Birth and Fertility during War: Afghanistan from 2007 to 2010

Parlow, Anton

University of Rostock

23 September 2016

Birth and Fertility during War: Afghanistan from 2007 to 2010

Draft *do not quote*

Anton Parlow

Visiting Assistant Professor, Department of Economics, University of Rostock, Germany, Phone: +49-381-4984471, Email: anton.parlow@uni-rostock.de

Abstract

Using spatial variations in the experience of war-related violence between 2007 and 2010 in Afghanistan, I estimate that birth rates are about eight percent higher for households living in provinces affected by violence the most, thus, an insurance effect may be present. The results remain robust after accounting for migration as well as community level fixed effects and are more pronounced for the poorest households but reverse in sign for the poor and middle class households. Additionally, I find that stillbirths are more likely and more women are currently pregnant in these provinces. These two fertility outcomes are possible channels explaining increased birth rates in the provinces affected the most by violence.

Keywords: Armed Conflicts, Birth Rates, Fertility

JEL-Classification: I12, O12

I would like to thank Philipp Ottolinger for his motivational speeches and valuable reminders to always use maps.

1. Introduction

Households, and in particular women, in developing countries use children as a coping mechanism to overcome times of crisis. Increasing the number of children can be for instance an insurance mechanism to smooth consumption over time or to replace children lost due to a crisis (Lee 1997, Nobles, Kim and Prskawetz 2010, Frankenberg and Thomas 2015). These crises can include earthquakes (Finlay 2009), weather shocks (Bertelli 2015) or tsunamis (Nobles, Frankenberg and Thomas 2015), but also war. Yet, little is known about the dynamics of war or war-like situations, e.g. armed conflicts, and their dynamics on the effect of fertility and along with this birth rates.

So far, the research on the effect of war, and armed conflicts in general, on fertility is limited and quite often focuses only on macroeconomic trends in fertility (Grabill (1944), Blanc (2004), Urdal and Che (2013), and Cetorelli (2014), ignoring possible effects at the micro level, e.g. the household level and the decision of women to get more or less children. However, a notable exception can be found in Agadjanian and Prata (2002). Their work is also my motivation to fill this possible research gap.

To fill this gap, I focus on household level effects of a particular crisis, the war in Afghanistan and how this negative shock to the livelihoods of households affects birth rates of women experiencing more violence in their daily lives than women experiencing less violence.

The war on terror in Afghanistan is an unique example, given that the shock is not a one-time idiosyncratic shock, but experienced over a longer period of time. Women could adapt to these circumstances and thus have time to change their fertility preferences. They could also form more informed expectations about the years to come and find other channels on how to cope with the war surrounding their daily routines. In this light, the effect on fertility does not

have to be as straightforward, and could range from a negative, a positive or even an insignificant effect of war on birth rates. In identifying households (and women) more affected by the violence in Afghanistan, I estimate a causal effect of war on birth rates and thus further the understanding of fertility consequences of armed conflicts.

I find that women living in provinces (e.g. Kabul, Kandahar) more affected by violence than provinces less affected by violence, do have a higher birth rate by about eight percent. The effect remains significant and similar in magnitude after controlling for migration (e.g. internal displacement) and is more pronounced for the poorest households. To cope with the violence households decide to get more children which could be used to support the current household income or to insure against a future loss in income or even children (e.g. hoarding). In support of the insurance motive is the finding that still births are more likely in high war intensity provinces and that at the time of the survey more women are pregnant in the provinces.

My paper is organized as follows. A brief literature follows in section 2. In section 3, I discuss the data, my identification strategy and my empirical model. In section 4, I present my main results and perform robustness checks and further explore the effect of war on fertility related outcomes. The paper concludes in section 5.

2. Related work

The work on fertility responses to war (or crisis in general) in developing countries can be broadly divided into studies discussing overall macro fertility trends and studies analyzing the response to these shocks at the micro household level and focus on coping mechanisms and individual fertility responses.

One of the first studies is from Grabill (1944) focusing on US birth rates during war. Since then, the impact of war in developed countries is well researched, however less has been

Studies on the effect of war on fertility trends can be found in Blanc (2004), Urdal and Che (2013) and Cetorelli (2014). They find that fertility rates decline compared to prewar periods and start to increase after a war ended, e.g. a wartime gap. Though, macro studies typically ignore possible effects during the war on fertility and sometimes do not include any control variables and just use overall fertility rates (Blanc 2014). Exceptions can be found in Urdal and Che (2013) and Cetorelli (2014).

Urdal and Che (2013) compare wars at a global level and use country level data for the time period 1970 to 2005. This includes country level variables such as battle related deaths to explain the effect of war on fertility. Cetorelli (2014) estimates fertility rates based on household data and uses these predicted fertility rates to describe a fertility decline during the Iraq war compared with the period before. However, this approach assumes the war experience was uniform across the entire country during the 2003 Iraq war.

Yet, these trends cannot explain decisions made at the household level and ignore possible differences in the experience of war across regions or provinces within a country. An exception to the work cited above can be found in Agadjanian and Prata (2002). Agadjanian and Prata account for variations in the war experience within a country in defining two very broad regions in Angola. They also use household level data to estimate an effect of the war on fertility outcomes. Their work is related to my study design. My goal is to explore the variations in the Afghan war experience across provinces to identify households more affected by the war in Afghanistan than others. Instead of just assuming a region experienced more war, I use actual conflict event data to identify smaller geographical units (e.g. provinces) experiencing more violence

done for developing countries where most armed conflicts has been taking place since the end of the Cold War.

than other provinces.

3. Data, descriptive statistics, identification and empirical strategy

3.1. Data and descriptive statistics

I am utilizing the 2010 Afghanistan Mortality Survey (AMS) for my analysis. The AMS is the first comprehensive household survey for Afghanistan including background information on mothers and the living situation of the households as well as a complete birth and mortality history of the children. It is nationally representative including all 34 provinces, even the provinces affected highly by violence. Women of reproductive age (age 12 to 49) who are usual residents were interviewed. In total 24,000 households are in the sample which results in 48,190 women for my empirical models.

In Table 1, I show basic overall descriptive statistics at the household level. I already define regions more affected by the violence than others. A discussion of how I identify and define these provinces follows shortly after. A few noteworthy points are already visible in these averages. First, Afghan women have almost no education at all given a destructive Taliban rule undermining and narrowing the role of women (Skaine 2001). Second, Afghan households are very poor on the average and third, because of the war, the marriage rates and fertility rates are relatively low and surprisingly uniform across the entire country. However, overall averages can mask developments over time and at the province level. Thus, in Figure 2 I show crude birth rates per women from 2007 to 2010 and across provinces. Given that there has been no population census since 1979 for the country, I define crude birth rates as children born in a given year and province divided by the sample size of the province. I then average these rates over regions. It can already be seen that fertility rates varies across the regions with slightly higher rates actually in the regions more affected by violence. Though, these trends still mask developments at the province level and therefore,

I show birth rates for the provinces from 2007 to 2010 in Figure 1. Here, the picture is not as clear and province individual developments are present and should be generally accounted for.

[Table 1 about here]

[Figure 1 about here]

[Figure 2 about here]

3.2. Identification strategy

Above I showed that birth rates are different across provinces and vary over time. To actually estimate a causal effect of war on birth outcomes, I need to identify provinces affected more by violence than others. Previous studies assume that the entire war experience is uniform across an entire country, however, armed conflicts vary in their intensity spatially and over time. I use event data on violent events to show these variations and base my identification of provinces on these event data. I utilize data published by the UN (UNAMA 2016) and USAID (USAID 2016) and visualize civilian victims dead and injured across the provinces and over the years 2007 to 2010 in Figure 3. Violence does vary over time but is also concentrated in some provinces, e.g. Kabul and Kandahar, the provinces with the government present but also US troops (Nato 2016), the proclaimed enemy of the Taliban (Mcnally and Bucala 2015). Insurgents (and terrorist) in general tend to target the facilities of their enemies as well as the local authorities supported by these (Kalvyas 2006). With the underlying event data, I define provinces as high and very high intensity provinces to compare fertility outcomes with provinces having less or even no incidences of violence at all. Provinces with a high intensity of violence have more than 400 incidences per year, while provinces with very high level levels of violence have more than

1,000 incidences per year.

[Figure 3 about here]

3.3. Empirical strategy

My goal is to estimate a local average treatment effect of the war in Afghanistan on birth outcomes. To do so, I identify provinces, and therefore households and women living in these households, more affected by the war than others. Thus, I estimate a linear probability difference in difference model in the following fashion. Similar approaches can be found in Agadjanian and Prata 2002, Finlay 2009, and Bertelli 2015 to estimate the impact of an exogenous shock on individual fertility outcomes:

$$\text{Birth}_{ij} = \alpha + \gamma \text{War}_{ij} + \beta_1 \text{X}_{ij} + \beta_2 \text{Mother}_{ij} + \beta_3 \text{SES}_{ij} + \tau + \epsilon_{ij} \qquad (1)$$

Birth is the outcome variable of interest and defined as one if a mother i living in province j had at least one child during 2007 and 2010 and zero otherwise. Given that I argue that identifying provinces more affected by war than others based on actual data on violence is an improvement to previous studies, I limit my analysis do this time frame, e.g. where I have actual and sufficient event data on violence for a proper identification. It would also be possible to use birth outcomes before 2007 but then I can only assume a uniform war experience for the entire country for that period.

The variable *War* is my treatment variable and defined as one if a province was more affected by war during the entire period 2007 to 2010. For provinces

This includes the following provinces: Kunduz, Paktia, Paktika, Uruzgan, Hilmand, Zabul, Kunar, Nangahar, Kabul, and Khost as high intensity and Kunar, Kabul, Khost, and Nanga- har as very high intensity.

less or not affected it takes the value zero. A binary treatment variable allows the interpretation of a local average treatment effect of war on birth outcomes.

The vector X includes information on child mortality and parity (e.g. the number of children) which could explain fertility preferences. To avoid potential endogeneity issues between current fertility outcomes and current child mortality, I define child mortality as one if a child died before 2007. This also assumes that women do not replace their children immediately but likely within then nearer future. However, I am aware that children who died during the same period could be a better explanation for changing fertility preferences. Nobles, Frankenberg und Thomas (2015) use current child mortality but assume their is no endogeneity and likely estimate a possibly biased model. Though, given data limitations it is sometimes not possible to deal with the endogeneity issue at hand and thus, I use previous child mortality to avoid issues of endogeneity in my models.

The variable *Mother* includes information on the age (and age square), education and if the woman is married or not while the socio-economic status SES includes characteristics on the household itself.

The parameter τ includes community level fixed effects, e.g. to account for developments and ties present at the local community level. I have roughly 724 communities (e.g. clusters) in my dataset. Nobles, Frankenberg and Thomas (2015) show that for the tsunami in Indonesia community ties, e.g. helping each other after the aftermath in the process of rebuilding, are a major determinant in easing the consequences of a crisis. It safe to assume that in a tribe-based society as the Afghan society one is, households aid and assist each other. This

A possible instrument to explain current child mortality but not current fertility levels, could be low birth weight or size of the child. Birth circumstances have been linked to later health and, thus, mortality outcomes (Case, Fertig, and Paxson 2005). However, these data are quite often not available in data sets from conflict regions.

can be even more pronounced in Afghanistan, given that a war-like situation has been overshadowing the lives of people since the 1979 Soviet invasion.

Finally, ϵ is a clustered standard error term and actually clustered at the community level. Given that there are 724 community cluster the standard errors should be unbiased. Alternatively, clustering (and using fixed effects) at the province level would also been an option. However, I showed above that developments in provinces likely show a temporal dimension, I cannot account for in a simple cross-section of households.

4. Results

4.1. Main results

My main results are shown in Table 2. I present baseline models without the treatment variable *war* and models with the treatment variable *war* for high and very high intensity provinces. Furthermore, I show results for the same models including province dummy variables accounting for time invariant characteristics specific to these provinces.

Before turning to the discussion of the war variable, I discuss the baseline models already showing some noteworthy results remaining robust after the inclusion of my treatment variable. First, the main predictor for higher birth outcomes is actually the marital status, and with this the risk of pregnancy. In light, that more than 97 percent of the husbands live at home, it is not surprising that being married increases births. However, what is surprising, is the low rate of marriage with roughly 50 percent, mainly due to the war and many men not available for marriage. Second, variables describing the living situation of the households, e.g. living in urban areas or the wealth level, have limited explanatory power. Thus, I explore the role of the socio-economic status of the household later to further explore where the significant effect of my treatment

variable is coming from. I suspect that households with a different wealth status can cope differently with the experience of violence.

Third, variables typically explaining fertility and birth outcomes, e.g the age of the mother and her education, have the expected signs and are significant. Older mothers have lower birth outcomes on the average, as well as mothers with more education. Though, the result should be seen in perspective, given that most women have no education at all and if, just one year of education at most. Previous child mortality has no effect on current birth outcomes, and a replacement effect may not be present.

Thus, I attribute the positive effect of war on birth outcomes mainly on what Lee (1997) describes as an insurance effect. Women may get more children because their risk of dying in the future is higher in the provinces experiencing most of the violence in Afghanistan. I find that birth outcomes in these provinces are roughly eight percent higher than in provinces experiencing less or no violence at all. The effect is stronger in magnitude for provinces experiencing very high levels of violence and thus a likely higher perceived risk of child mortality.

[Table 2 about here]

However, the level of household wealth can be a channel possibly affecting the effect of war on fertility. Rich households cope differently than very poor households in times of crisis because they possess more and better resources and are usually also better educated (Kim and Prskawetz 2010). Thus, in Table 3, I explore the effect of the war on different wealth quintiles ranging from very poor to very rich. I find that households respond differently to the experience

An alternative term could be hoarding as in Nobles, Frankenberg and Duncan 2015. Hoarding of children takes place when parents expect their children have a higher risk of dying because of the household situation.

of violence. The war has almost no effect on rich households but a pronounced effect on the poor households. These may respond with having more children on the average. However, the effect is not as clear because the fixed effects regression show a different sign, e.g. the former positive effect on birth rates becomes negative. However, I tend to prefer the results with fixed effects, given it accounts of a possible omitted variable bias between the treatment variable and province effects. Nonetheless, the households in the middle of the wealth distribution have less births because of the war, e.g. the may possess enough resources to counteract negative consequences of the war and do not need children as a possible coping mechanism.

[Table 3 about here]

4.2. Robustness checks

In this section I explore the effect of war on fertility outcomes further and account for issues typically concerning the validity of results in the work with household data from developing countries. These issues can include possible migration (e.g. internal displacement) because of the armed conflict and data issues.

A typical issue affecting results can be internal displacement because it can change the composition of the household interviewed. Usually, families seek safer places in times of war, e.g. moving to refugee camps or to relatives in areas with less violence. In Afghanistan most internally displaced persons move to informal camps but also very limited to relatives (UNHCR 2008, IDMC 2016). This can affect the results because household surveys ask the members present

During the time period covered in the AMS 2010 roughly 150,000 to 300,000 persons were internally displaced (UNHCR 2008). This number started to increase after 2010 to one million in 2015 (IDMC 2016).

in the household at the time of the interview. To remedy this problem, I use information on how long the members of the households have been living in this particular household. The composition of my sample is almost not affected. I still find a positive effect on birth outcomes but the coefficients lose their significance for households living in high intensity areas. Results are reported in Table 4.

[Table 4 about here]

Finally, data concerns can be an issue, e.g. if it is too unsafe to conduct interviews in certain areas, interviewers may fill out questionnaires and turn in these fraudulent questionnaires. Hill (2012) argues this may be an issue for the South of Afghanistan. In Table 5, I do exclude these potential regions. However, with my underlying event data in mind, these regions are not the regions with the most violence but my base for comparison. Excluding these regions decreases the sample size and furthermore changes the results. In my case the previous significant effect of the war on fertility loses its statistical significance.

[Table 5 about here]

4.3. A few more channels to fertility

In this section, I explore if the war in Afghanistan affects other additional channels related to fertility. These channels could include the number of stillbirths and whether women are currently pregnant. Those two outcomes are typically affected by exogenous shocks, e.g. by the deterioration of the living and health situation, and thus maternal health, and the change in the demand for children. If maternal health reduces because of the war, I do expect that stillbirths should be negatively affected by the experience of violence. Furthermore, I also expect that more women are currently pregnant in the province

more affected by the war if an insurance effect is present. I use the same models as above but change the outcome variable to explore these channels. Results for the treatment variable *War* are presented in Table 6.

I find that women in provinces more affected by violence are more likely to be currently, e.g. in 2010, pregnant. This reflects the development that violence against civilians started to increase substantially since 2007 and women could demand more children as an insurance against a future loss of children.

Additionally, I estimate a treatment effect of the war on a specific birth outcome: stillbirths. Stillbirths are usually closely related to maternal health and the living situation of the household but also to stress experienced during pregnancy (Camacho 2008) . However, there are reportedly (Coleman and Lemmon 2011) significant improvements in the health system in Afghanistan, especially in regions highly affected by war because they also attract more development aid. This particularly includes Kabul, the capital where many aid agencies are present. In this light, stress experienced because of the war may be one channel left affecting this particular birth outcome. Yet, I find that stillbirths are less likely in provinces affected highly by violence but more likely in provinces with very high level of violence. Even if maternal health improved the negative effect of the war outweighs the positive effect of improved maternal health. The higher risk of having a still birth in these provinces can also explain why more women are currently pregnant in these provinces, because of an insurance mechanism present (Lee 1997).

[Table 6 about here]

5. Conclusion

Households experiencing negative shocks like weather shocks and other natural disasters, do cope differently with the negative consequences of a particular crisis. An armed conflict is another form of a negative shock. Consequences of experiencing armed conflicts is the loss of consumption and assets or even family members like children. A possible response is to change the fertility preference because of the crisis. However, the fertility response can range from reducing the demand for children to increasing the demand for children, depending on other resources available to compensate the negative consequences (Lee 1997). I am using the case of Afghanistan to further the understanding of fertility responses to armed conflicts, a form of crisis, yet, less researched so far.

I find that women tend to have more children on the average in areas more affected by the war experience in Afghanistan. In utilizing the 2010 Afghan Mortality Survey (AMS), I shed light on the household fertility decision because most of the previous work focuses only on (macro) fertility trends and compare outcomes before and after war. However, from a policy point of view understanding the fertility response at the household level helps designing better aid projects for the households affected the most by armed conflicts and external shocks in general.

My finding is mainly driven by the response of the poor households which increase their fertility likely to insure against future loss of children (e.g. hoarding) or get children as additional labor in the household production to increase household consumption. Limiting to my analysis is that I have no information on actual consumption patterns and I can only analyze a cross section of women. Still, I make use of the birth history given in the AMS and a novel event data set on violent incidences across provinces and over the years 2007 to 2010 to identify provinces more affected by violence than other provinces.

References

[1] Agadjanian Victor and Prata Ndola (2002) "War, peace, and fertility in Angola", Demography, Vol. 39 No.2, pp.215-231

[2] Bertelli Olivia (2015) "The more the merrier? Adjusting fertility to weather shocks.", Paris School of Economics Working Papers, No. 2015-38, https://halshs.archives-ouvertes.fr/halshs-01226421, last accessed 07/11/2016

[3] Bloom David and Canning David (2005) "Health and Economic Growth: Reconciling the Micro and Macro Evidence", CDDRL Working Paper No. 42

[4] Bove Vincenzo and Gavrilova Evelina (2014) "Income and Livelihoods in the War in Afghanistan", World Development, Vol.60, pp.113-131

[5] Caldwell John (2004) "Social Upheaval and Fertility Decline", Journal of Family History, Vol.29 No. 4, pp.382-406

[6] Camacho Adriana (2008) "Stress and Birth Weight: Evidence from Terrorist Attacks", American Economic Review, Vol.98 No.2, pp.511-515

[7] Carvalho Natalie, Salehi Shah Ahmad, and Goldie Sue (2013) "National and sub-national analysis of the health benefits and cost-effectiveness in Afghanistan", Health Policy and Planning Advances, Vol. 18 No.1, pp.62-74

[8] Case Anne, Fertig Angela, and Paxson Christina (2005) "The lasting impact of childhood health and circumstance", Journal of Health Economics, Vol.24, pp.365-389

[9] Coleman Isobel and Lemmon Gayle (2011) "Maternal Health in Afghanistan - Improving Health and Strengthening Society", Council on Foreign Relations, Working Paper, http://www.cfr.org/afghanistan/maternal-health-afghanistan/p25915, last accessed 04/04/2016

[10] Gates Scott, Hegre Havard, Nygard Havard, and Strand Havard (2012) "Development Consequences of Armed Conflict", World Development, Vol. 40 No. 9, pp.1713-1722

[11] Grabill Wilson (1944) "Effect of the War on the Birth Rate and Postwar Fertility Prospects", American Journal of Sociology, Vol. 50, No. 2, pp. 107-111

[12] Finlay Jocelyn (2009) "Fertility Response to Natural Disasters", World Bank Policy Research Working Paper No.4883

[13] HDR (2015) "Human Development Report 2015 - Work for Human Development", UNDP, http://hdr.undp.org/sites/default/files/2015_human_development_report.pdf, last accessed: 04/17/2016

[14] Hill Kenneth (2012) "Gains in Afghan Health: Too Good To Be True?", Harvard Center for Population and Development Studies, Presentation, http://www.cgdev.org/doc/blog/Gains_in_Afghan_Health_CGD_Talk_pdf.pdf, last accessed 04/20/2016

[15] IDMC (2016) "Afghanistan IDP Figure Analysis", Internal Monitoring Displacement Centre, http://www.internal-displacement.org/south-and-south-east-asia/afghanistan/figures-analysis, last accessed: 07/27/2016

[16] Kalvyas Stathis (2006) "The Logic of Violence in Civil War", Cambridge University Press

[17] Kim Jungho and Prskawetz Alexia (2010) "External Shocks, Household Consumption and Fertility in Indonesia", Population Research Policy Review, Vol.29, pp.503-526

[18] Lavy Victor, Strauss John, Thomas Duncan, and de Vreyer Philippe (1996) "Quality of health care, survival and health outcomes in Ghana", Journal of Health Economics, Vol. 15 No. 3, pp.333-357

[19] Lee Ronald (1997) "Population Dynamics: Equilibrium, Disequilibrium, and Consequences of Fluctuations", in Rosenzweig and Stark: Handbook of Population and Family Economics, Chapter 19, pp.1063-1115

[20] Mcnally Lauren and Bucala Paul (2015) "The Taliban Resurgent: Threat to Afghanistan's Security", Institute for the Study of War , http://www.understandingwar.org/sites/default/files/AFGH$\%$20Report.pdf, last accessed 04/13/2016

[21] Nato (2016) "ISAF Placemat Archives", http://www.rs.nato.int/isaf-placemat-archives.html, last accessed 04/13/2016

[22] Nobles Jenna, Frankenberg Elizabeth and Duncan Thomas (2015) "The effects of Mortality on Fertility: Population Dynamics After a Natural Disaster", Demography, Vol. 52, pp.15-38

[23] Preston Samuel (1975) "The changing relation between mortality and level of economic development", Population Studies, Vol. 29 No. 2, pp. 231-248

[24] Rose Elaina (1999) "Consumption Smoothing and Excess Female Mortality in Rural India", Review of Economics and Statistics, Vol.81 No.1, pp.41-49

[25] Skaine Rosemarie (2001) "The Women of Afghanistan Under the Taliban", McFarland

[26] Skoufias Emmanuel (2003) "Economic Crisis and Natural Disasters: Coping Strategies and Policy Implications", World Development, Vol. 31 No. 7, pp.1087-1102

[27] Strauss John and Thomas Duncan (1998) "Healh, Nutrition, and Economic Development", Journal of Economic Literature, Vol. 36, pp.766-817

[28] UNAMA (2016) "Reports on the Protection of Civilians", https://unama.unmissions.org/protection-of-civilians-reports, last accessed 04/12/2016

[29] UNHCR (2008) "National Profile of Internal Displaced Persons (IDPs) in Afghanistan", UNHCR Report, http://www.unhcr.org/49ba33a02.html, last accessed: 04/18/2016

[30] USAID (2016) "Spatial density of security incidents observed for the period 2008 to 2013 for all the categories monitored", http://reliefweb.int/sites/reliefweb.int/files/resources/1263.pdf, last accessed 04/12/2016

[31] Urdal Henrik and Che Primus Chi (2013) "War and Gender Inequalities in Health: The Impact of Armed Conflict on Fertility and Maternal Mortality", International Interactions, Vol. 39 No.4, pp.489-510

Figures

Figure 1: Crude birth rates from 2007 to 2010

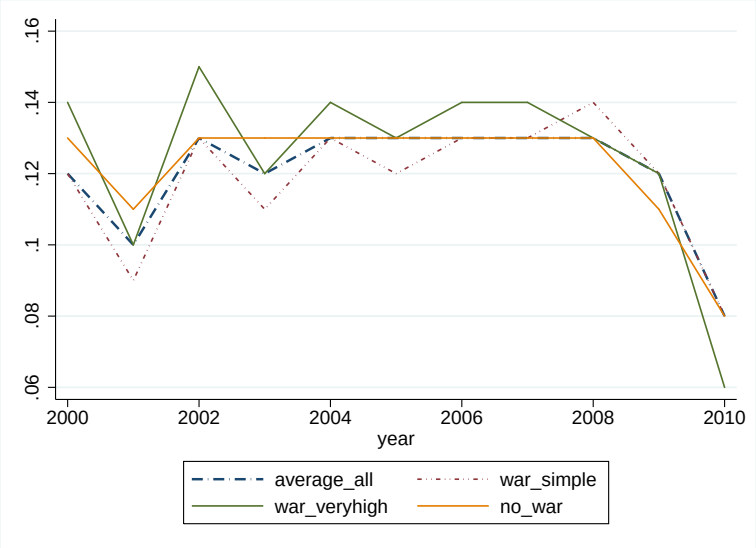


Figure 2: Crude birth rates across provinces - 2007 to 2010

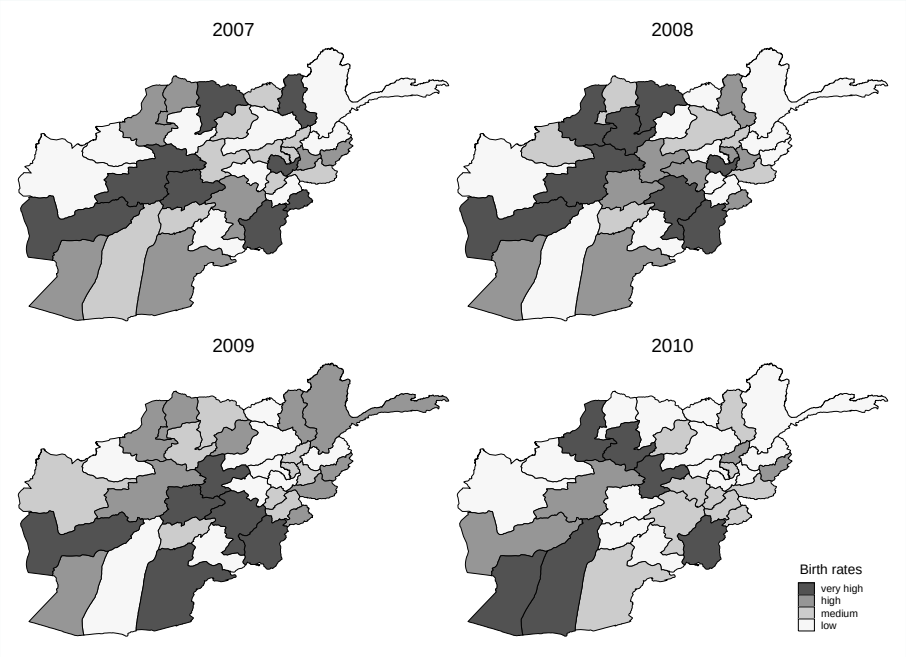
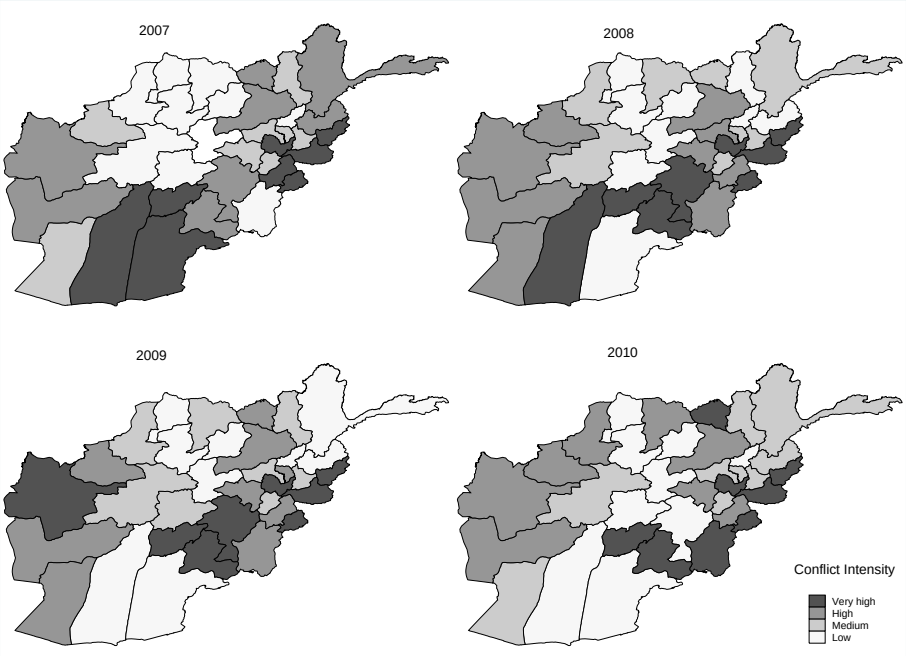


Figure 3: Civilians dead and injured across provinces - 2007 to 2010



Tables

Table 1: Descriptive statistics - AMS 2010

	All	Low intensity	High intensity
Current age mother	24.39	24.25	24.49
No education	73.33%	72.20 %	74.85 %
Currently married	54.05%	54.90 %	52.90%
Children ever born	4.34	4.34	4.34
Children dead	21.49%	25.51%	15.83%
Current age child	10.96	10.85	11.10
Boys	53.22%	52.39%	54.38%
Currently pregnant	18.07 %	16.67 %	20.02 %
Urban	31.26 %	25.88 %	38.52 %
Unprotected water source	23.08%	24.02%	19.46%
Electricity	48.12%	51.48%	43.59%
Refrigerator	11.85%	11.41%	12.41%

Intensity refers to the number of civilians dead in a province. I sum these provinces up to low and high intensity regions. Provinces with a high intensity of violence have more than 400 incidences per year, while provinces with very high level levels of violence have more than 1,000 incidences per year.

Table 2: Birth outcomes - DiD regressions

Variables	Baseline		High intensity		Very high intensity	
War			.0042	.0857***	.0126	.2582***
			(.0088)	(.0013)	(.0076)	(.0019)
Age	.0445***	.0458***	.0445***	.0458***	.0445***	.0458***
	(.0018)	(.0011)	(.0018)	(.0011)	(.0018)	(.0011)
Age Squared	-.0010***	-.0010***	-.0010***	-.0010***	-.0010***	-.0010***
	(.0000)	(.0000)	(.0000)	(.0000)	(.0000)	(.0000)
Education	-.0209***	-.0190***	-.0205***	-.0190***	-.0209***	-.0190***
	(.0037)	(.0042)	(.0035)	(.0042)	(.0037)	(.0042)
Parity	.0771***	.0741***	.0770***	.0741***	.0769***	.0741***
	(.0037)	(.0022)	(.0036)	(.0022)	(.0036)	(.0022)
Child Mortality	.0068	.0045	.0071	.0045	.0078	.0045
	(.0147)	(.0130)	(.0149)	(.0130)	(.0145)	(.0130)
Urban	-.0027	.0626***	-.0026	-.0230***	-.0031	-.4649***
	(.0069)	(.0065)	(.0072)	(.0061)	(.0081)	(.0021)
Married	.5603***	.5596***	.5604***	.5596***	.5606***	.5596***
	(.0077)	(.0061)	(.0077)	(.0061)	(.0077)	(.0061)
Poor	-.0021	.0190***	.0000	.0190***	.0026	.0190***
	(.0069)	(.0061)	(.0069)	(.0061)	(.0068)	(.0061)
Community FE	no	yes	no	yes	no	yes
N	48190	48190	48190	48190	48190	48190
R^2	0.51	0.53	0.51	0.53	0.51	0.53

Notes: Standard errors are clustered at the community level and are shown in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Provinces with a high intensity of violence have more than 400 incidences per year, while provinces with very high level levels of violence have more than 1,000 incidences per year.

Table 3: Birth rates - by wealth quintiles

Wealth	Poorest	f.e.	Poorer	f.e.	Middle	f.e.	Richer	f.e.	Richest	f.e.
High	.0555*	.774***	-.0304*	-.2196***	.0049	.1341***	-.0030	.6119***	.0182	.2116***
intensity	(.0290)	(.0306)	(.0162)	(.0336)	(.0133)	(.0119)	(.0095)	(.0111)	(.0125)	(.0182)
N	7296	7296	8132	8132	8685	8685	10293	10293	13784	13784
R^2	0.50	0.53	0.50	0.54	0.52	0.57	0.52	0.55	0.52	0.54
Very high	.1152**	-.0162***	-.0113	.7102***	.0127	.1989***	.0109	.6119***	.0157	-.0602***
intensity	(.0418)	(.0260)	(.0104)	(.0254)	(.0114)	(.0154)	(.0089)	(.0111)	(.0122)	(.0182)
N	7296	7296	8132	8132	8685	8685	10293	10293	13784	13784
R^2	0.50	0.53	0.50	0.54	0.52	0.57	0.52	0.55	0.52	0.54

Notes: Standard errors are clustered at the community level and are shown in parentheses. Some models are plagued with multicollinearity, e.g. because of the reduction of sample size and number of cluster fixed effects left. Thus, I would interpret the fixed effects results with caution.
* p<0.10, ** p<0.05, *** p<0.01

Table 4: Robustness check - Accounting for migration

Variables	Baseline	Migration	f.e.
High intensity	.0042	.0115	.1172***
	(.0088)	(.0096)	(.0060)
N	48190	38987	38987
R^2	0.51	0.56	0.58
Very high intensity	.0126	.0168**	.1310***
	(.0076)	(.0074)	(.0012)
N	48190	38987	38987
R^2	0.51	0.56	0.58

Notes: To conserve space, I only report results for the war variable. Standard errors are clustered at the community level and are shown in parentheses. Migration (internal displacement) is not present if the household member interviewed has been living in the same household for more than five years. * p<0.10, ** p<0.05, *** p<0.01

Table 5: Robustness check - Data issues - Excluding the South

Variables	Whole country	Without South	f.e.	Without South II	f.e.
High intensity	.0042	-.0079	.0882***	-.0006	.0873***
	(.0088)	(.0115)	(.0015)	(.0085)	(.0014)
N	48190	30117	30117	37826	37826
R^2	0.51	0.51	0.53	0.52	0.53
Very high intensity	.0126	.0042	.2593***	.0086	.2596***
	(.0076)	(.0062)	(.0022)	(.0063)	(.0020)
N	48190	30117	30117	37826	37826
R^2	0.51	0.51	0.53	0.52	0.53

Notes: To conserve space, I only report results for the war variable. Standard errors are clustered at the province level and are shown in parentheses. I exclude the South (region and provinces). * p<0.10, ** p<0.05, *** p<0.01

Table 6: Currently pregnant and stillbirths

Variables	High intensity	f.e.	Very high intensity	f.e.
Currently pregnant	.0341**	.1838***	.0144	.1838***
	(.0149)	(.0031)	(.0072)	(.0031)
N	25478	25478	25478	25478
R^2	0.05	0.11	0.05	0.11
Stillbirths	-.0088	-.0151**	-.0148	.0515***
	(.0131)	(.0072)	(.0151)	(.0027)
N	15614	15614	15614	15614
R^2	0.00	0.08	0.00	0.08

Notes: To conserve space, I only report results for the war variable. Standard errors are clustered at the province level and are shown in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Provinces with a high intensity of violence have more than 400 incidences per year, while provinces with very high level levels of violence have more than 1,000 incidences per year.

Appendix A. Underlying data for the GIS maps

Table A1: Crude birth rates (CBR) by provinces and year.

Province	2007	2008	2009	2010
Kabul	0.11	0.11	0.12	0.04
Kapisa	0.10	0.12	0.10	0.07
Parwan	0.11	0.12	0.10	0.07
Wardak	0.16	0.17	0.11	0.02
Logar	0.12	0.14	0.14	0.11
Nangarhar	0.15	0.14	0.14	0.07
Laghman	0.17	0.16	0.15	0.10
Panjsher	0.13	0.15	0.13	0.11
Baghlan	0.13	0.15	0.14	0.09
Bamyan	0.15	0.16	0.12	0.10
Ghazni	0.12	0.08	0.08	0.11
Paktika	0.11	0.11	0.11	0.04
Paktya	0.13	0.12	0.12	0.07
Khost	0.15	0.15	0.09	0.05
Kunar	0.14	0.14	0.14	0.09
Nuristan	0.12	0.13	0.11	0.09
Badakhsha	0.15	0.14	0.13	0.08
Takhar	0.14	0.11	0.13	0.10
Kunduz	0.12	0.11	0.10	0.07
Samangan	0.13	0.14	0.11	0.05
Balkh	0.12	0.11	0.11	0.08
Sari pul	0.12	0.12	0.12	0.09
Ghor	0.14	0.13	0.12	0.11
Daykundi	0.08	0.09	0.08	0.05
Urozgan	0.18	0.22	0.19	0.19
Zabul	0.07	0.11	0.11	0.09
Kandahar	0.12	0.12	0.11	0.10
Jawzjan	0.12	0.10	0.10	0.06
Faryab	0.12	0.11	0.12	0.09
Helmand	0.11	0.16	0.11	0.07
Badghis	0.16	0.13	0.12	0.09
Herat	0.12	0.12	0.11	0.07
Farah	0.10	0.13	0.09	0.09
Nimroz	0.08	0.07	0.07	0.06

Crude birth rates per women and year. The birth rate is defined as the number of children born in a given year divided by the sample population, given their is no current population census. The last official population census was 1979. Own calculations based on the AMS (2010).

Table A2: Incidences of Violence

province	2007	2008	2009	2010
Badakhshan	51	97	86	125
Badghis	4	153	258	383
Baghlan	59	215	244	368
Balkh	0	123	128	268
Bamyan	0	62	59	34
Daykundi	0	44	98	70
Farah	81	210	257	356
Faryab	0	97	203	353
Ghazni	83	431	547	1,178
Ghor	3	84	110	133
Hilmand	668	972	1,240	2,498
Hirat	40	232	371	496
Jawzjan	0	44	74	71
Kabul	342	618	865	539
Kandahar	393	1,746	2,151	2,512
Kapisa	17	129	325	168
Khost	215	624	710	876
Kunar	198	479	580	725
Kunduz	45	144	343	674
Laghman	37	135	172	110
Logar	26	148	187	256
Maydan Wardak	25	242	311	417
Nangarhar	121	563	682	862
Nimroz	12	330	249	246
Nuristan	45	65	64	108
Paktika	0	283	345	619
Paktya	240	264	266	513
Panjsher	0	1	8	5
Parwan	14	203	143	100
Samangan	0	20	12	18
Sari Pul	0	8	22	49
Takhar	16	52	103	256
Uruzgan	210	360	544	524
Zabul	81	511	528	622
Sum	3,026	7,945	8,897	10,350

Base for the GIS map in the text. Sources are the UNAMA 2007 to 2010 reports and USAID (2016).