	(8.32)	(8.00)	(9.75)	(13.85)	(10.18)	(9.51)
Exposed Binary * High bargaining	-8.29	-5.42	1.72	-26.13	18.52	23.23	21.35	0
	(11.42)	(8.62)	(12.88)	(16.50)	(20.89)	(18.97)	(22.71)	(0.00)
High bargaining	1.33	-0.08	-2.46	-1.25				
	(1.81)	(1.78)	(1.84)	(3.08)				
Survey year FE	Yes	Yes	Yes	Yes	No	No	No	No
Cluster FE	Yes	Yes	Yes	Yes	No	No	No	No
Mother FE	No	No	No	No	Yes	Yes	Yes	Yes
Observations	35,339	35,339	35,339	35,339	24,970	24,970	24,970	24,970
R^2	0.30	0.30	0.30	0.30	0.77	0.77	0.77	0.77

* *Note*: the estimated model is an OLS model. The baseline regressions include controls for mother ethnicity, her age and age squared, mother and father number of years of education, their working in agriculture sector binaries, the sexe of the head, the number of household members and under five children and the NDHS poverty quintile. The two specifications (baseline and sibling) include controls for child characteristics, such as a binary variable for twin status and gender, child birth order and current age. The birth month and year of the child are included in all regressions. The birth month and year of the child and interview's month FE are included in all regressions. Standard errors in parentheses are clustered at the NDHS cluster level. *Significant at the 0.1 level, **Significant at the 0.05 level, ***Significant at the 0.01 level.

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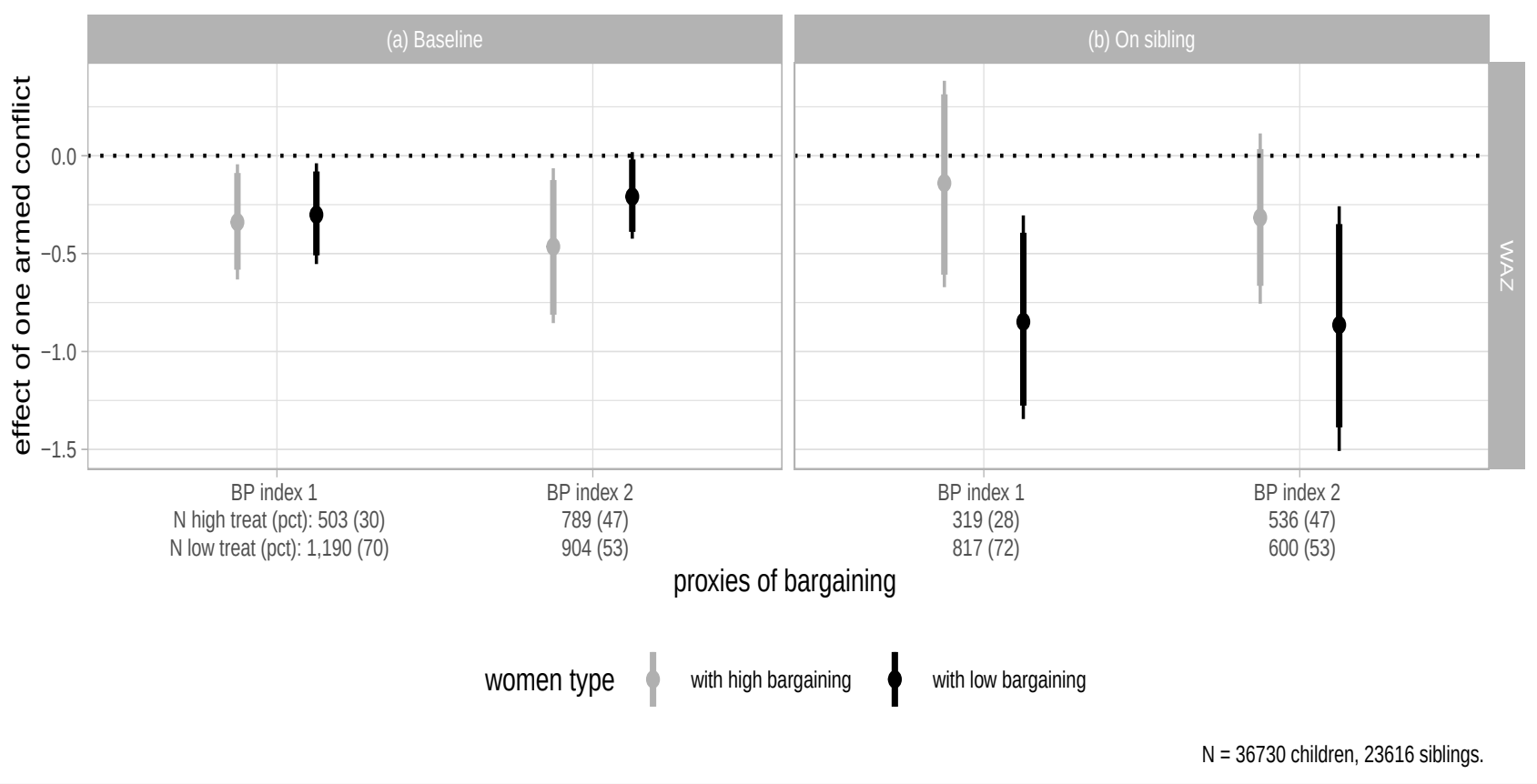
Sensitivity analysis

Figure 16: The effect of a single BH conflict on malnutrition.



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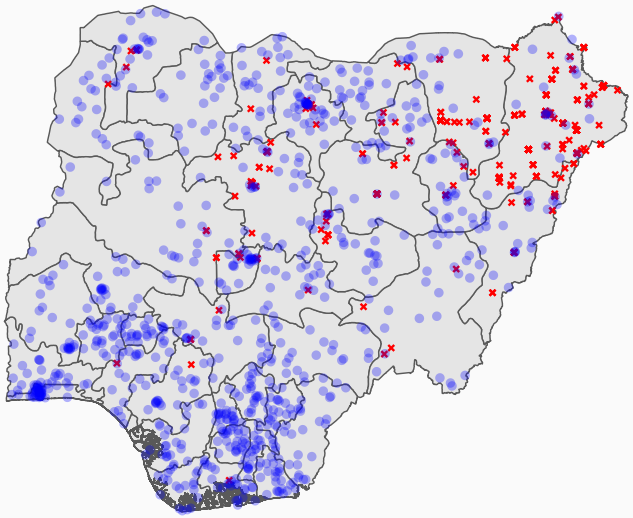
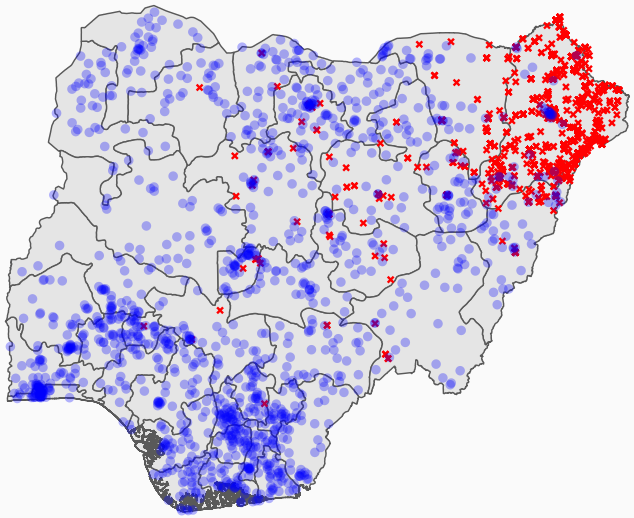
BH conflict in Nigeria

2009 − 2013



2014 − 2018



BH conflict

DHS cluster buffer of 10km

Data sources: NDHS and ACLED (Author's own calculation).

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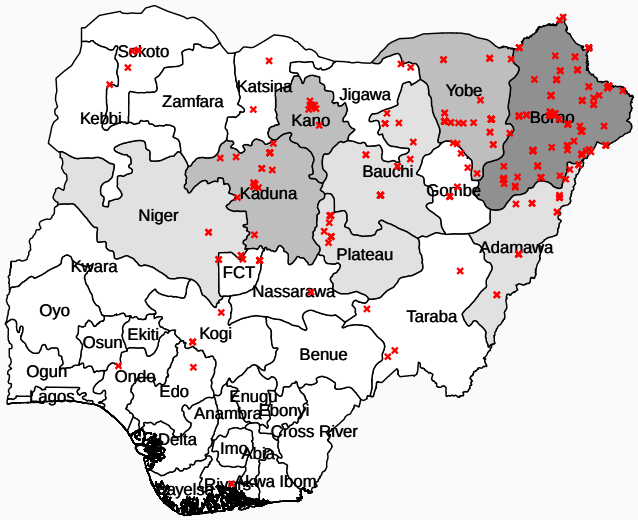
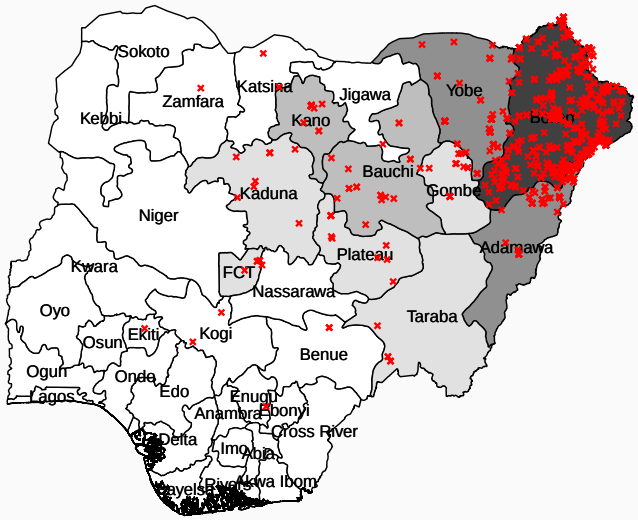
BH conflict in Nigeria

2009 – 2013



2014 – 2018



Number of armed conflicts related to BH · 0–5 · 5–20 · 20–100 · 100–200 · >200 · BH conflict

Data sources: ACLED (Author's own calculation).

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Malnutrition

▸ (back)

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