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# Business as Unusual. An Explanation of the Increase of Private Economic Activity in High-Conflict Areas in Afghanistan

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**Abstract**
In this paper we use a unique dataset that combines spatial detailed information on conflict events and on households' activity, to show a positive and significant correlation between violent conflict and entrepreneurship in Afghanistan. We build spatial and IV identifications to estimate the effect of different measures of conflict on the investment in a range of private economic activities of nearby households. The results consistently show that the level of conflict, its impact, and to a lesser extent its frequency, increase the probability that a household engages in self-employment activities with lower capital intensity and in activities related to subsistence agriculture, and reduce the probability of investing in higher capital self-employment. Overall, by increasing entrepreneurship, conflict pushes the country towards a regressive structural change. However, the magnitude of most of the effects is quite small. The paper contributes to a literature that, due to data constraints and identification issues, has not yet delivered conclusive evidence.

Keywords: Violent conflict, entrepreneurship, development
JEL Classifications: O12; D74; L26; R12

# 1 Introduction

The relationship between conflict, economic development, and private economic activity (PEA) is still a puzzling one, despite the recent increase in studies investigating the microeconomic impacts of conflict. First, violent conflict has a significant negative effect on low-income countries' economic growth.[1] At the microeconomic level violent conflict reduces the incentives to invest in entrepreneurial activities by destroying physical and human capital, increasing risks, lowering expected returns, reducing labour supply via displacement and reduced education, and disrupting markets, institutions, and social networks.[2]

Second, entrepreneurial activity is one key determinant of economic development.[3] Reduced investments and entrepreneurship have a negative effect on output and employment. If, as generally understood, unemployment contributes to fuelling the conflicting armies (e.g. Iyer and Santos, 2012), a country experiencing violent conflict may enter a vicious cycle of conflict, reduced PEA, reduced labour demand, increased migration and enrolment into conflict, reduced labour supply, and further reduced economic activity. The reduced economic activity may contributes to fuelling this cycle.[4]

Third, there is evidence showing that in in-conflict countries there are more people employed in conflict areas than in non-conflict areas (e.g. Iyer and Santos, 2012). And there is also growing evidence that entrepreneurship, and more in general PEA, is resilient or even increases in the aftermath of conflicts.[5]

How do we reconcile the positive effects of business development with the negative relation between growth and conflict, and the evidence of resilience and increased self-employment under conflict? One possible explanation is that the negative effect of conflict on growth is transmitted through distinct micro mechanisms, which are not related to entrepreneurship, and which are stronger than the positive effect of entrepreneurship on growth. Another possible explanation is that the observed PEA under conflict is either non productive, or even harmful for economic growth (Baumol, 1990; Naudé, 2007).

This paper provides with new robust empirical evidence on the above question, reconciling the co-existence of intense conflict, increased PEA, and low output growth. We build on an unprecedented level of data granularity, substantially refining the identification of the relationship between conflict and PEA with respect to the literature.

The significant improvements in the identification of the effect of conflict on private economic activity is achieved in two main ways. First, we construct a rich dataset combining a number of household surveys run in Afghanistan between 2003 and 2008 (the National Risk and Vulnerability Assessment (NRVA))[6] and a rich dataset that maps geographically and through time the conflict related events that have involved the NATO International Security Assistance Force (ISAF) and the local population (insurgents and

[1] See for exampleChen et al. (2008); Collier (1999); Cramer (2006); Hoeffler and Reynal-Querol (2003); Iyer and Santos (2012); World Bank (2011).

[2] Amuedo-Dorantes and Pozo (2006); Brück and Schindler (2009); Hoeffler and Reynal-Querol (2003); Ravallion (1988).

[3] See for example Acs (2006); Audretsch et al. (2006); Bandiera et al. (2013); Boettke and Leeson (2009); Iyigun and Rodrik (2004).

[4] As suggested, among others, in Collier et al. (2004); Do and Iyer (2010); Elbadawi and Sambanis (2002); Fearon (2004); Murshed and Gates (2005).

[5] From different perspectives and countries, see for example Anugwom (2011); Brück et al. (2013a); Bullough et al. (2014); Cañares (2011); Guidolin and La Ferrara (2007); Justino et al. (2012); Menon and Rodgers (2013); Nillesen and Verwimp (2010); Peschka et al. (2011).

[6] For a number of reasons related to the comparability of the different waves our main focus is on the period from 2005 to 2008.

civilians). Second, we control for time invariant geographical factors, as well as for the time variant conflict, constructing a geographical grid defining multiple cells, a spatial unit significantly smaller than the district – the smaller administrative boundary in Afghanistan. This is equivalent to a difference in difference analysis (by year and spatial cell) using a quasi-panel spatial definition.

Looking at several years of the current violent conflict in Afghanistan we do find robust evidence that private economic activities do in fact increase in areas where the conflict is more intense. However, this is a sign of reduced income opportunities, rather than the other way round. In line with previous studies that have looked at changes in employment in conflict areas in South Asia (Iyer and Santos, 2012) we find that higher levels of conflict events, as well as a higher number of casualties, shift households away from formal employment to low capital self employment activities, small businesses, and agriculture related self employment. Self-employment with a higher capital content, instead, decreases in high conflict areas. Although the general pattern is consistent for a number of conflict measures (intensity, impact, and frequency), we find interesting differences when we distinguish among different parties suffering from casualties. In particular, it is the number of casualties among the civil population driving the results of the impact measure of conflict. We find less precise estimates when we use self reported violence, which is more markedly correlated to an increase in self employment in agriculture-related activities. We then turn to people's conflict expectations using various measures of yearly peace frequency: we find that people are affected only by the total number of days of peace, not by the temporal pattern of conflict, and the effect is in line with that of conflict intensity. Results are confirmed by the counter-intuitive increase of investment in agricultural inputs under higher conflict, and by the fact that the increase in low capital intensive self employment is stronger in high conflict areas that are also far from trade infrastructures. This last result suggests that the observed self employment is mainly of the subsistence type.

Although our identification strategy is quite robust, we run a number of robustness checks, among which: we control for lagged measures of conflict intensity, we instrument the conflict indicator, we contrast a number of definitions of PEA, we control for non violent military activities (to proxy for the presence of military contractors), and we use alternative spatial units (larger cells and original districts).

Answering to the question that we address in this paper, our results suggest that the negative effect of conflict on economic growth observed at the macro level operates through a vicious structural change: conflict reduces employment opportunities (through business disinvestment) and increases self employment in activities that have low returns. With reference to the well established evidence that the relation between economic output (x-axis) and the ratio of entrepreneurs (y-axis) is concave (Acs, 2006; Wennekers et al., 2005), violent conflict moves a country leftwards (lower output per capita) and upwards (more entrepreneurship). We therefore provide an empirical explanation for why more entrepreneurship is associated with contemporaneous stronger conflict and lower economic growth.

The rest of the paper is divided in four sections. In the next section (2) we set the stage for the analysis: we briefly review the literature on the relation between conflict, PEA and economic development. We also briefly describe the Afghan contest for doing business. Next, Section 3.2 describes the data, the statistical relation between the conflict and different types of income choices, and the empirical strategy. We discuss the main results and the main robustness checks in Section 4. And we conclude with some final considerations in Section 5. The paper includes a long Appendix that details the description of the data, the construction of the dataset, and some of the robustness checks.

# 2 Backgrounds

Conflict is expected to reduce the incentives to invest in entrepreneurial activities by destroying physical and human capital, increasing risks, lowering expected returns, displacing households, reducing labour, and disrupting markets, institutions, and social networks (Brück and Schindler, 2009; Hoeffler and Reynal-Querol, 2003; Ravallion, 1988). However, due to data constraints, only a small number of studies explore the effect of conflict on private enterprises. In contrast with prediction from theory, there is evidence supporting both a positive and a negative effect of conflict on PEA Ciarli et al. (2014). This effect varies with respect to the type of entrepreneurship, the type of conflict, and its duration (Brück et al., 2011, 2013b), as well as with the unit of analysis, the sector, and the indicator of conflict employed in the studies (Ciarli et al., 2014).

In this section we discuss the related literature on (i) entrepreneurship and conflict, (ii) entrepreneurship and income growth, (iii) evidence on entrepreneurial choice in Afghanistan, and (iv) evidence on doing business in Afghanistan.

## 2.1 Entrepreneurship, Self-Employment and Conflict

With reference to the main intuition that conflict reduces income through a reduction in firm activities, Ksoll et al. (2013) find the expected negative relationship using exports of flowers from Kenya. They suggest that the main effect of the conflict is reducing labour mobility. Narayan and Petesch, eds (2010) finds evidence that many factories that shut down due to the intensity of the armed conflict do not go back to business even after security is re-established . Using micro data, Chowdhury (2011) finds that local armed conflict reduces the probability that a household owns a business in the high conflict region by 11 percent compared to households elsewhere in Bangladesh. Using a small sample of firms Vijayakumar (2012) finds that the civil conflict in Sri Lanka had a negative effect on firms growth in terms of assets value, turnover and employment. According to Deininger (2003), closeness to civil strife reduced investment and the number of non-agricultural enterprise start-ups in Uganda between 1992 and 2000. Besley et al. (2011) show that in Punjab farmers decreased investments in tube wells when violence started. A similar results is found also in Singh (2013), who mainly refers to farmers' long term investments. According to the analysis by Besley et al. (2011), the reduction in investment is affected mainly by the expected level of conflict persistence. Similarly, Cañares (2011) reports lower investment and growth of firms in conflict areas in The Philippines, and Bullough et al. (2014) reports a lower entry of firms in conflict zones in Afghanistan.

However, both Cañares (2011) and Bullough et al. (2014) show that these slowdowns are accompanied by strong resilience, resulting in no difference in the number of small firms or self employed. This is confirmed by an analysis of a large cross section of Afghan households finding that conflict intensity[7] is only weakly negatively correlated with the household's choice to run a small business (Ciarli et al., 2010). Indeed, firms can gain from violent conflict (civil war) in resource intense industries, as it has been the case for Angola firms engaged in diamond extraction (Guidolin and La Ferrara, 2007). A number of studies go further and find that exposure to violence even increases entrepreneurial activity (Branzei and Abdelnour, 2010). For example, using micro data on self employment in Colombia, Bozzoli et al. (2013) find that between 2002 and 2006 the displacement due to violence has a positive effect on self employment in services, but with reduced income. Other microeconomic studies that find an increased PEA are Abdelnour et al. (2008) for

[7]Measured with 13 indicators of subjective and objective conflict intensity from different sources.

women in Sudan and Anugwom (2011) for women in Nigeria. Conflict may also influence PEA by affecting social capital. For example, Gilligan et al. (2011) and Voors et al. (2012) find that the violent conflict has promoted pro-social behaviour, respectively in Nepal and in Burundi, which can be conducive to entrepreneurship.

## 2.2 Casual and Formal Entrepreneurship

At the core of these different findings may be that entrepreneurship is highly heterogeneous. In the recent literature on entrepreneurship in low income countries major distinctions are made. For instance, Reynolds et al. (2001) distinguish between necessity and opportunity entrepreneurship, where the first one is mainly a substitute for the lack of employment and yields low value added. In practice, it is difficult to distinguish between households that invest in an entrepreneurial activity only because of necessity from those that invest only because they see a business opportunity (Cañares, 2011). However, this literature seems to agree that entrepreneurship in low income countries leans toward the necessity type (Acs et al., 2004; Acs and Szerb, 2009), particularly in areas with violent conflict (Naudé, 2007).

Similarly, Lerner and Schoar, eds (2010) distinguish between subsistence and transformational entrepreneurs. Assuming that we can distinguish between two ideal types of entrepreneurs, which for simplicity we refer to as casual (self-employed, for subsistence and necessity) and formal (opportunity seekers and transformational), the literature suggests that casual self-employment is a substitute for labour: unemployed become self-employed to earn a leaving. As soon as labour opportunities emerge again, some of these will be better than self-employment, and some self-employed will leave their activity and return to paid job (Lucas, 1978).

The evidence collected in Lerner and Schoar, eds (2010) shows that subsistence entrepreneurs tend to move between the labour market and self employment, and rarely they manage to make the step towards transformational entrepreneurs. Mondragón-Vélez and Peña (2010) also suggest that casual entrepreneurs have a lower human capital than formal ones. A large study over 74 developing countries (Gindling and Newhouse, 2014) suggests that we can usually observe a transition from casual self employment in agriculture, to casual self employment out of agriculture to paid work.

## 2.3 The Choice of Private Economic Activity Under Conflict in Afghanistan

If, as suggested by some of the evidence, PEA does not fall back, or even grows, in areas plagued by violent conflict, what kind of PEA is likely to develop? We look at the available evidence for Afghanistan. Iyer and Santos (2012) show that despite the shortfalls in the private sector demand for labour in conflict areas, in Afghanistan, India, Nepal, and Sri Lanka there is more employment in conflict areas than in non-conflict areas. They note that the forms of employment that raise in these conflict areas are: (i) women workers replacing absent men, particularly in the agricultural sector;[8] (ii) agricultural employment; (iii) and unpaid family labour. In sum, in the South Asian countries that have experienced, or are experiencing violent conflict, conflict areas may have a higher rate of self-employment, but these are lower quality activities, involving people with significantly lower education attainment than in non-conflict areas. This is mainly because in conflict areas wages are significantly lower, due to an increase in the supply of labour and a

[8]The "added worker" effect found in a number of empirical analysis of conflict (e.g. Justino et al., 2012; Menon and Rodgers, 2013; Shemyakina, 2011).

reduction in demand, associated with the closure of most productive businesses (Iyer and Santos, 2012).

This is in line with Berman et al. (2011) findings that in Iraq, Afghanistan and The Philippines unemployment is negatively related to insurgent activities, with the finding that Afghan individuals that are exposed to violence tend to have a higher preference for certainty (Callen et al., 2014) – which may reduce the number of household holding a business, and that the perception of danger in Afghanistan reduces the disposition to entrepreneurial activity, except for resilient individuals (Bullough et al., 2014).

### 2.4 Doing Business in Afghanistan

Despite the high growth rates in the last decade, Afghanistan is one of the poorest countries in the world. The average income per capita in 2008 (the last year of our study) was about 325 US dollars per year, and social indicators are also at the bottom of the world ranks. Agriculture is the main source of household income and the size of the informal sector is large (Ward et al., 2008). Ward et al. (2008) describes the Afghan economy as an "informal equilibrium not conducive to growth" where informal sector enterprises are too small, disparate and not organized to meet the needs of the market.

Conflict has persisted in Afghanistan since the early 1980s changing parties and intensity over time and the high level of insecurity represents a major impediment to development (Ward et al., 2008).

The World Bank firm survey in 2008 (IFC, 2014) shows that, although firms experienced growth in sales, their participation to the export market was extremely low with respect to other low income countries. Firms experienced barriers to business with respect to (i) the high cost of dealing with the government, (ii) the large number of bribes paid, and (iii) access to finance. But the main obstacles to doing business were (i) crime, theft and disorder, (ii) electricity, and (iii) political instability. That is, the violent conflict and its consequence on infrastructures. The situation was even gloomier in high conflict areas, where firms were even more constrained from doing business with respect to infrastructures, the regulatory framework, security, and skills (Iyer and Santos, 2012)

## 3 Data and Identification Strategy

### 3.1 Building the Database

The analysis below is based on three main sources of data. First, a unique dataset harmonising three different waves of a large household survey run in Afghanistan in 2003, 2005, 2007/8 – National Risk and Vulnerability Assessment (NRVA), and the Afghan administrative borders, which changed during the years of the last conflict. For a number of limitations discussed in the Web Appendix (Sections 1.1 and 1.2),[9] in this paper our analysis uses the data from 2005 to 2008. We include 2003 as a robustness check. In Section 1.1 of the Web Appendix we provide an overview of NRVA for the different years, and in Section 1.2 of the Web Appendix we discuss the procedures used to harmonise the household data.

The second and third datasets consist of all the geocoded conflict actions, either recorded by the US military – Afghan War Diaries (AWD) – or which appeared in the media – Global Dataset on Events, Location and Tone (GDELT). The details of the conflict data can be found in Section 2 of the Web Appendix.

[9] `https://users.sussex.ac.uk/~hbp48/projects/pedl/AfghPooledShort_Jan15RevApp.html`

Based on the first data source we built a number of different definitions of PEA, and based on the second and third data sources we built a number of different definitions of conflict.

### 3.1.1 Identification of Different PEA

There is no one single definition of private economic activity (PEA) – or of entrepreneurship.[10] Exploiting the richness of the NRVA questionnaire we construct different definitions of PEA, disentangling the main sources of income of a household in to mutually exclusive types of activities.

The first type of PEA that we define is that of households indicating as its main source of income a *small business* (*bus*).

The second type of PEA consists of a group of activities that are usually considered *self employment*, and which are outside the agricultural sector, such as carpet weaving and taxi driving (*se_na*) – see Table 8 and the Web Appendix for a full list of activities. Among self employment we further distinguish between lower capital intensive PEA ($Low\_K$) and higher capital intensive PEA ($High\_K$).

The third type of PEA, is *self employment* in the agricultural sector (*agric*) – see Table 8 for a full list of activities. We further distinguish between PEA in subsistence agriculture (*agr_sub*), and PEA related to the sale of agricultural products (not for consumption) (*agr_sale*).

The residual category is composed by all (main) sources of household income that do not consist in an entrepreneurial activity, such as paid labour, opium, or other sources of rent.

For our main period of analysis (2005-2008) we define a household (HH) of a given PEA type when the main source of income is generated by that type of PEA. The reason for focussing on the most important source of income is to have a database of mutually exclusive occupational options, where each household is identified with only one type of PEA. Among the robustness tests we check if results differ when considering as well secondary sources of income to identify the PEA of a HH.[11]

Tables 1 shows how PEA is distributed in our sample for all the years of the survey, and we show the correlation among the different definitions in Table 12 in the Appendix. The highest share of households earn their main income from self employment, and in particular from subsistence agriculture. Around 70% of the HH who's main source of income is in agriculture cultivate mainly for direct consumption. Only between ten and sixteen percent of the households earn their main source of income from self employment unrelated to agriculture. This percentage increases significantly from 2003 to 2007/8. Among the self employed, approximately two thirds own an activity that requires a small capital investment, and the rest have invested in an activity with a higher capital need. Only a very small portion of Afghan households are what we referred to as formal entrepreneurs, earning their main income from a small business.

We next move to the construction of conflict indicators.

[10] See discussion in Section 2.

[11] In 2003 the type of HH is identified with the number of HH members working in a small business or self-employment. In Section 1.2 of the Web Appendix we describe in detail how the different PEA variables were harmonised across the different survey waves.

| | Variable | Definition | 2003 | 2005 | 2007/8 |
|---|---|---|---|---|---|
| 1 | *bus* | small business | 2.02 | 5.05 | 2.03 |
| 2 | *se_na* | non agricultural self employment | 10.48 | 10.85 | 16.39 |
| 3 | *Low_K* | lower capital intensive activities | N.A. | 6.43 | 11.24 |
| 4 | *High_K* | higher capital intensive activities | N.A. | 4.42 | 5.15 |
| 5 | *agric* | agricultural self employment | 32.81 | 39.53 | 29.15 |
| 6 | *agr_sub* | subsistence agriculture | N.A. | 29.06 | 19.78 |
| 7 | *agr_sale* | agriculture for sale | N.A. | 10.47 | 9.37 |
| | 3 + 4 (= 2) | | | 10.85 | 16.39 |
| | 6 + 7 (= 5) | | | 39.53 | 29.16 |

Table 1: **Percentage of PEA for different years of hte survey**

*Source: own computation based on NRVA 2003-08*

### 3.1.2 Conflict Measures

The effect of conflict on economic behaviour changes for distinct conflict features. For instance, one area may be affected by a handful of devastating events, which cause a high number of casualties; or it can be affected by many violent events that overall cause a small number of casualties. The same number of events, in one area may be highly concentrated in a small number of days, in another area they may be uniformly distributed along time. These differences are more than statistical artefacts: they do represent quite different conflicts. In the attempt to capture these different aspects of a violent conflict, we define a number of different indicators using the available data: the count of conflict events, their impact on the population in terms of casualties, and their frequency.

The first conflict indicator that we use reflects the overall *intensity* of the conflict: we count the number of relevant conflict events in a given area recorded by the US army in the Afghan war diaries (AWD),[12] which can be disruptive for private economic activity ($n\_conflict$). In the Web Appendix (Section 2.1, Table 5) we list the type of events that were considered as relevant. $n\_conflict$ captures whether an area has experienced strong conflict, independently from its impact in terms of victims and its frequency in terms of interval between two subsequent conflict events. In addition, as a control, we employ the number of material conflicts recorded in the media ($n\_event4$). The variable is built using data from the Global Dataset on Events, Location and Tone (GDELT),[13] which collects information from a very long time series. The information is not as precise as the one recorded in the AWD, but allows to account for conflict events from the 70's to date.

The second indicator captures the *impact* of the conflict on individuals. We compute the total number of people wounded and killed in a given area, as recorded by the US army in the AWD ($n\_wk$). We further differentiate among those who mainly suffer the impact in to three distinct populations, using the classifications in the data: US military ($n\_wk\_usa$), those considered 'insurgents' ($n\_wk\_ins$), and civilians ($n\_wk\_civ$). For instance, it may be that fights between US troops and the Taliban are more likely to occur in less densely populated areas, whereas civilians are more likely to suffer the consequences of the conflict in areas where there is more economic activity. Moreover, we expect civilians' economic activities to be influenced more by the loss of civilians than by the loss of combatants.

The third indicator captures the *time frequency* of the conflict events. We count

[12] Data and sources described in Section 2.1 of the Web Appendix.

[13] Section 2.2 of the Web Appendix

the number of days with no recorded conflicts, and compute the ratio with respect to the calendar year (*peace_days*). Differently from the previous variables, here we do not consider the intensity of the conflict – multiple conflict events occurring in a single day are not considered. What we mainly want to capture with the *peace_days* variable is the expectations that households may form on the occurrence of future violent conflicts (Callen et al., 2014).[14] Based on GDELT we also compute a variable $cum\_conf$ containing the cumulated number of material events since the beginning of the last conflict in 2001.

The fourth indicator captures the *household perception* of the violent conflict, which may differ from the violence recorded by the troops and the media. We count the number of households that have responded that they have suffered from a shock due to insecurity or violence in the previous year, and we compute the ratio of affected households per area (*p_shockins*).

All conflict indicators are likely to suffer from some limitations. We will not discuss here these limitations, confident that the use of different indicators, from different reliable and precise sources, leads to robust results. In Table 2 we summarise the definition, source, and time coverage of the different indicators. In Table 13 in the Appendix we also show how they are correlated.

| | Variable | Description | Source[a] | Years |
|---|---|---|---|---|
| 1 | $n\_conflict$ | N. of conflict events | AWD | 2004-9 |
| 2 | *n_wk* | N. of wounded and killed | AWD | 2004-9 |
| 3 | *n_wk_civ* | N. of wounded and killed civilians | AWD | 2004-9 |
| 4 | *n_wk_usa* | N. of wounded and killed u.s.a. soldiers | AWD | 2004-9 |
| 5 | *n_wk_ins* | N. of wounded and killed insurgent | AWD | 2004-9 |
| 6 | *peace_days* | % of days with no conflict per year | AWD | 2004-9 |
| 7 | *p_shockins* | % of HH affected by insecurity shocks | NRVA | 2003-8 |
| 8 | *n_event4* | N. of material conflict events | GDELT | 1979-14 |
| 9 | $n\_noconflict$ | N. of "no-conflict" military events | AWD | 2004-9 |
| 10 | $cum\_conf$ | N. of material conflict events cumulated since 2001 | GDELT | 2001-6 |

[a]See the Web Appendix for a detailed explanation of the sources.

Table 2: ***Summary of conflict variables***. *All variables are computed for a given area.*

*Source: own computation based on AWD, GDELT and NRVA*

In the Figures 1 to 6 we map the geographical distribution of the conflict for the measures defined above, for different years. We compare these figures with different sources, and find a remarkable similarity (Section 2.4 of the Web Appendix).

All data seem to agree that through the years the conflict has dramatically intensified in the South, along the border with Pakistan, where it has focussed since the beginning, and it has also spread north-east and north-west, covering an Afghan internal ellipse not far from its borders. In other words, between 2005 and 2008 the country has experienced a significant time and space variation of the conflict. It is this these variations that we aim to exploit to analyse the effect that the increased conflict has on entrepreneurial activity.

[14]We have computed a number of different variables to record the frequency, such as the maximum, the minimum, the average, and the median number of days between two subsequent events. In this paper we show results using the sum, as they are the most precise estimator for peace frequency.

### 3.2 Empirical Strategy

Our baseline empirical model tests the probability that a household is engaged in one type of PEA:

$$Pr\left(PEA\right)_{itpj} = \beta_1 * Conflict_{tpk} + \beta_2 * Conflict_{t-1pk} + Controls_{it} + \tau_t + \pi_p + \epsilon_{itp} \quad (1)$$

where $Pr(PEA)$ is the probability for an household $i$ at time $t$ located in some area $p$ to engage in a PEA of type $j$;[15] $Conflict$ is one of the $k$ measures of conflict in the area $p$ at time $t$;[16] $Controls$ include a set of household-specific control variables; $\tau$ and $\pi$ are time and area fixed effect, respectively; and $\epsilon$ is a household specific error term. The unit of observation is the household, and standard errors are clustered at area level. The initial sample contains 11,760 households in 2003, 30,826 in 2005, and 20,668 in 2007/8. After removing the nomadic population (Kuchi), to reduce the problem of spatial sorting, and data cleaning, we observe 11,639 households in 2003, 29,087 in 2005 and 19,432 in 2007/8.

The equation is estimated with a Linear Probability Model (LPM). Although the dependent variable is a probability bounded within zero and one, the linear specification is preferred to the Probit model because of the large number of fixed effects; results from Probit estimations, available from the authors, show no significant differences.

#### 3.2.1 Definition of the Spatial Unit of Analysis

The choice of the proper spatial unit of analysis is a crucial issue in analyses at a very detailed spatial scale like the one in this paper. First, the 'area' $p$ is the spatial unit within which the conflict events that may be relevant to the households' occupational choice occur. The smaller is the spatial unit, the closer are the events to the household, on average. Second, we define a set of fixed effects at the area level. The definition of the area influences the precision with which we control for all time-invariant geographical factors – such as ruggedness, climate, distance to the Pakistan border and to major cities, and, in first approximation, for 'structural' factors that change very slowly over time and for which time-variant data are non available – including population density, other demographic factors (average age, ethnic composition, etc.), irrigation, and mineral resources.

The definition of the spatial unit may therefore significantly affect the results. In the literature on spatial/urban economics, regional science, and quantitative geography, the issues associated with the choice of the appropriate spatial unit of reference falls under the heading of the 'modifiable areal unit problem' (MAUP). Differently from international comparisons, where country borders are attached with socio-economic and political meanings, at a sub-national level there usually are many alternative options among spatial units of different shape and size. It has been shown that economic estimates may present huge variations across different spatial classifications (Arbia, 1989; Gehlke and Biehl, 1934; Menon, 2012; Openshaw, 1983). In some circumstances, a viable solution is using spatial units that approximately match the spatial extent of the economic phenomenon under scrutiny – e.g., commuting-defined local labour market areas for analysis of local unemployment. This however requires access to a well-established local statistics infrastructure, which is not generally available for low-income countries. The only sub-national geographical classifications available for Afghanistan are provinces and districts, which borders have little meaning for private economic activity, and even less for conflict. Moreover, their size heterogeneity may significantly jeopardize the results: by using the district as the spatial

[15] PEA equals one if the HH is an entrepreneurial HH and 0 otherwise. The definitions of the $j$ different types of PEA is given in Section 3.1.1.

[16] The definitions of the $k$ different measures of conflict is given in Section 3.1.2.

unit, we would implicitly attribute the same value to a conflict happening at the other end of the district – possibly hundreds of kilometres away from the household – and to a conflict taking place in the same village where the household is located. Furthermore, the location of households and conflict events can also be endogenous to the district borders, e.g. in the case in which the border is drawn along a mountain watershed – which Taliban use as refugees – or a village is located at the centre of the district.

One possible solution is to weight conflict events with their distance to the village, but our initial tests showed that this strategy still leads to imprecise results, because the effect of distance is likely to be highly non-linear, and there are many unobserved spatial discontinuities due to physical geography (rivers, mountains, etc.) that cannot be taken into account.

We therefore adopted an alternative solution, i.e., we created an ad-hoc regular geography for Afghanistan. More specifically, we superimposed on the Afghan territory a regular grid of squared *cells* of 0.3 degree width (corresponding to approximately 33 km). All households and conflict events are then assigned to the cell in which they are physically located, given the geographical coordinates. The cell is then the 'area' in equation 1. We chose the size of the cell with the following trade-off in mind: first, the cell should be large enough to 'minimize' the number of cells populated by households only in one of the years, as those would be dropped from the fixed-effect estimation, given that they do not show any variation over time. On the other hand, the cell should be small enough to 'maximise' precision of the estimation of the fixed effect and to match the spatial decay of the impact of conflict events on the households' choices.[17] After experimenting size and number of households for a number of different degrees, 0.3 is the smaller size we could use without critically reducing the size of the sample – 75% of the cells are non-empty in both years (third column in Table 3).[18]

This approach brings a number of advantages for the empirical analysis. First, the number of spatial units is larger than the number of districts (Table 3), increasing the precision of the spatial fixed effects and the sample size; second, we get rid of the heterogeneity in the most important spatial dimension, i.e., the area; third – and as a corollary of the size homogeneity – conflict events are on average located at the same distance from the households, being their distance from the cell border defined randomly. This randomness, in turn, implies that we do not need to rely on a parametric distance weighting of conflict events.

In Table 3 we compare the number of household sampled in the 'area' for different definitions of the spatial unit: our preferred sized cell (0.3 degrees), the district, and a cell of size similar to the average district (0.4 degrees). As the number of areas is significantly larger when we use a cell of 0.3 degrees width, the number of households in each area is smaller, on average. Adopting cells of 0.3 degrees width in our analysis we have to comply with an attrition rate of 25%, against almost no attrition in the case of districts – and 17% for cells of 0.4 degrees width.

In Section 4.4, among the robustness tests, we replicate the main results for larger cells (0.4 degree) and the original districts.

[17] Yonamine (2013) shows that fine graining significantly improves the prediction of conflict events.

[18] Starting from the minimum $x$ and $y$ spatial coordinates for Afghanistan as lower bounds, and by the same values added by 0.3 degrees as upper bounds, the grid is created by incrementally adding 0.3 degree to either the latitudinal or the longitudinal dimension of the lower and upper bounds, and by tagging all the households and conflict events that fall into the $x - y$ interval. The process ends when the maximum $x$ and $y$ are beyond the Afghanistan border, and each household and event has a cell identifier.

| | Cell width=0.3 | | | Cell width=0.4 | | | Districts | |
|---|---|---|---|---|---|---|---|---|
| | 2005 | 2007/8 | 2005-08 | 2005 | 2007/8 | 2005-08 | 2005 | 2007/8 |
| Non empty areas | 467 | 478 | 354 | 316 | 327 | 268 | 383 | 389 |
| Mean | 62.28 | 40.65 | 60.47 | 92.04 | 59.43 | 85.89 | 76 | 50 |
| Median | 35 | 24 | 32 | 48 | 32 | 48 | 48 | 32 |
| p10 | 12 | 8 | 8 | 12 | 8 | 12 | 24 | 16 |
| p90 | 130 | 80 | 130 | 188 | 136 | 188 | 141 | 88 |

Table 3: **Spatial features for different definitions of the area**: *number of areas with at least one household, mean and median number of households per area, and min (first decile) and max (last decile) number of households*

*Source: own computation based on NRVA*

### 3.2.2 Causality and Identification

Although the LPM does not generally allow for a causal interpretation of the estimated coefficients – due to potential sources of reverse causality and omitted variable bias – we built our empirical strategy in order to minimise potential sources of bias. First, the richness of the information collected by the NRVA survey allows to include a wide set of control variables, which minimize the risk that unobserved heterogeneity correlated with the conflict indicators biases its coefficient. Some of these controls are introduced as robustness checks (see section 4.4).

Second, we include a wide set of fixed effects defined at a narrow spatial scale, which absorb the effect of all time-invariant local unobservable factors (e.g. ruggedness, natural resources, agro-environmental characteristics, etc). Importantly, fixed effects at the level of the small spatial unit defined above is a robust control for the distance between the household and the closest border with Pakistan, a source of trade and therefore of PEA.

Third, recent empirical evidence using the same source of conflict data accurately shows that the spatial diffusion of the conflict in Afghanistan over time (starting in 2004) can be modelled with good precision using a latent Gaussian model based only on the information on previous conflict events (Zammit-Mangion et al., 2013, 2012). The control for topological features, such as ruggedness, and distance to the Pakistan border, does not add much information. Similarly, Yonamine (2013) also finds quite regular patterns of mean reverting conflict dynamics using a more standard auto regressive moving average model (ARFIMA). He also finds that variables that are potentially endogenous in the relation between conflict events and household behaviour, such as opium prices, do not improve the accuracy of predictions. As Zammit-Mangion et al. (2012, p.6) argue: "the Afghan conflict is characterized by insurgent movements and qualifies as a case of irregular warfare where activity is only loosely dependent and actioned by a myriad of disparate groups. Some averaging effects may be leading to the Gaussian behaviour of the conflict's intensity, which in turn may be exploited for modelling purposes" (Zammit-Mangion et al., 2012, p.6). This comes very handy in our setting, as it makes unlikely the possibility of dynamic endogeneity of the conflict variable with respect to household occupational choice.

Moreover, the Afghan conflict is led by foreign troops (NATO), who are unlikely to be concerned with the local economic private activities such as small businesses and self employment.[19]

[19]The ISAF troops have no mandate to contrast the production of opium (Lind et al., 2014).

Our main strategy to improve the identification of the relation between conflict and household entrepreneurial activity is to use different indicators of conflict – which include the intensity, the parties involved (civilians, US troops and local armies), household perception of violence and the frequency – and different types of entrepreneurship. For instance, households with rich entrepreneurial activities might attract violent conflict, but it is unlikely that this is reflected also in a high frequency of attacks (once their wealth has reduced as a consequence of the attack), unless the interviewed households live in a compound of businesses protected by national military, which is not the case. And even when this is the case, the distinction between different forms of entrepreneurship should identify the effect on formal businesses differently from casual and/or rural self employment.

Moreover, although the ISAF military intervention are not related to opium, to be on the safest side we distinguish household cultivating opium as their main activity from households that have different forms of PEA. Households who's main source of income is opium cultivation or labour are not included in any for of PEA. As a robustness check (see below) we also control for the local percentage of opium cultivation.

However, there might still be sources of bias due to omitted variables or reverse causality mechanisms we are not aware of. Therefore, among our robustness checks we control for a number of proxies of potential omitted variables, and we instrument the current conflict via two-stages least squares (2SLS) estimations.

### 3.2.3 Control Variables

On top of the intensity, impact, and frequency of the conflict – described in Section 3.1.2 – we control for a large number of potential determinants of a household engagement with a PEA. We include traditional determinants of entrepreneurial activity widely studied in the literature (Evans and Jovanovic, 1989; Evans and Leighton, 1989, e.g.), such as household features and access to markets (credit, inputs and outputs), geographical features such as infrastructures, institutions, and shocks other than conflict. To proxy for the size of the local market we also distinguish between urban and rural areas.[20] To further control for issues related to spatial sorting, we include in the regression the information about the members of the households that migrated in the previous year.

We list and describe all the control variables included in the main regressions in Table 9 in the Appendix. In Tables 10 and 11 we also detail the main descriptive statistics of the variables included in the main pooled sample 2005-2007/8, and in the the 2003-2007/8 control sample, respectively.

In tables 12, 13, and 14 in the Appendix we show the correlations among PEA variables, conflict variables and all control variables. There is no sign of high correlation which could lead to multicollinearity, if not for the dummies for mutually exclusive categories.

## 4 Results

Given the aim of this paper to identify as precisely as possible different effects of conflict on the household's decision to invest in different types of PEA, we need to summarise a large set of results combining several conflict indicators and several definitions of PEA.

In the first section (4.1) we present the results on the effect of the main conflict indicator $k$ on each type of PEA $j$. All estimations result from regressions including all control variables (Table 9), year and area fixed effects. For each type of $PEA_j$, the first column

[20]The sampling of households is not representative at the level of the spatial unit constructed by us. Estimations of the population size at this level are therefore not reliable.

includes the effect of the current level of conflict, and the second column includes both the current and the lagged value of the conflict in the household area.

In the second section 4.2 we focus on the role of self employment in the agricultural sector in driving the results of the effect of conflict on PEA. We estimate the effect of conflict on agricultural assets. A negative effect would indicate that farmers tend to sell livestock to cope with the conflict shocks, attempts to reducing the risk of being targeted, or migrate. A positive effect would confirm that conflict induces households to invest in agricultural activities in order to cope with the lack of labour and with high political and economic uncertainty. The literature has found mixed results (e.g. Bundervoet, 2010; Gonzalez and Lopez, 2007; Verpoorten, 2009).

Third, despite the stochastic nature of the Afghan conflict (Zammit-Mangion et al., 2013, 2012), there may still be reasons to think that some forms of PEA may attract more or less conflict. For example, local insurgents may use local, non-opium related, economic resources to finance the conflict, while protecting entrepreneurial activity. In other words, households may be better able to undergo entrepreneurial activity where the insurgents are located, because they may feel they run lower risks. The presence of insurgents, in turn, may attract more conflict. As a further check we instrument the intensity of the current conflict led by ISAF with past levels of conflict during the Soviet war in they same cell. Results are presented in Section 4.3.

Finally, in the last section (4.4) we discuss the results checking for a large number of potential sources of bias. First, we check whether the effect of conflict runs mainly through the destruction of infrastructures. We interact the intensity of conflict with the distance form markets and roads.

Second, we use a different definition of PEA: instead of using the main source of income, we define an entrepreneurial household when a PEA contributes to the household income at any level.

Third, PEA may be influenced by the presence of military bases and aid programmes, which influence the labour market, and may also provide new incentives for PEA. We check for this effect by using the number of non relevant conflict events, i.e. events that show the presence of US military, but that are not direct source of violence. For example air movement, checkpoints, and false and suspect improvised explosion devices (IED). In doing so we assume that NGO and other aid programmes are more likely to be located closer to areas which are also "protected" by the presence of military troops.

Fourth, although we control for the lagged level of conflict, the decision on whether to invest in a PEA may depend on history of the last conflict, rather than simply on the current or last year level of conflict. That is, similar to the when we use a yearly frequency variable, we test if the main results change when we consider the cumulation of conflict events since 2001 up to the year preceding the household interview.

Finally, we check whether the results are robust to a number of variations in the control variables and in the sample: we control for the (i) inclusion of the 2003 households in the sample, (ii) different functional forms of the conflict measures, (iii) the rate of local unemployment, (iv) the intensity of opium cultivation, (v) the separation of urban and rural samples, (vi) the size of the area, (vii) excluding the households surveyed in 2007, and (viii) clustering the standard errors at the district level.

## 4.1 Conflict on PEA

Table 4 summarises the result of our main measure of conflict objective intensity ($n\_conflict$) and time frequency ($peace\_days$) on the different types of PEA (listed in the second row): small business ($bus$), self employment in non-agricultural activities ($se\_na$), divided into

lower capital intensity ($Low\_K$) and higher capital intensity ($High\_K$), and agricultural activity ($agric$) divided into subsistence agriculture ($agr\_sub$) and agriculture for sale ($agr\_sale$).

All regressions are linear (LPM),[21] they include control variable (Section 3.2.3 and Table 9), year and area fixed effects. In the odd columns we estimate the effect of the current measure of conflict; in the even columns we estimated the effect of the current and the past measure of conflict (indicated by the name of the variable preceded by $l1\_$).

The regression analysis shows that the intensity of conflict has a general positive effect on entrepreneurial activity. This may be because of the decision of households residing in the area, or because new households have moved in the area. Although we believe that the second explanation is not so common in the case of Afghanistan, in this paper we are not interested in discriminating between the two explanations. The number of conflict events – both in the same year and in the year before the NRVA survey – show a significant association with the probability of owning a small business (cols. 1-2). The magnitude of the coefficient implies that an increase of 100 relevant conflict events, i.e. of approximately two standard deviations (sd) in $n\_conflict$, is associated with an increase of the probability that a household in the same cell owns a small business of approximately 0.03-0.05 % points (pp), i.e., on average of around 0.011-0.2%. Considering that the average number of conflict events per cell in the sample is around 13, the magnitude of the effect is relatively small, but not totally negligible given the small share of business owners, and would probably be hard to detect with a less precise estimation setting.

The effect on non-agricultural self employment (cols. 3-4), instead, is not significant. However, the decomposition of non-agricultural self employment activities into lower- and higher-capital intensive (respectively cols. 5-6 and 7-8) reveals that the non significant coefficient is due to the two contrasting effects on activities with different capital intensity. Indeed, conflict intensity is negatively associated with higher capital intensive self-employment, and it is positively associated with self-employment activities based on small capital investments. The magnitude of the effects are also quite small. An increase of 100 conflicts ($\sim 2sd$) per cell-year increases the probability that a household earns its income mainly from a lower capital intensive self employment activity by .04-.07 pp, and decreases the probability that a household earns its income mainly from a lower capital intensive self employment activity by 0.3-0.4 pp.

The results on agricultural activities (cols. 9-10) further suggest that the positive association of conflict with self-employment is almost entirely attributable to activities with lower value added related to subsistence agriculture, rather than to the commercialisation of agricultural goods. The estimated coefficient for the overall effect on agricultural activities is relatively large, implying that, on average, 100 conflict more in a cell, per year, are associated with an increase in the probability that a households gains its wage mainly from agriculture of approximately 1.2-1.5 pp. Instead, an increase of 100 conflict events in $t-1$ increases the probability in $t$ of about 0.8 pp, which is entirely explained by self subsistence agriculture (cols. 11-12), and not by sale of agricultural goods (cols. 13-14), of potentially higher value added.

When we turn to the frequency of the conflict in terms of the total number of days with no conflict activities in a year, the results are very similar, but less significant. More peace days reduce the likelihood that a household owns a small business (cols. 1-2), as well as the investment in lower capital self employment activities (cols. 5-6). The increase in higher capital activities (cols. 7-8) is barely significant and the decrease in lower capital

[21] We have used probit regressions for the main models, and found no difference. Results available form the authors.

| VARIABLES | (1) bus | (2) bus | (3) se_na | (4) se_na | (5) Low_K | (6) Low_K | (7) High_K | (8) High_K | (9) agric | (10) agric | (11) agr_sub | (12) agr_sub | (13) agr_sale | (14) agr_sale |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n_conflict | 0.049*** | 0.028** | 0.030 | 0.017 | 0.068** | 0.043* | -0.037*** | -0.026** | 0.151** | 0.115* | 0.093* | 0.059 | 0.058 | 0.056 |
| | (0.016) | (0.013) | (0.024) | (0.026) | (0.029) | (0.025) | (0.013) | (0.011) | (0.062) | (0.064) | (0.056) | (0.051) | (0.057) | (0.063) |
| l1_n_conflict | | 0.047*** | | 0.029 | | 0.053*** | | -0.024 | | 0.077** | | 0.074*** | | 0.003 |
| | | (0.018) | | (0.023) | | (0.011) | | (0.020) | | (0.030) | | (0.022) | | (0.023) |
| R-squared | 0.058 | 0.059 | 0.130 | 0.130 | 0.100 | 0.100 | 0.053 | 0.053 | 0.253 | 0.254 | 0.249 | 0.249 | 0.173 | 0.173 |
| peace_days | -0.048*** | -0.017 | -0.036 | -0.004 | -0.063* | -0.033 | 0.027 | 0.029* | -0.126 | -0.104 | -0.065 | -0.035 | -0.061 | -0.068 |
| | (0.018) | (0.017) | (0.025) | (0.029) | (0.034) | (0.029) | (0.021) | (0.016) | (0.079) | (0.074) | (0.078) | (0.069) | (0.049) | (0.056) |
| l1_peace_days | | -0.054*** | | -0.054 | | -0.050*** | | -0.004 | | -0.038 | | -0.050 | | 0.012 |
| | | (0.020) | | (0.042) | | (0.017) | | (0.035) | | (0.044) | | (0.032) | | (0.027) |
| R-squared | 0.058 | 0.059 | 0.130 | 0.130 | 0.100 | 0.100 | 0.053 | 0.053 | 0.253 | 0.253 | 0.248 | 0.249 | 0.173 | 0.173 |
| Cells F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell $p$.
*** p<0.01, ** p<0.05, * p<0.1
The dependent variables are dummy variables defined at the household level specifying the type of activity of the household (see Table 1 for definitions). Conflict measures are computed at the cell level (see Table 2 for definitions). All conflict measures, except for peace_days_single_p and p_shockins, are divided by 1000. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 4: ***LPM pooled cross-section estimates of conflict on PEA (2005-08)***

*Source: own computation based on NRVA and AWD*

activities is observed only with a one period lag. That is, halving the ratio of peace days in year $t$ (a decrease of 97 % points) increases the probability that a household holds a lower capital self employment activity by about 5 pp in year $t+1$. Whereas frequency has no significant effect on agriculture (cols. 9-14). These results suggest that households react to the number of conflict events, and their time frequency in a very similar way, but the overall intensity in a year is more relevant than whether the events are clustered in a few days or evenly distributed across the year.

In the Appendix we present further results on the other measures of conflict analysed (Table 15): impact ($n\_wk$, $n\_wk\_usa$, $n\_wk\_ins$, $n\_wk\_civ$), household subjective experience ($p\_shockins$), and an alternative measure of intensity ($n\_event4$). The overall picture is very similar, but with some interesting differences worth discussing. First, the most precise indicators of conflict to measure the effect on PEA are the total number of relevant conflict, discussed above, and the total number of people wounded and killed ($n\_wk$).

Second, we distinguish among different populations of wounded and killed. The number of wounded and killed USA or Taliban soldiers does not have any significant effect on PEA. Instead, it is the number of civilians that drives the entire effect of the impact of conflict on PEA. For instance, for an increase of 20 ($\sim 1sd$) civilians wounded or killed in a cell-year we estimated an increase in the likelihood of households owning a small business (cols. 1-2) of about 0.17 pp a reduction in the likelihood of households' self employment in higher capital-intensive activities (cols. 7-8) of about 0.2-0.27 pp, an increase in the likelihood of households' lower capital-intensive activities (cols 5-6) of almost 0.29 pp and an increase in in the likelihood of households' agricultural activities (cols. 9-10) of about 0.4-0.54 pp, all concentrated in subsistence agriculture (cols. 11-12). We do not find significant lagged effect when considering impact of conflict through people lives.

Third, the percentage of households that have experienced a shock due to insecurity or violence in the previous year reproduces some of the main effects discussed above, but is not very significant. For instance, there is no effect on the likelihood of owning a small business. Instead, the results suggest that the most affected households move their income sources towards agricultural self employment, producing goods that can be sold in the market.

Finally, the number of events registered by the media (in the GDELT database) is a less good proxy of conflict intensity than the more precise self reported data in the Afghan war diaries.

Overall, the results indicate that, although there is a small positive effect of the intensity and frequency of conflict and its impact on civil casualties on the probability that a households owns a small business or becomes self-employed, the overall effect on private economic activity is negative. The conflict intensity, impact, perception, and frequency push households towards activities with lower investment and value added – or zero value added, in the case of self subsistence agriculture. Households substitute labour income with self employment that is not likely to have a large impact on welfare.

### 4.2 Conflict on Productive Agricultural Assets

To further disentangle the effect of conflict on self employment, we focus on agriculture, for which we have a richer account of productive assets. We estimate the effect of conflict intensity on the number/size of the agricultural assets owned by the household using the following equation (irrespective on whether the main activity of the household is agricultural or not):

$$Assets_{itpj} = \beta_1 * Conflict_{tpk} + \beta_2 * Conflict_{t-1pk} + Controls_{it} + \tau_t + \pi_p + \epsilon_{itp} \qquad (2)$$

where $Assets_{itpj}$ is the number of assets of class $j$ owned by household $i$ located in some area $p$ in year $t$; and all the rest is defined as in equation 1. We consider the following three classes of agricultural assets $j$: number of livestock (camels, oxen, cattle, horses, sheep, goats, and donkeys), number of capital goods (tractor and thresher), and land ownership. The equation is estimated with a linear model.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | n_agrica1 | n_agrica1 | n_agrica2 | n_agrica2 | n_agrica3 | n_agrica3 |
| n_conflict | 2.056* | 1.486 | -0.114* | -0.085 | 0.040 | 0.002 |
| | (1.078) | (0.991) | (0.061) | (0.056) | (0.081) | (0.076) |
| l1_n_conflict | | 1.213 | | -0.061*** | | 0.081*** |
| | | (0.740) | | (0.019) | | (0.030) |
| R-squared | 0.185 | 0.185 | 0.826 | 0.826 | 0.308 | 0.308 |
| peace_days | -1.674 | -1.352 | 0.075 | 0.039 | -0.087 | -0.027 |
| | (1.330) | (1.156) | (0.074) | (0.068) | (0.080) | (0.081) |
| l1_peace_days | | -0.544 | | 0.062** | | -0.102*** |
| | | (1.076) | | (0.025) | | (0.038) |
| R-squared | 0.185 | 0.185 | 0.826 | 0.826 | 0.308 | 0.309 |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Cell F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 41,391 | 41,391 | 41,391 | 41,391 | 41,391 | 41,391 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell $p$.

*** p<0.01, ** p<0.05, * p<0.1

The dependent variables are count ($n\_agrica1$ and $n\_agrica2$) and dummy ($n\_agrica3$) variables defined at the household level specifying the number of agricultural asset of the household (livestock or capital) and the ownership of land. The equation is estimated with a linear model (OLS). Conflict measures are computed at the cell level (see Table 2 for definitions). All conflict measures, except for peace_days and p_shockins, are divided by 1000. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 5: ***OLS pooled cross-section estimates of conflict on the number of agricultural assets (2005-2008)***

*Source: own computation based on NRVA and AWD*

We present the results for the intensity and the frequency of conflict in Table 5. In the first two columns ($n\_agrica1$) we estimated the effect of conflict on the number of livestock owned (camels, oxen, cattle, horses, sheep, goats, and donkeys); in the following two columns ($n\_agrica2$) we estimated the effect of conflict on the number of capital goods owned (tractors and threshers); and in the last two columns we estimated the effect of conflict on the size of the land owned ($n\_agrica3$).

The main results indicate a mixed behaviour, differing by type of asset. First, the increase in the number of livestock (cols. 1-2) as a result of conflict intensity is large but not significant once we remove the outliers. Only the impact of conflict in terms of civilian casualties has a significant effect (Tab. 16): an increase of 20 civilian who are wounded or killed in a cell-year ($\sim 1sd$) increases the number of livestock (including all types of livestock) by 7.3 pp, that is, of about 0.5 animals, on average. Second, past conflict intensity significant decreases the investment in capital goods (cols. 3-4) and

significantly increases the probability that a HH owns a piece of land (cols. 5-6), but with smaller magnitude: an increase of about 50 conflict events per cell-year reduces the number of capital goods available to the households by about 0.3 pp (0.05% of a tractor or thresher) and increases the probability of investing in land by about 0.4 pp. Third, the current conflict intensity does not significantly affect the probability of investing in land (positively) and in capital goods (negatively) (cols. 3-4).

The frequency of the conflict (*peace_days*) events has a very similar effect. In Table 16 in the Appendix we consider all other indicators of conflict. The pattern is very similar to the one discussed above for the effect on PEA: (i) the impact of conflict (*n_wk*, *n_wk_usa*, *n_wk_ins*, *n_wk_civ*) is significant mainly through the number of wounded and killed civilians (*n_wk_civ*); (ii) the share of households experiencing violence (*p_shockins*) is barely significant, as well as the the number of events registered by the media (in the GDELT database) (*n_event4*).

The general result suggests that agricultural activities become more relevant under intense conflict but households are likely to invest only in livestock and some land, while they reduce the investment in capital goods.

Interestingly, when we focus on a sub-sample of the population including only the households whose main source of income is related to an agricultural activity (*agric*), the results are much less significant, for all conflict indicators, particularly with respect to livestock.[22] Suggesting that for those households whose main source of income is agriculture, the conflict (intensity, impact, frequency or experience) has no effect on the accumulation of inputs needed to cultivate.

Overall, our results suggest that conflict induces more investment in agriculture, for the least expensive inputs, due to a shift of households from non-agricultural to agricultural activities.

### 4.3 An Instrument for Conflict: IV Description and 2SLS Estimations

As discussed earlier, the potential bias due to omitted variables, reverse causality and measurement error is addressed controlling for a large number of different PEA activities and conflict measures, and for household and district controls, cells fixed effects, and lagged values of conflict. However, as an additional robustness test we build a time-variant instrumental variable (IV) to be used in a two-stages least square (2SLS) estimation. In this section we describe in details how the instrument is constructed and we discuss the results of the 2SLS estimation.

The instrumental strategy is inspired by the so-called "shift-share" methodology used in urban and regional economics to instrument regional economic growth, at least since Bartik (1991) and Blanchard and Katz (1992). In both papers, the authors instrument regional economic growth interacting the lagged regional sectoral structure with the contemporaneous national sectoral trend. A similar methodology has also been widely used in the migration literature to instrument local migration flows. Here, researchers interact the lagged ethnic enclaves with the contemporaneous nation-wide flows of ethnic groups (Altonji and Card, 1991; Bartel, 1989; Saiz, 2007).

In our case, in order to instrument for conflict the instrumental variable has to be strongly correlated with the cell-level variation over time in conflict intensity (relevance condition) and, at the same time, it has to be properly excluded from the second stage regression, i.e., it should affect PEA only through its effect on the conflict intensity variable, not directly (exogeneity or exclusion condition).

[22] The results are not included here but are available form the authors.

Following the "shift-share" approach, we interact the share of conflict per cell between 1979 and 1989 (the conflict during the Soviet occupation) over the total nation-wide number of conflict events in the same period ($Share_{0p}$), with the contemporaneous nationwide number of conflict events ($Global\_Conf_t$):

$$Share_{0p} = Conf_{0p}/Global\_Conf_0 \tag{3}$$

$$iv1_{tp} = Share_{0p} * Global\_Conf_t \tag{4}$$

where $Conf_{0p}$ is the number of cell-level conflicts in time 0 in cell $p$, $Global\_Conf$ is the number of nationwide level conflicts in time 0 and time $t$, the index 0 refers to the pre-sample period (1979-1989), and the index $t$ represents the years of our analysis t=[2005, 2007/8].

We choose the Soviet war rather than the Afghan civil war (1992-1996) or the anti-Taliban resistance (1996-2001) because it took place long time ago (30 years before the period of our analysis), it was a quite different conflict, with different targets, and fought for different reasons, and the country went through many structural changes since then. This implies that it is extremely unlikely that there is a common unobserved, cell-specific, time trend between the outcome variables and the pattern of conflict, which could invalidate the exclusion restrictions. We therefore assume that the significance of the instrument and the subsequent first-stage correlation depend only on exogenous physical and geographical factors (such as ruggedness, accessibility, position, etc) which makes a given cell more or less likely to be affected by conflict events when the overall conflict intensity in the whole country increases.

Second, the Soviets did not engage in reconstruction or development programs after the war. This allows us to rule out the possibility that areas were the Russian war was more intense benefited from programs that may have induced more economic activity.

Third, although the two conflicts were completely different, they both spread throughout the whole country. In Figure 9 we plot the average number of relevant conflicts per district over the periods of interest for the Soviet conflict (9a) and for the conflict studied in this paper (data between 2004 and 2009) (9b). Due to differences in reporting between 30 years ago and recent years, the overall number of conflicts registered is clearly different. However, the figure shows that both conflict where spread throughout the country, although the average intensity might differ between districts. The fact that the two conflicts, on average, interested similar districts with similar intensity is confirmed by a significant Spearman's correlation coefficient of 0.41 between the number of events per district in the two periods. Finally, Figure 9c plots the routes of the soviet invasion, which is remarkably close to the belt of strongest conflict plot in Figure 9a.

Fourth, as suggested by Zammit-Mangion et al. (2012) the volatility of the conflict within provinces is quite high, suggesting that it is difficult to identify trends. On the contrary, the "irregular warfare" observed can be predicted, only because random effects cancel out, showing Gaussian distribution of the conflict's intensity.

The results from the first stage equation are reported in table 6. The instrumental variable is positively correlated with the actual conflict intensity at cell level and the estimates are extremely precise, also thanks to the large size of the household sample. The IV is therefore very strong and the relevance condition is also respected.

The results from the second stage equation are presented in table 7: given the very strong similarity with the baseline estimations, for brevity we report only the coefficients for the main variable of conflict intensity ($n\_conflict$) – the results with the other conflict variables lead to specular conclusions, both in the first and second stage.

| VARIABLES | (1)<br>n_conflict |
|---|---|
| iv1 | 0.228***<br>(0.003) |
| Observations | 36,140 |
| R-squared | 0.673 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell *p*.
*** p<0.01, ** p<0.05, * p<0.1

Table 6: ***First stage of pooled IV regressions (2005-2008)***

*Source: own computation based on NRVA, AWD, and GDELT*

All in all, the use of IV does not affect the discussion of the results of the baseline regression (Section 4.1). Two differences are worth mentioning.

First, the effect of conflict on non-agricultural self-employment (*se_na*, col. 2), which is non statistically different from zero in the baseline regressions, turns significant in the 2SLS estimates. However, the 2SLS also confirms that the aggregate effect on *se_na* is the result of two opposing effects: positive on lower capital intensive activities (col. 3), and negative on self employment activities requiring higher capital investments (col. 4). In both the baseline and 2SLS regressions the absolute value of the coefficient is slightly stronger for lower-capital activities, but only in the 2SLS regressions the difference is large enough to turn significant the coefficient on the aggregate variable *se_na*.

| VARIABLES | (1)<br>bus | (2)<br>se_na | (3)<br>Low_K | (4)<br>High_K | (5)<br>agric | (6)<br>agr_sub | (7)<br>agr_sale |
|---|---|---|---|---|---|---|---|
| n_conflict | 0.058*** | 0.073** | 0.136*** | -0.063*** | 0.196*** | 0.192*** | 0.004 |
| | (0.012) | (0.029) | (0.022) | (0.013) | (0.039) | (0.039) | (0.024) |
| R-squared | 0.008 | 0.040 | 0.027 | 0.012 | 0.054 | 0.036 | 0.012 |
| Cells F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 36,140 | 36,140 | 36,140 | 36,140 | 36,140 | 36,140 | 36,140 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell *p*.
*** p<0.01, ** p<0.05, * p<0.1
The dependent variables are dummy variables defined at the household level specifying the type of activity of the household (see Table 1 for definitions). Conflict measures are computed at the cell level (see Table 2 for definitions). All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 7: ***IV 2SLS pooled cross-section estimates of conflict on PEA (2005-2008)***

*Source: own computation based on NRVA and GDELT*

Second, the 2SLS coefficients are generally larger than those presented in the baseline regressions for self employment – both with lower and higher capital intensity – and for agriculture, in particular subsistence agriculture. The bias is downward for lower capital

intensive self employment and particularly for subsistence agriculture, and positive for higher capital intensive self employment. This may be due to omitted variables, as well as to an "attenuation bias". Concerning omitted variables, good candidates for omitted variables are the households wealth (not well accounted for by the number of assets), natural resources, and, with a less clear effect, in-migration. Higher household wealth is positively correlated with higher capital intensive investments and possibly with conflict targeting, but negatively correlated with subsistence agriculture. Similarly, a large presence of natural resources attracts both higher capital intensive investments, and conflict, and is likely to reduce land for subsistence agriculture. Finally, migrants are more likely to take up subsistence jobs, rather than investing in higher capital intensive activities; and people will tend to migrate where there is less conflict. However, it is not clear if areas characterised by less migration are more likely to host higher capital investors or subsistence farmers. Other behavioural unobservables, which are appealing to relate to both the source of income and to the level of conflict, such as risk preferences, are not very promising candidate to explain the LPM bias. Indeed, risk aversion is negatively correlated with capital investment and positively with the level of conflict.

However, the explanation of the "attenuation bias" of the 2SLS estimates can be simply related to the independence of the measurement error of the cell-level conflict for the endogenous variable and for the instrument. Given that the information on the conflict level during the Russian conflict (used to construct the instrument) and the most recent conflict level (instrumented) comes from two completely different datasets, it is likely that the measurement error components potentially affecting both variables are mutually independent. This is the necessary condition to make the 2SLS estimates consistent in presence of well-behaved measurement errors.

However, it is worth noticing that the differences between the two sets of estimates – LPM and 2SLS – are small and not always significant, which suggests that the measurement error – as well as other sources of bias – does not affect the main conclusions of the analysis. Overall, the instrumental variable estimations suggest that the LPM results should be considered to be a conservative or lower-bound estimate of the true effect.

## 4.4 Robustness Checks

Although the main results were quite stable across a number of different specifications, given the complexity of the data and of the subject we check for a number of potential sources of bias and implement a number of robustness checks. Results are presented and discussed below.

### 4.4.1 Destruction of Infrastructures: Interaction with Conflict

Given the high relevance that infrastructures have in the literature on conflict and development, and their potentially strong effect in fostering/hindering economic activity of any sort, we first analyse if the effect of conflict runs mainly through the destruction of infrastructures. This is done by interacting the intensity of conflict with the distance from markets and with the availability of roads.

We present results of the interaction with distance from markets in Table 17. The effect of conflict is unchanged: the intensity ($n\_conflict$) is somehow less significant, but the impact ($n\_wk$ and $n\_wk\_civ$) is not. The main difference is in the effect of conflict intensity on self employment in higher capital intensive activities (cols. 7-8): conflict intensity ($n\_conflict$) has no significant effect, but its interaction with the distance from market ($IMkt$) has a negative effect, meaning that the negative effect of conflict on activities with

potentially higher value added occurs when the activities and the conflict are closer to the market. Similarly, higher capital intensive activities increases with less frequent conflict events (longer periods of peace) close to markets.

In Table 18 we show the estimated effects when we introduce the interaction between the conflict indicators and the distance from the village to the main road. As for the distance to market the results do not change much. Longer distance from the road clearly reduces the probability that households invest in self employment activities with higher capital intensity (cols 7-8), but the interaction is term ($IRoad$) is barely significant. The only significant result that emerges is that conflict intensity has a positive effect on the probability of engaging in activities related to the sales of agricultural product (cols. 13-14) (rather than subsistence agriculture) when far from the main roads. Once more, this indicates that conflict pushes activities that substitute for missing markets.

### 4.4.2 Broad Definition of PEA

In the main analysis we define an entrepreneurial household of a given type as a household whose main source of income is a type of PEA. This is a more convenient definition because most households have more than one source of income, and among those is often at least one form of agriculture and/or self employment. In table 19 we report results for estimates when $PEA_{ij} = 1$ if the PEA contributes to income even if it is not the main source of income.

The main differences with respect to the baseline results are related to the fact that most households hold some agricultural activity and/or some (low capital) self employment activity, even when they contribute to the households income marginally.

First, self employment in non agriculture (cols. 3-4) now is negatively affected by conflict (intensity and impact). This is simply due to the fact that many households have at least a member with at least a low capital intensive self employment activity. E.g. it is common to wave carpets in the household. However, only a small ratio of household have a self employment activity with higher capital investment which is not the main source of income. Therefore, the negative effect of conflict on higher capital intensive self employment predominates (cols. 7-8) while the positive effect of lower capital intensive self employment activities is not significant (cols. 5-6).

Second, conflict (intensity and impact) has no significant effect on the likelihood of holding an agricultural activity (cols. 9-10): as discussed above, the large majority of households are active in agriculture, despite the conflict level. However, subsistence agriculture is negative and significant (cols. 11-12), meaning that with high levels of conflict some households give up cultivation if it is not the main source of subsistence – although under conflict it does become the main source of income for many households (see baseline estimations).

Third, the frequency of peace/conflict is overall a less precise estimator of household PEA.

### 4.4.3 The Influence of Foreign Troops and Aid: Test with Military Events not Perceived as Harmful for PEA

It is possible that some of the effect of PEA that we observe in the baseline estimation is due to the presence of foreign armies, which demand for goods and services, and aid programmes, for example run by NGOs. We check for military presence by building a variable $n\_noconflict$ that accounts for all military events recorded in the Afghan war diaries, and which were not included among the 'relevant' events used to measure the intensity

of conflict ($n\_conflict$) – listed in Table 5 of the Web Appendix. Basically, these are all events that do not involve fire, and which the population would not perceive as harmful for an economic activity. There is a large list of such events: convoys (an accompanying and protecting force of troops/patrols), medical interventions, and surveillance actions are three among the many examples. Assuming that NGOs are more likely to cluster close to military troops, the $n\_conflict$ variable is a proxy for any external intervention that may stimulate PEA.

Results using $n\_noconflict$ in the place of the "conflict" variable are found in Table 20.[23] Indeed, non conflict activities conducted by foreign troops have a positive and significant effect on the likelihood that households in the same cell-year have a small business (cols. 1-2). The effect is three and a half time stronger than in the baseline estimation: an increase of 100 events increases the likelihood that a households holds a small business by 1.8 pp This indicates that it may not be the conflict activity per se that induces more entrepreneurship in the form of small businesses, but the presence of troops. Unfortunately we do not have the data to disentangle the two effects.

However, the presence of troops, without relevant conflicts, have no significant effect on self employment, whether of lower or higher capital intensity (cols. 3-8) – if anything, the coefficients have the opposite sign with respect to $n\_conflict$, and are of the same magnitude.

Third, the positive effect on agriculture is confirmed significant (cols. 9-10), but in this case it is driven by the sale of agricultural products (cols. 13-14), and not by subsistence agriculture (cols. 11-12), although the effect o sale is poorly significant. As in the case of small business, this may be due to the effect that foreign troops have on the demand of agricultural products.

Overall, "non-relevant" military action, i.e. actions that do not generate direct destruction, seem to induce more commercial activity, but this has an effect only on small businesses and agricultural sales. The effect of conflict estimated on other types of PEA are not influenced by the military presence alone.

#### 4.4.4 Expectation of Conflict Based on Past Cumulated Conflict Events

In order to account for the formation of adaptive expectations based on the years since the beginning of the last conflict, using the GDELT data we build a variable $cum\_conf$ that, for each area, sums the number of material conflicts recorded since 2001 till the year before the survey. For example, for households interviewed in 2005 $cum\_conf$ is the sum of material conflicts between 2001 and 2004 in the area were the household lives. Table 21 reports the results form the estimations.

The baseline results are overall robust to the use of the cumulative number of conflicts (using the less precise GDELT data). However, a number of small differences add to the overall result of this paper. First, the sum of past violence have no significant effect on more formal small businesses. Taken together with the result discussed in the previous section, this confirms that the main driver of the positive effect of conflict on small business is the presence of military troops, not the number of relevant conflicts occurred in the previous years.

Second, in areas where the conflict has been more intense for a number of consecutive years the overall effect on self-employment is positive, due to the fact that the increase of lower capital activities is stronger and more significant than the decrease in higher capital

[23] We also attempted to use both the conflict and non-conflict intensity indicators, but results suffer from high collinearity.

capital activities.

Third, and related, with respect to the current and lagged conflict, the conflicts cumulated since the beginning of the war (2001) have a much stronger role in increasing the likelihood of households surviving on agriculture, and particularly on subsistence agriculture (still no significant effect on the sale of agricultural goods, on which the presence of military troops has a slightly significant effect).

Overall, the effect of the expectation on future conflict based on the sum of conflicts since the beginning of the war reinforces the results of the paper: violent conflict pushes households out of employment and more capital intensive self employment, toward low capital intensive activities, and even more toward subsistence agriculture. Whereas it has no effect on small businesses.

### 4.4.5 Further Robustness Checks

Finally, in this section we run a number of robustness checks to assess the consistency of the results under different specifications and samplings.

First, we run the analysis for the period including the 2003 wave (results in Table 22). For this period we can use only two conflict indicators: intensity measured with the number of events recorded by the media ($n\_events4$), and the percentage of households that have experienced a violent shock in the are ($p\_shockins$). And we can analyse the effect only on three aggregated types of PEA: business ownership ($bus$, cols. 1-2), self employment in agriculture with no distinction between subsistence and sales ($se\_agr$, cols. 3-4) and self employment in non agriculture ($se\_na$, cols. 5-6).

The results largely confirm the corresponding results for the 2005-07/8 sample: no significant effect of these conflict indicators on the available categories of PEA, and no significant changes in the signs. The only relevant difference is that the lagged positive effect of conflict intensity on self employment in non agricultural self employment is now significant at the 5% level, reinforcing the results from the baseline estimations.

Second, we check a number of different functional forms of the conflict variables: quadratic, hyperbolic and logarithmic. All transformations show extremely poor results.

Third, we introduce the rate of unemployment per cell-year $Aunemp\_ratio$ as a determinant of the choice of investing in a PEA. Although unemployment ratio is often a significant determinant of PEA – positive for small business end self employment in non agriculture and negative for self employment in agriculture – the effect of the conflict variables is unchanged.

Fourth, we introduce the intensity of opium cultivation as the percentage of households that earn income from any opium activity in the cell-year ($perc\_opium\_act$). By construction, high level of opium cultivation reduces the likelihood of PEA among household – it is an alternative source of income. But the effect of conflict on PEA are unchanged.

Fifth, we analyse separately urban and rural samples. Focussing on the rural sample the estimates loose precision. Not surprisingly, the impact of the conflict on civilians ($wk\_civil$) is the variable which better explains the likelihood of a household holding a PEA. But overall there are no significant changes in the main message, a part from the capital intensity differences differences not significant anymore. In other words, conflict seems to have less impact on the income choice in the country side, a part from when it is perceived as number of civilians killed.

On the contrary, the baseline estimates are strengthened when we focus on the urban population, although there are no major differences with respect to the main message. The effect of conflict on self employment outside agriculture now becomes explicitly significant and negative because the effect on lower capital intensive activities is no more significant,

whereas the negative effect on higher capital intensive activities is negative and drives the overall effect. The effect on agriculture self-employment is also significant, but, being in urban areas, the effect is driven by sales of agricultural products, and not by subsistence agriculture.

Sixth, we change the size of the area, using cells of 0.4 degrees, and the native districts. In both cases results are less precise, as expected, but do not change.

Seventh, we re-estimate the baseline model without the households interviewed in 2007, which is a small group of households interviewed in a different season, with a slightly distribution of conflict events. Once more, the base line estimates are unchanged.

Finally, clustering the standard errors at the district level – rather than at the level of the our smaller regular cells of approximately 33km width – have only a marginal effect on the standard errors and in a few cases on the level of significance of the main results, which remain unchanged.

# 5 Concluding Remarks

Entrepreneurship is a crucial driver of economic development and growth, both in developing and in industrialized economies. Violent conflict, conversely, is a clear obstacle to economic development and growth, particularly in countries ragged by several decades of conflict such as Afghanistan.

International Organizations and aid agencies may be interested in knowing more about which kind of entrepreneurship is more resilient towards the obstacles that conflict and insecurity set on economic activities, as it could work as leverage for economic development, during and in the aftermath of wars. Similarly they might be interested in which aspects of the conflict plays the biggest role in hindering PEA – e.g. the intensity, frequency or the impact on infrastructures and people lives.

However, the evidence of the empirical economic literature so far is, at best, mixed. This is the case also because large part of the studies consider a generic entrepreneurial activity, when they focus on the households, or formal firms; and they control for one specific indicator of conflict, usually the impact in terms of number casualties.

We built a detailed and comprehensive dataset to carefully investigate the relation between conflict and PEA in the context of Afghanistan. We matched two unique sources of information – with a detail of precision along many different dimension (geographic detail, type of economic activity, household background information, and type of conflict events) and a comprehensiveness which are extremely rare in a developing country. The dataset enabled us to assess how the households' 'choices' with respect to the source of income are affected by the conflict intensity in the area in which they live. Here we focused on the choice to hold one type of private economic activity.

The results show that the probability that a household engages in PEA is, in general, positively affected by the level of conflict, its impact, and to a lesser extent by its frequency. However, the results are heterogeneous with respect to the type of activity and the conflict indicator used.

Indeed, it is mainly less capital-intensive self employment activities – e.g. sales of prepared food and petty trade – and activities related to subsistence agriculture, which drive the positive relationship. More capital-intensive self employment activities requiring higher fixed capital investments – e.g. milling and taxi driving – are instead negatively affected by the intensity of the conflict. We find the same result looking at the effect of conflict on the ownership of agricultural assets: households tend to own more land to cultivate, but they have less capital equipment.

Different measures of conflict have a positive effect also on more formal small businesses. However, in this case it is the presence of foreign troops in the area, which creates economic opportunities, which dominates the positive effect.

The results also clearly show that the manifestation of conflict that play the stronger role is the number of casualties among the civil population, followed by the intensity of the conflict and, to a lesser extent, by its frequency. When the conflict measure is confined to military casualties, there seem to be no significant effect.

All these results are remarkably stable across a number of different specifications and robustness tests, and an instrumental variable approach aimed at double-checking the direction of the causality links confirms the overall consistency of the baseline estimates. However, it is worth noticing that the estimated effects are rather small in magnitude, which in turn might suggest that empirical applications based on less precise data could fail to properly estimate these effects.

All in all, we find evidence that conflict pushes households towards marginal self employment activities and towards agriculture, although a few households gain from doing business with the foreign army. Thus, whereas the overall effect of conflict on the economy is likely to be negative, people tend to resume their course of life an hold on to their entrepreneurial – some would say survival – capabilities.

Do our findings can be supportive of directing international aids to entrepreneurship in conflict-ridden countries? We think so, for two reasons. Our results show that the causal relation goes from conflict to entrepreneurship: it is resilient private economic activity – self employment – which is driven by intensity, and not private economic activity which attracts more conflict (at least at the scale of private economic activity that an Afghan households holds). Second, and more speculatively, if financed, some of the entrepreneurial activity may become a strong leverage for economic development as soon as a conflict reduces in a specific area, even though it continues in other areas of the country. People who are forced out from employment into self employment may become a source of future development.

However, more importantly, our results do show that violent conflict, even when driven by a foreign coalition, rewinds the slow process of structural change of a low income country. If the conflict lasts long enough, such regression may require a long time before the country can change direction again. If a conflict is already in place, our results show that it is the "collateral" damages destroying the lives of civilians that has the strongest effect on household's decision to invest in a private economic activity of a given type.

> "When we first arrived here, there was no coffee seller. And now, barely five days later, he was back: life was resuming its old course, normality and dailiness were returning. It is a beautiful and heartening thing, this obstinate, heroic human striving for normality, this almost instinctive searching for it-no matter what. Ordinary people here treat political cataclysms–coups d'état, military takeovers, revolutions, and wars-as phenomena belonging to the realm of nature. They approach them with exactly the same apathetic resignation and fatalism as they would a tempest. One can do nothing about them; one must simply wait them out, hiding under the roof, peering out from time to time to observe the sky–has the lightning ceased, are the clouds departing? If yes, then one can step outside once again and resume that which was momentarily interrupted–work, a journey, sitting in the sun."

Ryszard Kapuściński (2001), The Shadow of the Sun, A. A. Knopf, New York, p83

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# A Figure Appendix

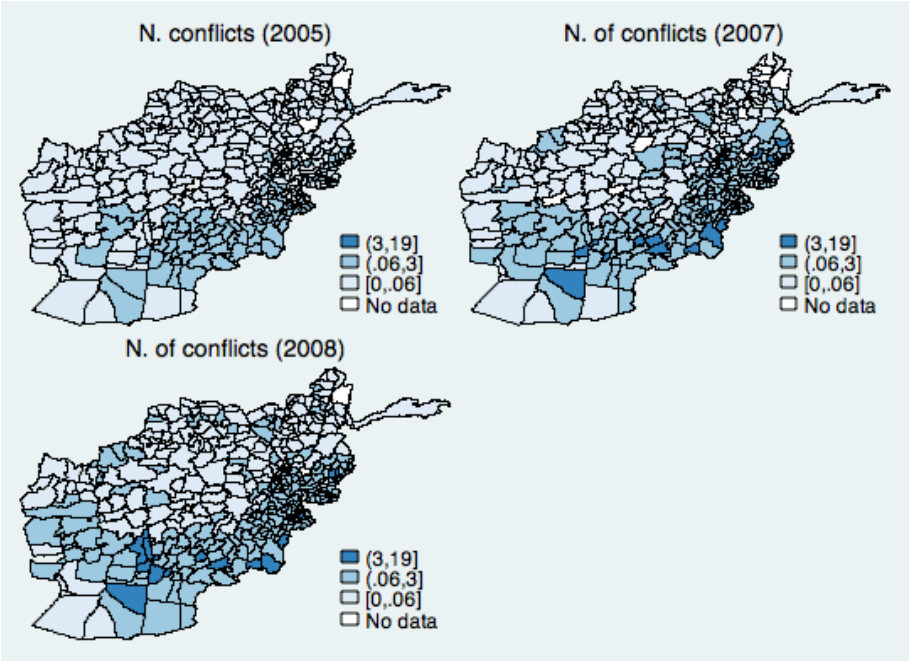



Figure 1: **Number of relevant conflicts recorded by the US army per district, 2005-2008**. *Conflicts are normalised by the district population.*

*Source: own computation based on AWD data.*

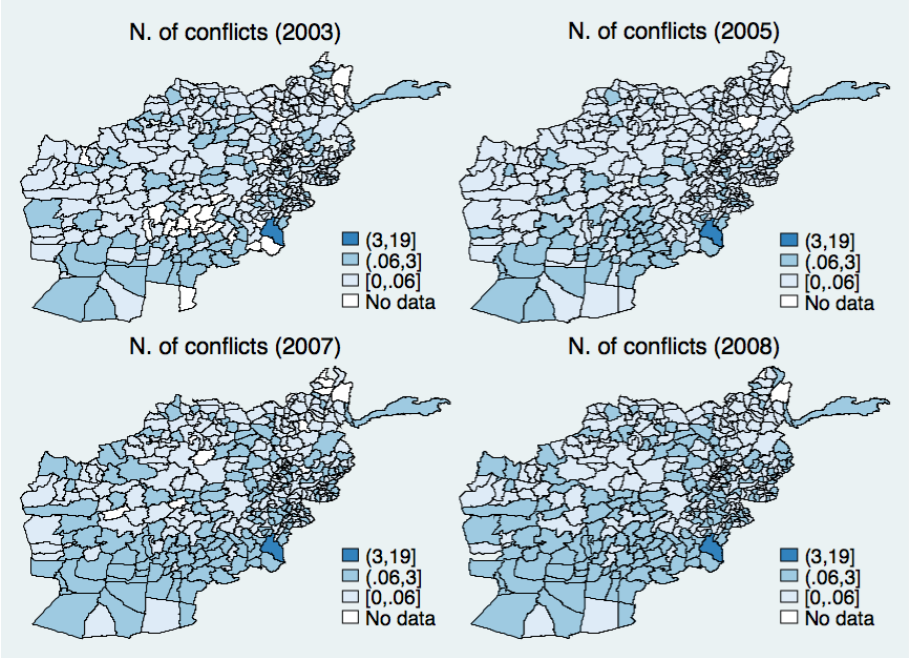



Figure 2: **Number of conflicts recorded by the media per district, 2003-2008**. *Conflicts are normalised by the district population.*

*Source: own computation based on GDELT data.*

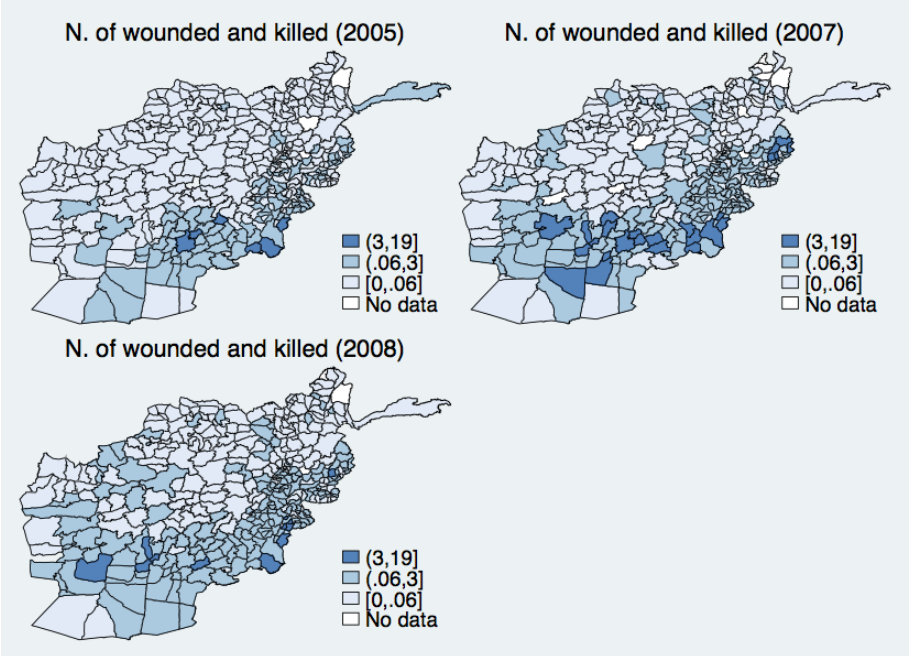



Figure 3: **Number of total individuals wounded and killed recorded by the US army per district, 2005-2008**. *Wounded and killed are normalised by the district population.*

*Source: own computation based on AWD data.*

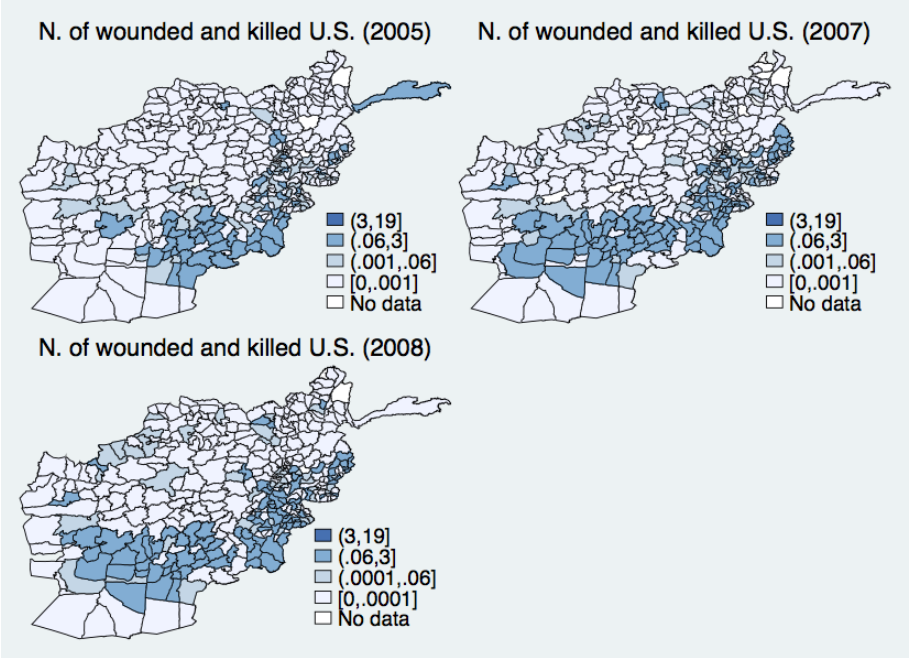



Figure 4: **Number of U.S. soldiers wounded and killed recorded by the US army per district, 2005-2008**. *Wounded and killed are normalised by the district population.*

*Source: own computation based on AWD data.*

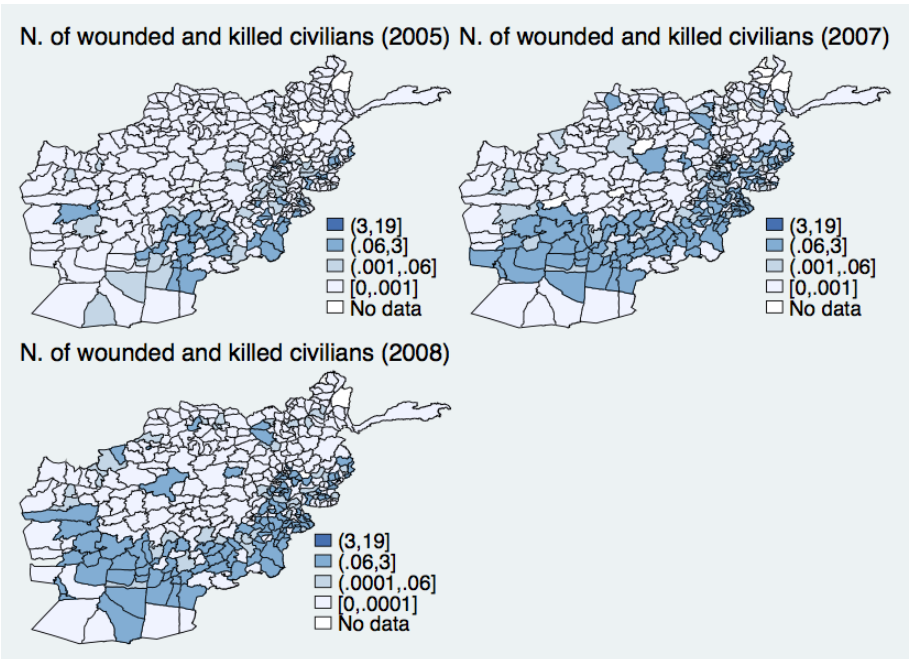



Figure 5: **Number of civilians wounded and killed recorded by the US army per district, 2005-2008**. *Wounded and killed are normalised by the district population.*

*Source: own computation based on AWD data.*

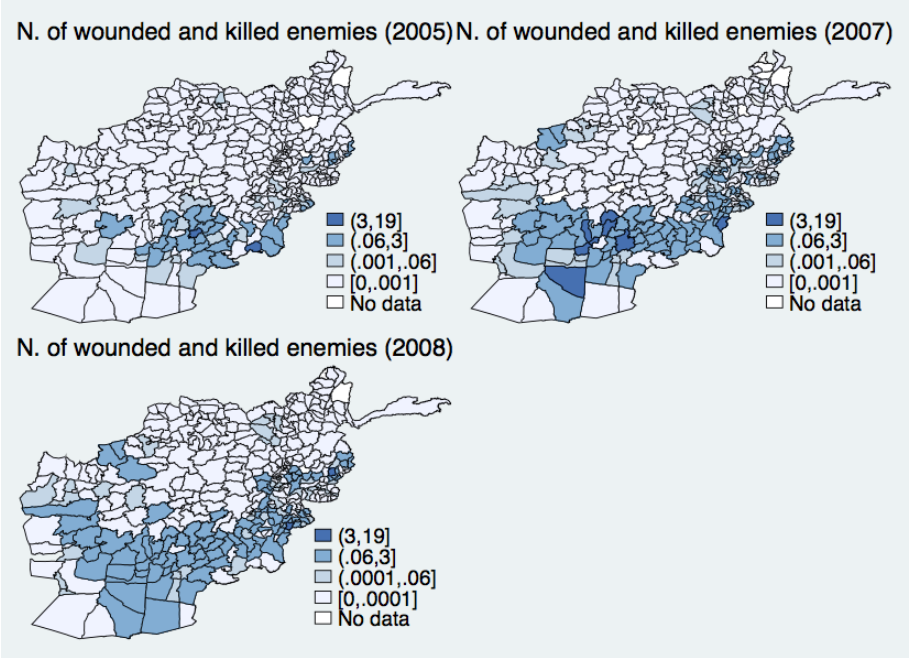



Figure 6: **Number of insurgents wounded and killed recorded by the US army per district, 2005-2008**. *Wounded and killed are normalised by the district population.*

*Source: own computation based on AWD data.*

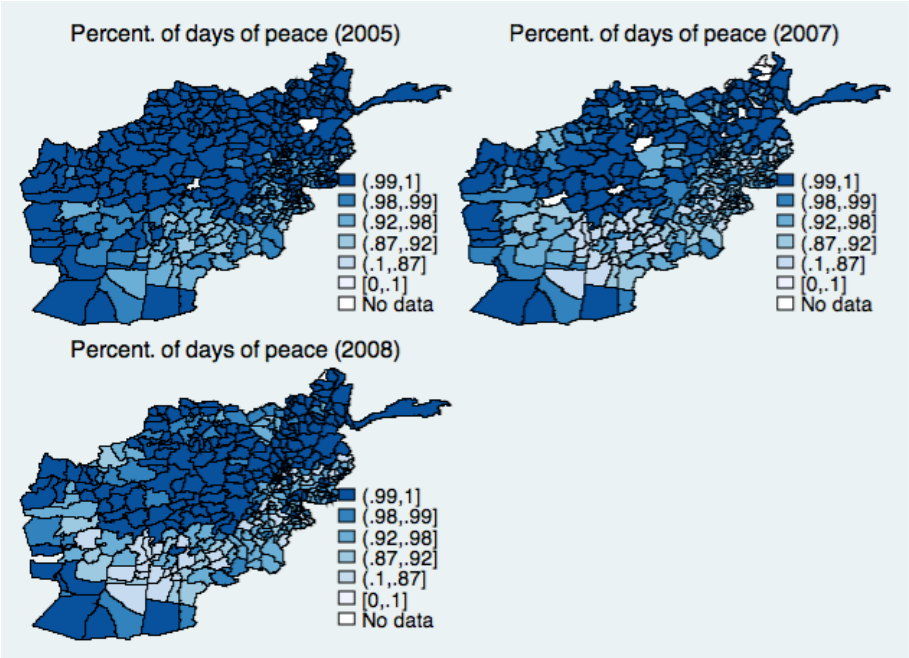



Figure 7: **Percentage of days in a year in which there is no relevant conflict**. *Density*

*Source: own computation based on AWD data.*

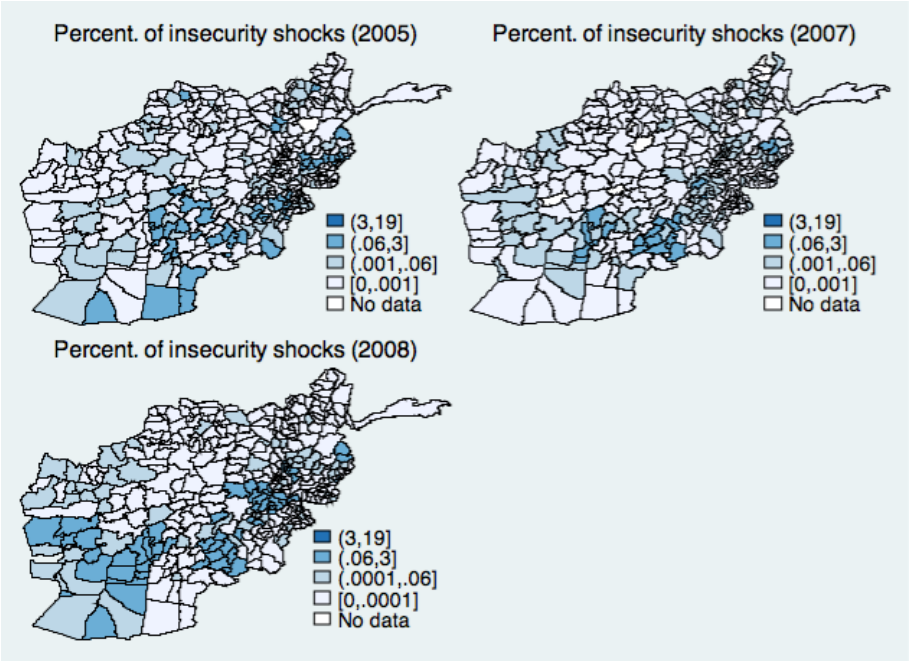
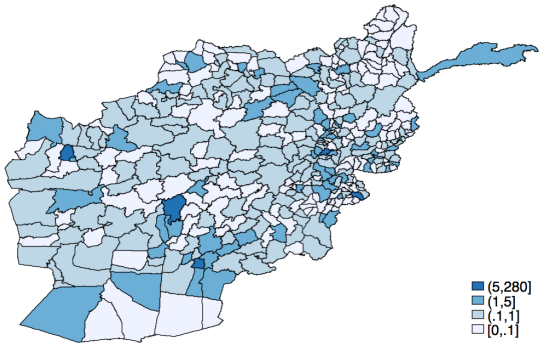


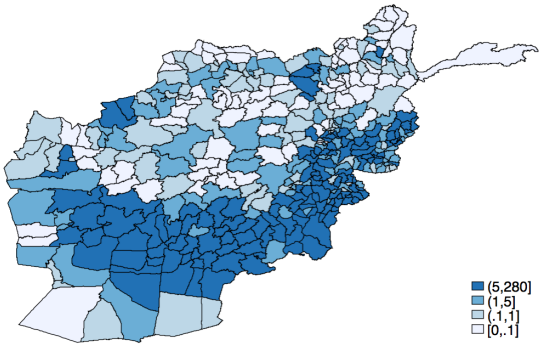

Figure 8: **Percentage of households in a district that have experienced a shock related to violence and insecurity in** $t-1$. *Density*

*Source: own computation based on NRVA data.*




(a) Soviet conflict (1979-1989)

*Source: own computation based on GDELT data.*




(b) ISAF conflict (2004-2009 only)

*Source: own computation based on AWD data.*


(c) US Map of Soviet Invasion in Afghanistan

*Source: Wikipedia*

Figure 9: **Geographical distribution of the Soviet (a-c) and the ISAF conflicts (b)**. *Maps 9a and 9b plot the averge number of relevant conflict events in each district (post-2005 definitions of districts) during the periods of interest: 1979-1989 for the Soviet conflcit (a) and 2004-2004 for the ISAF conflict (b). Due to differences in reporting between 30 years ago and recent years, the overall number of conflicts registered is clearly different. However, the figure shows that both conflicts where spread throughout the country, although the average intensity might differ between districts. Map 9c plots the Soviet invasion route, covering an area that is quite similar to the ISAF conflict belt in Figure 9b.*

# B Table Appendix

## B.1 Data

| Income source | Self employment types | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | *se_na* | *Low_K* | *High_K* | *agric* | *agr_sub* | *agr_sale* |
| Crop production for home consumption | | | | Yes | Yes | |
| Livestock production for home consumption | | | | Yes | Yes | |
| Production & sale of field crops | | | | Yes | | Yes |
| Prod & sales of cash crops (except Opium) | | | | Yes | | Yes |
| Prod & sales of orchard products | | | | Yes | | Yes |
| Prod & sales of livestock & products | | | | Yes | | Yes |
| Sales of prepared foods | Yes | Yes | | | | |
| Miller | Yes | | Yes | | | |
| Petty trade/ shopkeeping | Yes | Yes | | | | |
| Cross border trade | Yes | | Yes | | | |
| Firewood /charcoal sales | Yes | Yes | | | | |
| Handicrafts (sewing, embroidery, etc) | Yes | Yes | | | | |
| Carpet weaving | Yes | Yes | | | | |
| Taxi/transport | Yes | | Yes | | | |

Table 8: **List of the sources of income considered as self-employment for 2005 and 2007/8**

*Source: own elaboration based on NRVA*

| **Control variables** | **Description** | 2003 |
|---|---|---|
| HHMemb2 | = 1 if HH members are < 2 | Yes |
| HHMemb5 | = 1 if HH members are < 5 & > 2 | Yes |
| HHMemb10 | = 1 if HH members are < 10 & > 5 | Yes |
| HHMemb15 | = 1 if HH members are < 15 & > 10 | Yes |
| HHMemb20 | = 1 if HH members are < 20 & > 15 | Yes |
| MaleH | = 1 if the household head is a male | Yes |
| AgeHH | Age of the HH head | Yes |
| GenderAvHH | Average gender of the HH | Yes |
| LiteracyH | = 1 if the HH head is literate | Yes |
| LiteracyAvHH | Average literacy of the HH members | Yes |
| hhassets | Number of assets in the HH | Yes |
| Rural | = 1 if the HH lives in a rural area | No |
| Credit_Inst | = 1 if the HH obtained credit the previous year: credit institution | No |
| Credit_Lender | = 1 if the HH obtained credit the previous year: private lender | No |
| Credit_Inform | = 1 if the HH obtained credit the previous year: informal source | No |
| Credit_Other | = 1 if the HH obtained credit the previous year: other sources | No |
| Credit_None | = 1 if the HH did not obtain credit the previous year | No |
| Loan | = 1 if the HH obtained credit the previous year | No |
| HHMigration | = 1 if any HH member migrated the previous year | Yes |
| shocks | = 1 if the HH experienced a shock in the previous year | Yes |
| Dremittances | = 1 if the HH received remittance the previous year | No |
| DSocialContr | = 1 if the HH received any social aid the previous year | No |
| RoadKm | Km from the closest road | No |
| DElectrNo | = 1 if the HH has no access to electricity | No |
| DMkt_Close | = 1 if the HH is close to the market | No |
| Aunemp_ratio | % of unemployed adults (older than 13) in the cell | Yes |
| perc_opium_act | % of households cultivating opium in the cell | No |

Table 9: ***Control variables availability across waves.*** *All the variables were available for 2005-2007/8. Variables available for 2003 are indicated in the last column*

*Source: own elaboration based on NRVA*

## B.2 Summary Statistics

| Variable | Mean | Std. Dev. | Min. | Max. | N |
|---|---|---|---|---|---|
| **Dependent variables. See definition in Table 1** | | | | | |
| bus | 0.038 | 0.192 | 0 | 1 | 47343 |
| se_na | 0.131 | 0.338 | 0 | 1 | 47343 |
| Low_K | 0.084 | 0.277 | 0 | 1 | 47343 |
| High_K | 0.047 | 0.212 | 0 | 1 | 47343 |
| agric | 0.353 | 0.478 | 0 | 1 | 47343 |
| agr_sub | 0.253 | 0.434 | 0 | 1 | 47343 |
| agr_sale | 0.1 | 0.3 | 0 | 1 | 47343 |
| **Conflict variables. See definition in Table 2** | | | | | |
| n_conflict | 13.175 | 51.053 | 0 | 713 | 1180 |
| n_wk | 14.521 | 49.359 | 0 | 855 | 1180 |
| n_wk_usa | 2.262 | 7.996 | 0 | 123 | 1180 |
| n_wk_ins | 4.557 | 24.989 | 0 | 654 | 1180 |
| n_wk_civ | 4.02 | 18.355 | 0 | 402 | 1180 |
| peace_days | 0.972 | 0.081 | 0.101 | 1 | 1180 |
| p_shockins | 0.104 | 0.22 | 0 | 1 | 1178 |
| n_event4 | 4.831 | 13.837 | 0 | 124 | 1181 |
| n_noconflict | 9.636 | 38.672 | 0 | 809 | 1180 |
| cum_conf | 49.789 | 91.92 | 0 | 384 | |
| **Control variables. See definition in Table 9** | | | | | |
| HHMemb2 | 0.024 | 0.153 | 0 | 1 | 48519 |
| HHMemb5 | 0.243 | 0.429 | 0 | 1 | 48519 |
| HHMemb10 | 0.613 | 0.487 | 0 | 1 | 48519 |
| HHMemb15 | 0.101 | 0.301 | 0 | 1 | 48519 |
| HHMemb20 | 0.016 | 0.127 | 0 | 1 | 48519 |
| MaleH | 0.98 | 0.14 | 0 | 1 | 46403 |
| AgeHH | 43.335 | 13.358 | 1 | 99 | 45993 |
| GenderAvHH | 0.693 | 0.461 | 0 | 1 | 48519 |
| LiteracyH | 0.183 | 0.387 | 0 | 1 | 46404 |
| LiteracyAvHH | 0.266 | 0.277 | 0 | 1 | 48496 |
| hhassets | 2.356 | 1.849 | 0 | 7 | 48519 |
| hhasset2 | 8.968 | 12.798 | 0 | 49 | 48519 |
| Rural | 0.788 | 0.409 | 0 | 1 | 48311 |
| Credit_Other | 0.007 | 0.082 | 0 | 1 | 46757 |
| Credit_Inst | 0.009 | 0.097 | 0 | 1 | 46757 |
| Credit_Lender | 0.159 | 0.366 | 0 | 1 | 46547 |
| Credit_Inform | 0.737 | 0.44 | 0 | 1 | 46757 |
| Credit_None | 0.073 | 0.261 | 0 | 1 | 46757 |
| Loan | 0.467 | 0.499 | 0 | 1 | 48021 |
| HHMigration | 0.538 | 0.499 | 0 | 1 | 48465 |
| shocks | 0.488 | 0.5 | 0 | 1 | 48519 |
| Dremittances | 0.061 | 0.239 | 0 | 1 | 48519 |
| DSocialContr | 0.009 | 0.097 | 0 | 1 | 48515 |
| RoadKm | 3.426 | 13.337 | 0 | 602 | 47455 |
| RoadKm2 | 189.594 | 5312.043 | 0 | 362404 | 47455 |
| DMkt_Close | 0.404 | 0.491 | 0 | 1 | 47842 |

| | | | | | |
|---|---|---|---|---|---|
| DElectrNo | 0.675 | 0.468 | 0 | 1 | 47788 |
| perc_opium_act | .07 | .21 | 0 | 1 | 48527 |
| Aunemp_ratio | 0.358 | 0.173 | 0 | 1 | 1181 |
| **Number of agricultural assets. See definitions in Section 4.2** | | | | | |
| n_agrica1 | 6.899 | 17.809 | 0 | 445 | 50728 |
| n_agrica2 | 0.152 | 0.518 | 0 | 2 | 50728 |
| n_agrica3 | 0.457 | 0.498 | 0 | 1 | 50728 |

Table 10: ***Summary statistics of the variables used for the pooled regressions 2005-2008.***

*Source: own computation based on NRVA, AWD, and GDELT*

| Variable | Mean | Std. Dev. | Min. | Max. | N |
|---|---|---|---|---|---|
| **Dependent variables. See definition in Table 1** | | | | | |
| bus | 0.035 | 0.183 | 0 | 1 | 57948 |
| agric | 0.348 | 0.476 | 0 | 1 | 57823 |
| se_na | 0.126 | 0.332 | 0 | 1 | 57823 |
| **Conflict variables. See definition in Table 2** | | | | | |
| n_event4 | 4.607 | 13.844 | 0 | 124 | 631 |
| p_shockins | 0.126 | 0.247 | 0 | 1 | 630 |
| **Control variables. See definition in Table 9** | | | | | |
| HHMemb2 | 0.02 | 0.139 | 0 | 1 | 60154 |
| HHMemb5 | 0.224 | 0.417 | 0 | 1 | 60154 |
| HHMemb10 | 0.651 | 0.477 | 0 | 1 | 60154 |
| HHMemb15 | 0.09 | 0.285 | 0 | 1 | 60154 |
| HHMemb20 | 0.013 | 0.115 | 0 | 1 | 60154 |
| MaleH | 0.96 | 0.196 | 0 | 1 | 57248 |
| AgeHH | 43.429 | 12.916 | 1 | 99 | 56810 |
| GenderAvHH | 0.674 | 0.469 | 0 | 1 | 60154 |
| LiteracyH | 0.18 | 0.384 | 0 | 1 | 57124 |
| LiteracyAvHH | 0.266 | 0.277 | 0 | 1 | 48496 |
| hhassets | 2.06 | 1.81 | 0 | 7 | 60156 |
| hhasset2 | 7.516 | 11.925 | 0 | 49 | 60156 |
| HHMigration | 0.463 | 0.499 | 0 | 1 | 59963 |
| shocks | 0.517 | 0.5 | 0 | 1 | 59858 |
| **Number of agricultural assets. See definitions in Section 4.2** | | | | | |
| n_agrica1 | 7.514 | 19.516 | 0 | 445 | 62368 |
| n_agrica3 | 0.471 | 0.499 | 0 | 1 | 62368 |

Table 11: ***Summary statistics of the variables used for the pooled regressions 2003-2008.***

*Source: own computation based on NRVA and GDELT*

## B.3 Correlations

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| bus (1) | 1.00 | | | | | | |
| se_na (2) | -0.08*** | 1.00 | | | | | |
| Low_K (3) | -0.06*** | 0.78*** | 1.00 | | | | |
| High_K (4) | -0.04*** | 0.57*** | -0.07*** | 1.00 | | | |
| agric (5) | -0.15*** | -0.29*** | -0.22*** | -0.16*** | 1.00 | | |
| agr_sub (6) | -0.12*** | -0.23*** | -0.18*** | -0.13*** | 0.79*** | 1.00 | |
| agr_sale (7) | -0.07*** | -0.13*** | -0.10*** | -0.07*** | 0.45*** | -0.19*** | 1.00 |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

See Section 3.1.1 for variables definitions.

Table 12: ***Spearman Rank Correlations: PEA types***

*Source: own computation based on NRVA*

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| n_conflict (1) | 1.00 | | | | | | | | |
| n_noconflict (2) | 0.81*** | 1.00 | | | | | | | |
| n_wk (3) | 0.87*** | 0.77*** | 1.00 | | | | | | |
| n_wk_usa (4) | 0.71*** | 0.72*** | 0.80*** | 1.00 | | | | | |
| n_wk_ins (5) | 0.74*** | 0.66*** | 0.84*** | 0.72*** | 1.00 | | | | |
| n_wk_civ (6) | 0.74*** | 0.71*** | 0.82*** | 0.69*** | 0.71*** | 1.00 | | | |
| n_event4 (7) | 0.55*** | 0.51*** | 0.51*** | 0.45*** | 0.45*** | 0.48*** | 1.00 | | |
| p_shockins (8) | 0.32*** | 0.29*** | 0.31*** | 0.29*** | 0.32*** | 0.31*** | 0.23*** | 1.00 | |
| peace_days (9) | -1.00*** | -0.81*** | -0.87*** | -0.71*** | -0.74*** | -0.74*** | -0.55*** | -0.31*** | 1.00 |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

See Section 3.1.2 for variables definitions.

Table 13: ***Spearman Rank Correlations: Conflict indicators***

*Source: own computation based on AWD, NRVA, and GDELT*

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMemb2 (1) | 1.00 | | | | | | | | | | | | |
| HHMemb5 (2) | -0.09*** | 1.00 | | | | | | | | | | | |
| HHMemb10 (3) | -0.20*** | -0.71*** | 1.00 | | | | | | | | | | |
| HHMemb15 (4) | -0.05*** | -0.19*** | -0.42*** | 1.00 | | | | | | | | | |
| HHMemb20 (5) | -0.02*** | -0.07*** | -0.16*** | -0.04*** | 1.00 | | | | | | | | |
| MaleH (6) | -0.06*** | -0.06*** | 0.05*** | 0.03*** | 0.01* | 1.00 | | | | | | | |
| AgeHH (7) | -0.03*** | -0.25*** | 0.09*** | 0.17*** | 0.08*** | 0.00 | 1.00 | | | | | | |
| GenderAvHH (8) | 0.08*** | -0.02*** | 0.02*** | -0.04*** | 0.00 | 0.06*** | 0.03*** | 1.00 | | | | | |
| LiteracyH (9) | 0.02*** | -0.00 | 0.01 | -0.01* | -0.01* | -0.00 | -0.05*** | 0.03*** | 1.00 | | | | |
| LiteracyAvHH (10) | -0.07*** | -0.11*** | 0.08*** | 0.05*** | 0.02*** | -0.02*** | 0.11*** | 0.02*** | 0.41*** | 1.00 | | | |
| hhassets (11) | -0.06*** | -0.06*** | 0.03*** | 0.05*** | 0.04*** | 0.02*** | 0.00 | 0.01 | 0.07*** | 0.21*** | 1.00 | | |
| Rural (12) | -0.00 | -0.03*** | 0.02*** | 0.01** | 0.01* | 0.06*** | -0.03*** | 0.02*** | -0.17*** | -0.31*** | -0.32*** | 1.00 | |
| Credit_Other (13) | -0.00 | 0.00 | -0.01* | 0.01* | 0.01 | -0.01 | 0.01 | -0.01 | 0.02*** | 0.01* | -0.00 | 0.01** | 1.00 |
| Credit_Inst (14) | -0.01 | -0.01 | -0.00 | 0.01** | 0.02** | 0.01 | 0.01* | 0.00 | -0.02*** | 0.06*** | 0.05*** | -0.10*** | -0.01 |
| Credit_Lender (15) | 0.00 | 0.01** | 0.00 | -0.02*** | -0.01 | 0.02** | 0.03*** | -0.01* | -0.06*** | -0.03*** | -0.11*** | 0.08*** | -0.04*** |
| Credit_Inform (16) | -0.01 | -0.02*** | 0.02*** | 0.01 | -0.01 | -0.01 | -0.04*** | 0.01** | 0.04*** | -0.00 | 0.09*** | -0.03*** | -0.14*** |
| Credit_None (17) | 0.02*** | 0.02*** | -0.02*** | 0.00 | 0.00 | -0.01 | 0.01** | 0.00 | 0.04*** | -0.00 | -0.01* | -0.04*** | -0.02*** |
| Loan (18) | -0.02*** | -0.03*** | 0.01** | 0.03*** | 0.02*** | -0.01 | 0.03*** | -0.04*** | -0.09*** | 0.01* | -0.14*** | 0.10*** | -0.01 |
| HHMigration (19) | -0.01* | 0.02*** | 0.02*** | -0.04*** | -0.02*** | -0.04*** | -0.01* | 0.04*** | 0.30*** | -0.01* | -0.14*** | -0.03*** | 0.02*** |
| shocks (20) | -0.02*** | -0.04*** | 0.02*** | 0.03*** | 0.03*** | -0.00 | 0.03*** | -0.04*** | -0.19*** | -0.04*** | -0.11*** | 0.21*** | -0.02*** |
| Dremittances (21) | -0.01** | -0.05*** | 0.01** | 0.05*** | 0.02*** | -0.04*** | 0.06*** | 0.01* | 0.01** | 0.02*** | 0.00 | 0.08*** | 0.00 |
| DSocialContr (22) | 0.00 | -0.01 | 0.00 | 0.00 | 0.01 | -0.00 | 0.03*** | -0.02*** | 0.03*** | 0.07*** | 0.03*** | -0.06*** | -0.00 |
| RoadKm (23) | 0.01** | 0.03*** | -0.00 | -0.03*** | -0.03*** | 0.03*** | -0.03*** | 0.02*** | -0.07*** | -0.18*** | -0.14*** | 0.30*** | -0.00 |
| DMkt_Close (24) | -0.02*** | -0.02*** | 0.02*** | -0.00 | -0.00 | -0.02*** | 0.01** | 0.03*** | 0.27*** | 0.19*** | 0.11*** | -0.29*** | 0.01 |
| DElectrNo (25) | 0.00 | 0.02*** | 0.01* | -0.03*** | -0.03*** | 0.04*** | -0.04*** | 0.04*** | -0.10*** | -0.32*** | -0.28*** | 0.52*** | 0.01 |
| Aunemp_ratio (26) | 0.00 | -0.01** | -0.01* | 0.02*** | 0.03*** | -0.04*** | 0.05*** | -0.03*** | 0.15*** | 0.17*** | 0.10*** | -0.35*** | -0.02*** |
| perc_opium_act (27) | -0.01* | 0.03*** | 0.00 | -0.03*** | -0.02*** | -0.01** | -0.06*** | 0.05*** | 0.07*** | -0.10*** | 0.07*** | -0.06*** | 0.02*** |

*Table 14 continued on next page...*

*... table 14 continued*

| | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Credit_Inst (14) | 1.00 | | | | | | | | | | | | | |
| Credit_Lender (15) | -0.04*** | 1.00 | | | | | | | | | | | | |
| Credit_Inform (16) | -0.16*** | -0.73*** | 1.00 | | | | | | | | | | | |
| Credit_None (17) | -0.03*** | -0.12*** | -0.47*** | 1.00 | | | | | | | | | | |
| Loan (18) | 0.05*** | 0.19*** | -0.10*** | -0.15*** | 1.00 | | | | | | | | | |
| HHMigration (19) | -0.06*** | -0.05*** | 0.03*** | 0.06*** | -0.18*** | 1.00 | | | | | | | | |
| shocks (20) | 0.01* | 0.11*** | -0.07*** | -0.07*** | 0.28*** | -0.30*** | 1.00 | | | | | | | |
| Dremittances (21) | -0.01 | -0.02*** | 0.02*** | -0.01 | 0.01 | -0.13*** | 0.03*** | 1.00 | | | | | | |
| DSocialContr (22) | 0.00 | -0.01** | 0.01* | -0.00 | 0.01 | -0.02*** | -0.01 | -0.00 | 1.00 | | | | | |
| RoadKm (23) | -0.03*** | 0.05*** | -0.03*** | -0.01** | 0.00 | 0.04*** | 0.07*** | 0.04*** | -0.04*** | 1.00 | | | | |
| DMkt_Close (24) | -0.01* | -0.09*** | 0.06*** | 0.04*** | -0.14*** | 0.33*** | -0.27*** | -0.00 | 0.01** | -0.22*** | 1.00 | | | |
| DElectrNo (25) | -0.08*** | 0.06*** | -0.01 | -0.03*** | 0.02*** | 0.10*** | 0.06*** | 0.02*** | -0.05*** | 0.23*** | -0.14*** | 1.00 | | |
| Aunemp_ratio (26) | 0.03*** | -0.02*** | 0.01* | 0.02*** | -0.04*** | 0.10*** | -0.14*** | -0.01* | 0.04*** | -0.18*** | 0.22*** | -0.21*** | 1.00 | |
| perc_opium_act (27) | -0.03*** | -0.02*** | 0.03*** | 0.01* | -0.13*** | 0.18*** | -0.15*** | -0.06*** | -0.01** | 0.03*** | 0.09*** | 0.07*** | -0.03*** | 1.00 |

See Table 9 for variable definitions.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14: ***Spearman Rank Correlations: control variables***

*Source: own computation based on NRVA*

### B.4 Regressions

| VARIABLES | (1) bus | (2) bus | (3) se_na | (4) se_na | (5) Low_K | (6) Low_K | (7) High_K | (8) High_K | (9) agric | (10) agric | (11) agr_sub | (12) agr_sub | (13) agr_sale | (14) agr_sale |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n_wk | 0.055*** | 0.027 | 0.040 | 0.006 | 0.107*** | 0.094 | -0.067*** | -0.088*** | 0.157*** | 0.105 | 0.109 | 0.112 | 0.048 | -0.007 |
| | (0.020) | (0.025) | (0.025) | (0.068) | (0.023) | (0.067) | (0.015) | (0.030) | (0.057) | (0.097) | (0.068) | (0.096) | (0.035) | (0.064) |
| l1_n_wk | | 0.037 | | 0.045 | | 0.017 | | 0.028 | | 0.070 | | -0.005 | | 0.074 |
| | | (0.081) | | (0.077) | | (0.033) | | (0.090) | | (0.087) | | (0.068) | | |
| R-squared | 0.290 | 0.058 | 0.058 | 0.130 | 0.130 | 0.100 | 0.100 | 0.053 | 0.053 | 0.253 | 0.253 | 0.249 | 0.249 | 0.173 |
| n_wk_usa | 0.247 | 0.137 | 0.062 | -0.170 | -0.062 | -0.347 | 0.123 | 0.177 | -0.457 | -0.862 | -0.422 | -0.686 | -0.035 | -0.176 |
| | (0.258) | (0.245) | (0.519) | (0.509) | (0.422) | (0.422) | (0.329) | (0.303) | (1.028) | (1.111) | (1.049) | (1.047) | (0.513) | (0.525) |
| l1_n_wk_usa | | 0.310 | | 0.651 | | 0.802* | | -0.151 | | 1.140 | | 0.743 | | 0.397 |
| | | (0.236) | | (0.408) | | (0.424) | | (0.355) | | (0.815) | | (0.661) | | (0.437) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.099 | 0.100 | 0.053 | 0.053 | 0.253 | 0.253 | 0.248 | 0.248 | 0.172 | 0.172 |
| n_wk_ins | 0.004 | -0.001 | -0.024 | 0.019 | 0.078 | 0.119 | -0.102 | -0.100 | -0.314 | -0.352 | -0.424** | -0.423** | 0.110 | 0.071 |
| | (0.052) | (0.047) | (0.182) | (0.188) | (0.212) | (0.221) | (0.100) | (0.103) | (0.274) | (0.285) | (0.215) | (0.198) | (0.148) | (0.164) |
| l1_n_wk_ins | | 0.014 | | -0.133** | | -0.127* | | -0.006 | | 0.119 | | -0.004 | | 0.123 |
| | | (0.034) | | (0.064) | | (0.069) | | (0.045) | | (0.108) | | (0.128) | | (0.114) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.099 | 0.099 | 0.053 | 0.053 | 0.253 | 0.253 | 0.249 | 0.249 | 0.172 | 0.173 |
| n_wk_civ | 0.085*** | 0.043 | 0.033 | -0.119 | 0.143*** | 0.017 | -0.110*** | -0.136*** | 0.271*** | 0.210** | 0.210*** | 0.227* | 0.061 | -0.017 |
| | (0.023) | (0.052) | (0.033) | (0.111) | (0.022) | (0.088) | (0.019) | (0.039) | (0.057) | (0.097) | (0.043) | (0.136) | (0.043) | (0.081) |
| l1_n_wk_civ | | 0.084 | | 0.310 | | 0.257* | | 0.054 | | 0.125 | | -0.034 | | 0.159 |
| | | (0.082) | | (0.189) | | (0.155) | | (0.062) | | (0.185) | | (0.275) | | (0.191) |
| R-squared | 0.058 | 0.058 | 0.097 | 0.130 | 0.076 | 0.100 | 0.043 | 0.054 | 0.214 | 0.254 | 0.223 | 0.249 | 0.163 | 0.172 |
| n_event4 | -0.134 | -0.023 | 0.531 | 0.462 | 0.594* | 0.563 | -0.063 | -0.101 | 1.025 | 0.406 | 0.130 | -0.511 | 0.895** | 0.916** |
| | (0.560) | (0.478) | (0.370) | (0.457) | (0.325) | (0.355) | (0.358) | (0.376) | (1.123) | (1.057) | (0.917) | (0.914) | (0.426) | (0.380) |
| l1_n_event4 | | -0.236 | | 0.147 | | 0.067 | | 0.080 | | 1.325* | | 1.371** | | -0.046 |
| | | (0.467) | | (0.447) | | (0.485) | | (0.306) | | (0.786) | | (0.675) | | (0.461) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.076 | 0.100 | 0.042 | 0.053 | 0.213 | 0.253 | 0.254 | 0.248 | 0.249 | 0.163 |
| p_shockins | -0.004 | 0.013 | -0.024 | 0.007 | 0.012 | 0.052 | -0.036* | -0.045* | 0.114 | 0.047 | -0.013 | -0.085 | 0.127*** | 0.133** |
| | (0.013) | (0.016) | (0.034) | (0.047) | (0.025) | (0.034) | (0.019) | (0.027) | (0.070) | (0.087) | (0.062) | (0.079) | (0.046) | (0.055) |
| l1_p_shockins | | -0.003 | | -0.052 | | -0.047 | | -0.004 | | 0.091 | | 0.045 | | 0.046 |
| | | (0.018) | | (0.032) | | (0.030) | | (0.019) | | (0.072) | | (0.072) | | (0.054) |
| R-squared | 0.058 | 0.055 | 0.130 | 0.129 | 0.099 | 0.099 | 0.053 | 0.051 | 0.253 | 0.259 | 0.248 | 0.251 | 0.174 | 0.172 |
| Cells F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell $p$.
*** p<0.01, ** p<0.05, * p<0.1
The dependent variables are dummy variables defined at the household level specifying the type of activity of the household (see Table 1 for definitions). Conflict measures are computed at the cell level (see Table 2 for definitions). All conflict measures, except for peace_days and p_shockins, are divided by 1000. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 15: ***LPM Pooled cross-section estimates of conflict on PEA (2005-08)***

*Source: own computation based on NRVA, AWD, and GDELT*

| VARIABLES | (1) n_agrica1 | (2) n_agrica1 | (3) n_agrica2 | (4) n_agrica2 | (5) n_agrica3 | (6) n_agrica3 |
|---|---|---|---|---|---|---|
| n_wk | 2.477** | 0.953 | -0.087 | -0.147 | 0.070 | -0.021 |
| | (1.208) | (1.945) | (0.097) | (0.147) | (0.077) | (0.108) |
| l1_n_wk | | 2.034 | | 0.080 | | 0.122 |
| | | (2.238) | | (0.125) | | (0.084) |
| R-squared | 0.185 | 0.185 | 0.826 | 0.826 | 0.308 | 0.308 |
| n_wk_usa | -1.781 | -8.004 | 0.961 | 1.087 | 1.112 | 0.777 |
| | (23.862) | (22.871) | (0.899) | (0.707) | (1.138) | (1.051) |
| l1_n_wk_usa | | 17.273 | | -0.350 | | 0.928* |
| | | (15.742) | | (0.849) | | (0.511) |
| R-squared | 0.185 | 0.185 | 0.826 | 0.826 | 0.308 | 0.309 |
| n_wk_ins | 2.353 | 1.022 | 0.605** | 0.491** | 0.420** | 0.279 |
| | (5.957) | (6.037) | (0.240) | (0.231) | (0.184) | (0.174) |
| l1_n_wk_ins | | 4.084 | | 0.350** | | 0.433*** |
| | | (4.769) | | (0.138) | | (0.100) |
| R-squared | 0.185 | 0.185 | 0.826 | 0.826 | 0.308 | 0.309 |
| n_wk_civ | 3.662*** | 2.484 | -0.226*** | -0.206 | 0.065 | 0.203*** |
| | (1.271) | (1.653) | (0.050) | (0.179) | (0.065) | (0.066) |
| l1_n_wk_civ | | 2.391 | | -0.040 | | -0.281* |
| | | (3.284) | | (0.334) | | (0.164) |
| R-squared | 0.185 | 0.185 | 0.826 | 0.826 | 0.308 | 0.308 |
| n_event4 | 28.965** | 23.629 | -0.961 | -0.681 | 0.498 | 0.096 |
| | (14.409) | (15.387) | (0.663) | (0.743) | (0.620) | (0.766) |
| l1_n_event4 | | 11.369 | | -0.596 | | 0.857 |
| | | (16.246) | | (0.905) | | (0.897) |
| R-squared | 0.185 | 0.185 | 0.826 | 0.826 | 0.308 | 0.308 |
| perc_ShockInsec | 0.682 | 1.705 | 0.011 | -0.043 | -0.062 | -0.145* |
| | (2.137) | (2.161) | (0.045) | (0.055) | (0.062) | (0.076) |
| l1_perc_ShockInsec | | -1.296 | | 0.042 | | 0.072 |
| | | (1.619) | | (0.044) | | (0.055) |
| R-squared | 0.185 | 0.180 | 0.826 | 0.806 | 0.308 | 0.313 |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Cell F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 41,391 | 41,391 | 41,391 | 41,391 | 41,391 | 41,391 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell *p*.

*** p<0.01, ** p<0.05, * p<0.1

The dependent variables are count (*n_agrica*1 and *n_agrica*2) and dummy (*n_agrica*3) variables defined at the household level specifying the number of agricultural asset of the household (livestock or capital) and the ownership of land. The equation is estimated with a linear model (OLS). Conflict measures are computed at the cell level (see Table 2 for definitions). All conflict measures, except for peace_days and p_shockins, are divided by 1000. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 16: ***LPM Pooled cross-section estimates of conflict on the number of agricultural assets (2005-2008)***

*Source: own computation based on NRVA, AWD, and GDELT*

| VARIABLES | (1) bus | (2) bus | (3) se_na | (4) se_na | (5) Low_K | (6) Low_K | (7) High_K | (8) High_K | (9) agric | (10) agric | (11) agr_sub | (12) agr_sub | (13) agr_sale | (14) agr_sale |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n_conflict | 0.048** | 0.023 | 0.049 | 0.036 | 0.070* | 0.043 | -0.020 | -0.007 | 0.143* | 0.103 | 0.066 | 0.027 | 0.076 | 0.076 |
| | (0.019) | (0.016) | (0.038) | (0.040) | (0.036) | (0.033) | (0.013) | (0.013) | (0.077) | (0.080) | (0.068) | (0.064) | (0.076) | (0.085) |
| l1_n_conflict | | 0.047*** | | 0.027 | | 0.053*** | | -0.027 | | 0.078*** | | 0.077*** | | 0.001 |
| | | (0.017) | | (0.023) | | (0.010) | | (0.020) | | (0.029) | | (0.021) | | (0.025) |
| DMkt_Close | 0.005 | 0.005 | 0.000 | 0.000 | 0.002 | 0.002 | -0.002 | -0.002 | -0.035*** | -0.035*** | -0.023* | -0.023* | -0.012 | -0.012 |
| | (0.003) | (0.003) | (0.006) | (0.006) | (0.005) | (0.005) | (0.003) | (0.003) | (0.013) | (0.013) | (0.012) | (0.012) | (0.008) | (0.008) |
| IMkt | 0.004 | 0.011 | -0.052 | -0.048 | -0.006 | 0.002 | -0.046** | -0.050** | 0.022 | 0.033 | 0.072 | 0.083 | -0.050 | -0.050 |
| | (0.015) | (0.014) | (0.040) | (0.041) | (0.029) | (0.029) | (0.021) | (0.022) | (0.055) | (0.055) | (0.057) | (0.058) | (0.066) | (0.068) |
| R-squared | 0.058 | 0.059 | 0.130 | 0.130 | 0.100 | 0.100 | 0.053 | 0.053 | 0.253 | 0.254 | 0.249 | 0.249 | 0.173 | 0.173 |
| n_wk | 0.054** | 0.025 | 0.065** | 0.035 | 0.113*** | 0.101 | -0.048** | -0.065** | 0.143** | 0.085 | 0.097 | 0.097 | 0.046 | -0.012 |
| | (0.024) | (0.026) | (0.030) | (0.064) | (0.023) | (0.063) | (0.021) | (0.032) | (0.061) | (0.099) | (0.069) | (0.097) | (0.037) | (0.061) |
| l1_n_wk | | 0.037 | | 0.038 | | 0.016 | | 0.022 | | 0.075 | | -0.001 | | 0.075 |
| | | (0.026) | | (0.079) | | (0.075) | | (0.032) | | (0.089) | | (0.087) | | (0.067) |
| DMkt_Close | 0.005 | 0.005 | 0.001 | 0.001 | 0.003 | 0.003 | -0.002 | -0.002 | -0.036*** | -0.036*** | -0.021* | -0.021* | -0.014* | -0.014* |
| | (0.004) | (0.004) | (0.006) | (0.006) | (0.005) | (0.005) | (0.003) | (0.003) | (0.013) | (0.013) | (0.012) | (0.012) | (0.008) | (0.008) |
| IMkt | 0.003 | 0.006 | -0.071 | -0.068 | -0.017 | -0.015 | -0.054 | -0.052 | 0.040 | 0.046 | 0.035 | 0.035 | 0.005 | 0.011 |
| | (0.021) | (0.020) | (0.054) | (0.050) | (0.035) | (0.032) | (0.034) | (0.032) | (0.053) | (0.052) | (0.044) | (0.044) | (0.035) | (0.034) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.100 | 0.100 | 0.054 | 0.054 | 0.253 | 0.253 | 0.249 | 0.249 | 0.173 | 0.173 |
| n_wk_usa | 0.266 | 0.132 | 0.491 | 0.269 | 0.127 | -0.199 | 0.364 | 0.469 | -0.262 | -0.736 | -0.283 | -0.590 | 0.021 | -0.146 |
| | (0.286) | (0.275) | (0.621) | (0.596) | (0.494) | (0.474) | (0.371) | (0.357) | (1.003) | (1.108) | (1.073) | (1.089) | (0.550) | (0.557) |
| l1_n_wk_usa | | 0.312 | | 0.513 | | 0.756* | | -0.243 | | 1.100 | | 0.713 | | 0.387 |
| | | (0.240) | | (0.389) | | (0.411) | | (0.363) | | (0.850) | | (0.701) | | (0.434) |
| DMkt_Close | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.004 | 0.000 | 0.001 | -0.031** | -0.032** | -0.018 | -0.018 | -0.013 | -0.013 |
| | (0.004) | (0.004) | (0.006) | (0.006) | (0.005) | (0.005) | (0.003) | (0.003) | (0.013) | (0.013) | (0.012) | (0.012) | (0.009) | (0.009) |
| IMkt | -0.076 | 0.020 | -1.731** | -1.573** | -0.760 | -0.528 | -0.970*** | -1.045*** | -0.788 | -0.451 | -0.561 | -0.342 | -0.228 | -0.109 |
| | (0.368) | (0.378) | (0.705) | (0.661) | (0.573) | (0.544) | (0.314) | (0.295) | (1.147) | (1.200) | (0.854) | (0.934) | (0.678) | (0.663) |
| R-squared | 0.058 | 0.058 | 0.131 | 0.131 | 0.099 | 0.100 | 0.053 | 0.053 | 0.253 | 0.253 | 0.248 | 0.248 | 0.172 | 0.172 |
| n_wk_ins | 0.028 | 0.022 | -0.036 | 0.044 | -0.073 | -0.011 | 0.037 | 0.055 | -0.597*** | -0.700*** | -0.555** | -0.566** | -0.042 | -0.133 |
| | (0.070) | (0.062) | (0.213) | (0.232) | (0.176) | (0.194) | (0.167) | (0.173) | (0.224) | (0.224) | (0.253) | (0.238) | (0.261) | (0.247) |
| l1_n_wk_ins | | 0.010 | | -0.137** | | -0.106 | | -0.031 | | 0.176* | | 0.020 | | 0.156 |
| | | (0.034) | | (0.068) | | (0.068) | | (0.049) | | (0.103) | | (0.128) | | (0.105) |
| DMkt_Close | 0.005 | 0.005 | -0.002 | -0.002 | 0.000 | 0.000 | -0.003 | -0.003 | -0.037*** | -0.037*** | -0.021* | -0.021* | -0.016* | -0.016** |
| | (0.003) | (0.003) | (0.006) | (0.006) | (0.005) | (0.005) | (0.003) | (0.003) | (0.013) | (0.013) | (0.011) | (0.011) | (0.008) | (0.008) |
| IMkt | -0.046 | -0.041 | 0.024 | -0.046 | 0.295* | 0.242 | -0.272 | -0.288 | 0.555 | 0.644 | 0.256 | 0.266 | 0.298 | 0.378 |
| | (0.058) | (0.053) | (0.121) | (0.128) | (0.179) | (0.171) | (0.199) | (0.202) | (0.493) | (0.491) | (0.215) | (0.231) | (0.429) | (0.402) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.099 | 0.100 | 0.053 | 0.053 | 0.253 | 0.253 | 0.249 | 0.249 | 0.173 | 0.173 |
| n_wk_civ | 0.081*** | 0.040 | 0.058** | -0.094 | 0.158*** | 0.032 | -0.100*** | -0.126*** | 0.261*** | 0.200** | 0.190*** | 0.207 | 0.071 | -0.007 |
| | (0.026) | (0.048) | (0.029) | (0.092) | (0.022) | (0.074) | (0.018) | (0.035) | (0.068) | (0.091) | (0.047) | (0.129) | (0.052) | (0.081) |
| l1_n_wk_civ | | 0.084 | | 0.312* | | 0.257* | | 0.054 | | 0.125 | | -0.035 | | 0.160 |
| | | (0.082) | | (0.185) | | (0.153) | | (0.061) | | (0.186) | | (0.275) | | (0.190) |
| DMkt_Close | 0.005 | 0.005 | -0.000 | 0.000 | 0.003 | 0.003 | -0.003 | -0.003 | -0.035*** | -0.034*** | -0.021* | -0.021* | -0.013 | -0.013 |
| | (0.004) | (0.004) | (0.006) | (0.006) | (0.005) | (0.005) | (0.003) | (0.003) | (0.013) | (0.013) | (0.012) | (0.012) | (0.008) | (0.008) |
| IMkt | 0.011 | 0.010 | -0.073 | -0.074 | -0.044 | -0.045 | -0.029 | -0.029 | 0.028 | 0.027 | 0.056 | 0.057 | -0.029 | -0.030 |
| | (0.033) | (0.035) | (0.093) | (0.086) | (0.068) | (0.062) | (0.031) | (0.030) | (0.074) | (0.072) | (0.062) | (0.063) | (0.037) | (0.036) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.100 | 0.100 | 0.054 | 0.054 | 0.254 | 0.254 | 0.249 | 0.249 | 0.172 | 0.173 |
| n_event4 | -0.145 | 0.014 | 0.517 | 0.500 | 0.582* | 0.598* | -0.065 | -0.098 | 1.015 | 0.409 | 0.113 | -0.490 | 0.901** | 0.898** |
| | (0.562) | (0.459) | (0.371) | (0.434) | (0.330) | (0.334) | (0.357) | (0.375) | (1.120) | (1.062) | (0.918) | (0.926) | (0.427) | (0.380) |
| l1_n_event4 | | -0.345 | | 0.037 | | -0.035 | | 0.072 | | 1.318* | | 1.311* | | 0.007 |
| | | (0.479) | | (0.437) | | (0.418) | | (0.284) | | (0.780) | | (0.702) | | (0.474) |
| DMkt_Close | 0.008** | 0.008** | 0.003 | 0.003 | 0.006 | 0.006 | -0.003 | -0.004 | -0.030** | -0.032** | -0.016 | -0.018 | -0.014* | -0.014* |
| | (0.004) | (0.004) | (0.007) | (0.007) | (0.006) | (0.006) | (0.004) | (0.004) | (0.014) | (0.014) | (0.013) | (0.013) | (0.009) | (0.009) |
| IMkt | -0.180 | -0.219 | -0.227 | -0.222 | -0.202 | -0.206 | -0.025 | -0.016 | -0.164 | -0.016 | -0.269 | -0.121 | 0.104 | 0.105 |
| | (0.119) | (0.136) | (0.210) | (0.211) | (0.221) | (0.201) | (0.155) | (0.145) | (0.291) | (0.275) | (0.239) | (0.251) | (0.145) | (0.148) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.100 | 0.100 | 0.053 | 0.053 | 0.253 | 0.254 | 0.248 | 0.249 | 0.173 | 0.173 |
| p_shockins | -0.000 | 0.016 | -0.053 | -0.029 | -0.017 | 0.015 | -0.036** | -0.044* | 0.132* | 0.090 | -0.000 | -0.049 | 0.132** | 0.139** |
| | (0.014) | (0.016) | (0.033) | (0.047) | (0.026) | (0.039) | (0.017) | (0.025) | (0.079) | (0.096) | (0.071) | (0.092) | (0.053) | (0.061) |
| l1_p_shockins | | -0.003 | | -0.044 | | -0.039 | | -0.005 | | 0.082 | | 0.038 | | 0.044 |
| | | (0.019) | | (0.033) | | (0.031) | | (0.019) | | (0.071) | | (0.072) | | (0.053) |
| DMkt_Close | 0.006 | 0.003 | -0.008 | -0.006 | -0.004 | -0.004 | -0.003 | -0.003 | -0.033** | -0.022 | -0.018 | -0.008 | -0.015* | -0.014 |
| | (0.003) | (0.004) | (0.006) | (0.006) | (0.005) | (0.006) | (0.003) | (0.003) | (0.013) | (0.014) | (0.012) | (0.013) | (0.008) | (0.009) |
| IMkt | -0.011 | -0.007 | 0.083*** | 0.094*** | 0.083*** | 0.097** | -0.000 | -0.004 | -0.050 | -0.112 | -0.036 | -0.094 | -0.015 | -0.018 |
| | (0.016) | (0.018) | (0.032) | (0.034) | (0.032) | (0.038) | (0.019) | (0.023) | (0.082) | (0.091) | (0.068) | (0.074) | (0.054) | (0.064) |
| R-squared | 0.058 | 0.055 | 0.130 | 0.129 | 0.100 | 0.099 | 0.053 | 0.051 | 0.254 | 0.259 | 0.248 | 0.251 | 0.174 | 0.172 |
| peace_days | -0.048** | -0.015 | -0.047 | -0.015 | -0.059 | -0.027 | 0.012 | 0.013 | -0.109 | -0.084 | -0.040 | -0.006 | -0.069 | -0.078 |
| | (0.020) | (0.020) | (0.034) | (0.036) | (0.040) | (0.034) | (0.021) | (0.013) | (0.092) | (0.089) | (0.086) | (0.079) | (0.060) | (0.067) |
| l1_peace_days | | -0.054*** | | -0.052 | | -0.051*** | | -0.001 | | -0.042 | | -0.056* | | 0.014 |
| | | (0.020) | | (0.042) | | (0.016) | | (0.034) | | (0.043) | | (0.031) | | (0.028) |
| DMkt_Close | 0.004 | 0.010 | -0.039 | -0.033 | 0.014 | 0.020 | -0.053** | -0.052** | 0.019 | 0.024 | 0.059 | 0.065 | -0.040 | -0.041 |
| | (0.014) | (0.014) | (0.036) | (0.035) | (0.030) | (0.030) | (0.025) | (0.023) | (0.063) | (0.062) | (0.059) | (0.059) | (0.050) | (0.051) |
| IMkt | 0.001 | -0.005 | 0.039 | 0.033 | -0.012 | -0.018 | 0.052** | 0.052** | -0.056 | -0.061 | -0.084 | -0.090 | 0.028 | 0.029 |
| | (0.016) | (0.015) | (0.037) | (0.037) | (0.031) | (0.032) | (0.026) | (0.024) | (0.066) | (0.065) | (0.062) | (0.062) | (0.053) | (0.055) |
| R-squared | 0.058 | 0.059 | 0.130 | 0.130 | 0.100 | 0.100 | 0.053 | 0.053 | 0.253 | 0.253 | 0.249 | 0.249 | 0.173 | 0.173 |
| Cells F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell $p$.
*** p<0.01, ** p<0.05, * p<0.1
The dependent variables are dummy variables defined at the household level specifying the type of activity of the household (see Table 1 for definitions). Conflict measures are computed at the cell level (see Table 2 for definitions). All conflict measures, except for peace_days and p_shockins, are divided by 1000. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 17: ***LPM pooled cross-section estimates of conflict effect on PEA (2005-2008).*** *Interaction between conflict measures and the distance from the market.*



*Source: own computation based on NRVA, AWD, and GDELT*

| VARIABLES | (1) bus | (2) bus | (3) se_na | (4) se_na | (5) Low_K | (6) Low_K | (7) High_K | (8) High_K | (9) agric | (10) agric | (11) agr_sub | (12) agr_sub | (13) agr_sale | (14) agr_sale |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n_conflict | 0.049*** | 0.027** | 0.032 | 0.019 | 0.067** | 0.043* | -0.035** | -0.024** | 0.140** | 0.106* | 0.093* | 0.060 | 0.046 | 0.046 |
| | (0.015) | (0.012) | (0.023) | (0.024) | (0.028) | (0.025) | (0.014) | (0.011) | (0.060) | (0.063) | (0.050) | (0.047) | (0.052) | (0.059) |
| l1_n_conflict | | 0.047*** | | 0.029 | | 0.053*** | | -0.024 | | 0.075** | | 0.074*** | | 0.001 |
| | | (0.018) | | (0.024) | | (0.011) | | (0.020) | | (0.030) | | (0.021) | | (0.024) |
| RoadKm | -0.000 | -0.000 | -0.000 | -0.000 | 0.000 | 0.000 | -0.000** | -0.000** | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| IRoad | 0.001 | 0.001 | -0.004 | -0.004 | 0.001 | 0.001 | -0.005* | -0.005 | 0.021 | 0.020 | -0.001 | -0.001 | 0.022** | 0.022** |
| | (0.003) | (0.004) | (0.007) | (0.008) | (0.005) | (0.005) | (0.003) | (0.003) | (0.015) | (0.015) | (0.014) | (0.014) | (0.009) | (0.009) |
| R-squared | 0.058 | 0.059 | 0.130 | 0.130 | 0.100 | 0.100 | 0.053 | 0.053 | 0.254 | 0.254 | 0.249 | 0.249 | 0.173 | 0.173 |
| n_wk | 0.053*** | 0.028 | 0.037 | 0.007 | 0.104*** | 0.095 | -0.067*** | -0.089*** | 0.149** | 0.109 | 0.109* | 0.113 | 0.040 | -0.004 |
| | (0.020) | (0.025) | (0.025) | (0.069) | (0.023) | (0.068) | (0.015) | (0.031) | (0.059) | (0.097) | (0.063) | (0.098) | (0.032) | (0.064) |
| l1_n_wk | | 0.034 | | 0.041 | | 0.012 | | 0.030 | | 0.055 | | -0.005 | | 0.060 |
| | | (0.027) | | (0.083) | | (0.078) | | (0.034) | | (0.090) | | (0.089) | | (0.067) |
| RoadKm | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000** | -0.000** | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| IRoad | 0.003 | 0.002 | 0.005 | 0.004 | 0.006 | 0.006 | -0.001 | -0.002 | 0.016 | 0.015 | 0.001 | 0.001 | 0.016 | 0.015 |
| | (0.004) | (0.004) | (0.008) | (0.008) | (0.006) | (0.006) | (0.003) | (0.004) | (0.015) | (0.016) | (0.014) | (0.015) | (0.013) | (0.013) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.100 | 0.100 | 0.053 | 0.053 | 0.253 | 0.254 | 0.249 | 0.249 | 0.173 | 0.173 |
| n_wk_usa | 0.275 | 0.167 | 0.091 | -0.132 | -0.033 | -0.308 | 0.125 | 0.176 | -0.648 | -1.003 | -0.432 | -0.681 | -0.216 | -0.322 |
| | (0.255) | (0.244) | (0.523) | (0.511) | (0.429) | (0.430) | (0.329) | (0.303) | (1.081) | (1.136) | (1.049) | (1.043) | (0.488) | (0.510) |
| l1_n_wk_usa | | 0.326 | | 0.671* | | 0.823** | | -0.152 | | 1.064 | | 0.746 | | 0.318 |
| | | (0.232) | | (0.404) | | (0.413) | | (0.360) | | (0.855) | | (0.669) | | (0.444) |
| RoadKm | -0.000 | -0.000 | -0.000 | -0.000 | 0.000 | 0.000 | -0.000*** | -0.000*** | 0.001 | 0.001 | 0.001 | 0.001 | -0.000 | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| IRoad | -0.017 | -0.022 | -0.018 | -0.027 | -0.017 | -0.028 | -0.001 | 0.001 | 0.117 | 0.103 | 0.006 | -0.004 | 0.111 | 0.107 |
| | (0.013) | (0.014) | (0.035) | (0.034) | (0.033) | (0.029) | (0.020) | (0.021) | (0.072) | (0.076) | (0.054) | (0.059) | (0.086) | (0.087) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.099 | 0.100 | 0.053 | 0.053 | 0.253 | 0.253 | 0.248 | 0.248 | 0.173 | 0.173 |
| n_wk_ins | -0.007 | -0.008 | -0.052 | -0.011 | 0.051 | 0.091 | -0.103 | -0.102 | -0.342 | -0.365 | -0.404* | -0.408** | 0.062 | 0.042 |
| | (0.050) | (0.046) | (0.183) | (0.186) | (0.223) | (0.226) | (0.103) | (0.104) | (0.314) | (0.310) | (0.220) | (0.205) | (0.166) | (0.175) |
| l1_n_wk_ins | | 0.003 | | -0.176** | | -0.168*** | | -0.008 | | 0.100 | | 0.018 | | 0.082 |
| | | (0.037) | | (0.069) | | (0.061) | | (0.051) | | (0.129) | | (0.138) | | (0.093) |
| RoadKm | -0.000 | -0.000 | -0.000 | -0.000 | 0.000 | 0.000 | -0.000*** | -0.000*** | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| IRoad | 0.008 | 0.008 | 0.020 | 0.031** | 0.019 | 0.030*** | 0.001 | 0.001 | 0.020 | 0.013 | -0.014 | -0.016 | 0.034 | 0.029 |
| | (0.007) | (0.008) | (0.018) | (0.015) | (0.013) | (0.011) | (0.009) | (0.010) | (0.041) | (0.043) | (0.013) | (0.017) | (0.037) | (0.035) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.099 | 0.100 | 0.053 | 0.053 | 0.253 | 0.253 | 0.249 | 0.249 | 0.173 | 0.173 |
| n_wk_civ | 0.082*** | 0.041 | 0.030 | -0.123 | 0.138*** | 0.011 | -0.108*** | -0.134*** | 0.254*** | 0.189** | 0.199*** | 0.213 | 0.056 | -0.024 |
| | (0.023) | (0.052) | (0.032) | (0.110) | (0.023) | (0.088) | (0.019) | (0.038) | (0.054) | (0.096) | (0.042) | (0.138) | (0.039) | (0.083) |
| l1_n_wk_civ | | 0.085 | | 0.312* | | 0.259* | | 0.053 | | 0.133 | | -0.029 | | 0.162 |
| | | (0.082) | | (0.188) | | (0.154) | | (0.062) | | (0.185) | | (0.276) | | (0.191) |
| RoadKm | -0.000 | -0.000 | -0.000 | -0.000 | 0.000 | -0.000 | -0.000** | -0.000** | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| IRoad | 0.007 | 0.007 | 0.010 | 0.011 | 0.015 | 0.015 | -0.005 | -0.005 | 0.052*** | 0.052*** | 0.034** | 0.034** | 0.018 | 0.018 |
| | (0.008) | (0.008) | (0.013) | (0.013) | (0.010) | (0.010) | (0.006) | (0.006) | (0.018) | (0.018) | (0.017) | (0.017) | (0.017) | (0.017) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.100 | 0.100 | 0.054 | 0.054 | 0.254 | 0.254 | 0.249 | 0.249 | 0.173 | 0.173 |
| n_event4 | -0.131 | -0.022 | 0.533 | 0.463 | 0.595* | 0.563 | -0.063 | -0.101 | 1.021 | 0.405 | 0.131 | -0.510 | 0.890** | 0.915** |
| | (0.563) | (0.481) | (0.370) | (0.457) | (0.324) | (0.355) | (0.359) | (0.377) | (1.122) | (1.057) | (0.912) | (0.913) | (0.428) | (0.380) |
| l1_n_event4 | | -0.232 | | 0.151 | | 0.069 | | 0.082 | | 1.321* | | 1.373** | | -0.052 |
| | | (0.467) | | (0.444) | | (0.482) | | (0.306) | | (0.790) | | (0.672) | | (0.468) |
| RoadKm | 0.000 | 0.000 | -0.000 | -0.000 | 0.000 | 0.000 | -0.000** | -0.000** | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| IRoad | -0.017* | -0.017* | -0.012 | -0.013 | -0.007 | -0.008 | -0.005 | -0.005 | 0.020 | 0.018 | -0.007 | -0.009 | 0.027 | 0.027 |
| | (0.010) | (0.010) | (0.021) | (0.021) | (0.012) | (0.012) | (0.015) | (0.015) | (0.048) | (0.049) | (0.043) | (0.043) | (0.040) | (0.040) |
| R-squared | 0.058 | 0.058 | 0.130 | 0.130 | 0.100 | 0.100 | 0.053 | 0.053 | 0.253 | 0.254 | 0.248 | 0.249 | 0.173 | 0.173 |
| p_shockins | -0.004 | 0.014 | -0.027 | 0.008 | 0.013 | 0.057 | -0.040** | -0.048* | 0.101 | 0.033 | -0.023 | -0.097 | 0.125*** | 0.130** |
| | (0.014) | (0.016) | (0.034) | (0.047) | (0.026) | (0.035) | (0.019) | (0.027) | (0.071) | (0.089) | (0.062) | (0.080) | (0.046) | (0.054) |
| l1_p_shockins | | -0.003 | | -0.052 | | -0.049 | | -0.003 | | 0.095 | | 0.049 | | 0.046 |
| | | (0.018) | | (0.032) | | (0.030) | | (0.019) | | (0.072) | | (0.073) | | (0.054) |
| RoadKm | -0.000 | -0.000** | -0.000 | -0.001 | 0.000 | 0.000 | -0.001*** | -0.001*** | 0.001 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| IRoad | -0.000 | -0.000 | 0.001 | -0.000 | -0.000 | -0.001* | 0.001 | 0.001 | 0.004** | 0.004*** | 0.003 | 0.003 | 0.001 | 0.001 |
| | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| R-squared | 0.058 | 0.055 | 0.130 | 0.129 | 0.099 | 0.099 | 0.053 | 0.051 | 0.254 | 0.259 | 0.248 | 0.251 | 0.174 | 0.172 |
| peace_days | -0.048*** | -0.016 | -0.039 | -0.007 | -0.063* | -0.034 | 0.025 | 0.027* | -0.120 | -0.098 | -0.069 | -0.039 | -0.051 | -0.059 |
| | (0.017) | (0.017) | (0.025) | (0.027) | (0.034) | (0.028) | (0.023) | (0.016) | (0.076) | (0.072) | (0.071) | (0.063) | (0.048) | (0.054) |
| l1_peace_days | | -0.054*** | | -0.055 | | -0.050*** | | -0.004 | | -0.038 | | -0.051 | | 0.013 |
| | | (0.020) | | (0.042) | | (0.017) | | (0.035) | | (0.045) | | (0.032) | | (0.027) |
| RoadKm | -0.004 | 0.014 | -0.027 | 0.008 | 0.013 | 0.057 | -0.040** | -0.048* | 0.101 | 0.033 | -0.023 | -0.097 | 0.125*** | 0.130** |
| | (0.014) | (0.016) | (0.034) | (0.047) | (0.026) | (0.035) | (0.019) | (0.027) | (0.071) | (0.089) | (0.062) | (0.080) | (0.046) | (0.054) |
| IRoad | -0.000 | -0.000 | 0.004 | 0.004 | 0.001 | 0.001 | 0.003 | 0.003 | -0.007 | -0.007 | 0.005 | 0.005 | -0.013* | -0.013* |
| | (0.002) | (0.002) | (0.005) | (0.005) | (0.004) | (0.004) | (0.002) | (0.002) | (0.013) | (0.013) | (0.010) | (0.010) | (0.007) | (0.007) |
| R-squared | 0.058 | 0.059 | 0.130 | 0.130 | 0.100 | 0.100 | 0.053 | 0.053 | 0.253 | 0.253 | 0.248 | 0.249 | 0.173 | 0.173 |
| Cells F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | | | | | | | | | | | | | | |
| Observations | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell $p$.

*** p<0.01, ** p<0.05, * p<0.1

The dependent variables are dummy variables defined at the household level specifying the type of activity of the household (see Table 1 for definitions). Conflict measures are computed at the cell level (see Table 2 for definitions). All conflict measures, except for peace_days and p_shockins, are divided by 1000. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 18: ***LPM pooled cross-section estimates of conflict effect on PEA (2005-2008).*** *Interaction between conflict measures and distance from the main road.*



*Source: own computation based on NRVA, AWD, and GDELT*

| VARIABLES | (1) bus | (2) bus | (3) se_na | (4) se_na | (5) Low_K | (6) Low_K | (7) High_K | (8) High_K | (9) agric | (10) agric | (11) agr_sub | (12) agr_sub | (13) agr_sale | (14) agr_sale |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n_conflict | 0.070*** | 0.042*** | -0.044* | -0.016 | 0.011 | 0.027 | -0.048** | -0.040*** | 0.038 | 0.032 | -0.124*** | -0.074** | 0.025 | 0.008 |
| | (0.016) | (0.014) | (0.023) | (0.022) | (0.029) | (0.024) | (0.021) | (0.014) | (0.097) | (0.082) | (0.042) | (0.037) | (0.059) | (0.063) |
| l1_n_conflict | | 0.060*** | | -0.062*** | | -0.036 | | -0.018 | | 0.013 | | -0.110 | | 0.036 |
| | | (0.018) | | (0.018) | | (0.022) | | (0.023) | | (0.046) | | (0.067) | | (0.023) |
| R-squared | 0.076 | 0.077 | 0.118 | 0.119 | 0.116 | 0.116 | 0.050 | 0.050 | 0.289 | 0.289 | 0.287 | 0.287 | 0.178 | 0.178 |
| n_wk | 0.080*** | 0.004 | -0.077*** | -0.059 | 0.001 | 0.030 | -0.071*** | -0.092** | -0.004 | -0.158* | -0.208*** | -0.237*** | 0.010 | -0.144* |
| | (0.022) | (0.036) | (0.027) | (0.061) | (0.032) | (0.059) | (0.023) | (0.041) | (0.077) | (0.093) | (0.056) | (0.088) | (0.039) | (0.075) |
| l1_n_wk | | 0.102** | | -0.024 | | -0.039 | | 0.029 | | 0.206*** | | 0.039 | | 0.206** |
| | | (0.040) | | (0.069) | | (0.053) | | (0.044) | | (0.072) | | (0.111) | | (0.082) |
| R-squared | 0.076 | 0.077 | 0.118 | 0.118 | 0.116 | 0.116 | 0.050 | 0.050 | 0.288 | 0.289 | 0.287 | 0.287 | 0.178 | 0.178 |
| n_wk_usa | 0.328 | 0.094 | -0.008 | 0.047 | -0.183 | -0.125 | 0.096 | 0.066 | 0.816 | 0.387 | 0.215 | 0.204 | -0.731 | -0.817 |
| | (0.264) | (0.251) | (0.617) | (0.569) | (0.494) | (0.465) | (0.477) | (0.397) | (0.914) | (0.793) | (0.693) | (0.768) | (0.804) | (0.873) |
| l1_n_wk_usa | | 0.659** | | -0.154 | | -0.163 | | 0.084 | | 1.213 | | 0.031 | | 0.243 |
| | | (0.263) | | (0.504) | | (0.221) | | (0.468) | | (0.805) | | (1.348) | | (0.603) |
| R-squared | 0.076 | 0.076 | 0.118 | 0.118 | 0.116 | 0.116 | 0.049 | 0.049 | 0.289 | 0.289 | 0.286 | 0.286 | 0.178 | 0.178 |
| n_wk_ins | 0.002 | -0.022 | -0.134 | -0.089 | -0.095 | -0.057 | -0.087 | -0.080 | 0.462* | 0.348 | -0.123 | -0.166 | -0.171 | -0.270 |
| | (0.100) | (0.100) | (0.201) | (0.193) | (0.201) | (0.203) | (0.097) | (0.093) | (0.256) | (0.247) | (0.227) | (0.219) | (0.255) | (0.265) |
| l1_n_wk_ins | | 0.072* | | -0.137 | | -0.117* | | -0.020 | | 0.352*** | | 0.131 | | 0.306*** |
| | | (0.039) | | (0.121) | | (0.065) | | (0.077) | | (0.091) | | (0.117) | | (0.093) |
| R-squared | 0.076 | 0.076 | 0.118 | 0.118 | 0.116 | 0.116 | 0.049 | 0.049 | 0.289 | 0.289 | 0.286 | 0.286 | 0.178 | 0.178 |
| n_wk_civ | 0.118*** | 0.012 | -0.139*** | -0.189** | -0.007 | -0.077 | -0.115*** | -0.100 | -0.055 | -0.144* | -0.338*** | -0.317* | 0.073 | -0.046 |
| | (0.023) | (0.038) | (0.038) | (0.093) | (0.035) | (0.066) | (0.022) | (0.062) | (0.068) | (0.083) | (0.053) | (0.168) | (0.046) | (0.123) |
| l1_n_wk_civ | | 0.217*** | | 0.100 | | 0.143 | | -0.030 | | 0.181 | | -0.042 | | 0.244 |
| | | (0.071) | | (0.157) | | (0.123) | | (0.105) | | (0.214) | | (0.322) | | (0.281) |
| R-squared | 0.076 | 0.077 | 0.119 | 0.119 | 0.116 | 0.116 | 0.050 | 0.050 | 0.289 | 0.289 | 0.287 | 0.287 | 0.178 | 0.178 |
| n_event4 | 0.480 | 0.547 | 0.210 | 0.109 | 0.287 | 0.313 | -0.049 | -0.280 | 0.134 | -0.391 | -0.999 | -1.274 | 0.240 | 0.220 |
| | (0.468) | (0.438) | (0.514) | (0.520) | (0.361) | (0.448) | (0.466) | (0.553) | (0.690) | (0.712) | (0.913) | (0.842) | (0.515) | (0.537) |
| l1_n_event4 | | -0.144 | | 0.215 | | -0.056 | | 0.496 | | 1.124 | | 0.588 | | 0.043 |
| | | (0.496) | | (0.447) | | (0.437) | | (0.607) | | (0.936) | | (0.852) | | (0.732) |
| R-squared | 0.076 | 0.076 | 0.118 | 0.118 | 0.116 | 0.116 | 0.049 | 0.050 | 0.288 | 0.289 | 0.286 | 0.287 | 0.178 | 0.178 |
| perc_ShockInsec | -0.018 | -0.002 | -0.068* | -0.041 | -0.001 | 0.071** | -0.071** | -0.117*** | 0.070 | 0.001 | -0.036 | -0.092 | 0.158** | 0.212*** |
| | (0.018) | (0.023) | (0.036) | (0.051) | (0.028) | (0.034) | (0.029) | (0.040) | (0.074) | (0.089) | (0.080) | (0.105) | (0.066) | (0.074) |
| l1_perc_ShockInsec_ | | -0.015 | | -0.042 | | -0.072** | | 0.025 | | 0.149*** | | 0.160** | | 0.073 |
| | | (0.028) | | (0.034) | | (0.031) | | (0.028) | | (0.055) | | (0.064) | | (0.082) |
| R-squared | 0.076 | 0.066 | 0.119 | 0.116 | 0.116 | 0.113 | 0.050 | 0.050 | 0.289 | 0.291 | 0.286 | 0.291 | 0.179 | 0.179 |
| peace_days | -0.075*** | -0.035* | 0.035 | 0.009 | 0.004 | -0.025 | 0.027 | 0.032 | -0.064 | -0.035 | 0.114* | 0.093** | -0.031 | -0.027 |
| | (0.019) | (0.018) | (0.027) | (0.026) | (0.031) | (0.030) | (0.034) | (0.020) | (0.095) | (0.077) | (0.065) | (0.046) | (0.058) | (0.065) |
| l1_peace_days | | -0.068*** | | 0.045 | | 0.049** | | -0.009 | | -0.050 | | 0.036 | | -0.006 |
| | | (0.020) | | (0.035) | | (0.022) | | (0.033) | | (0.059) | | (0.097) | | (0.043) |
| R-squared | 0.076 | 0.077 | 0.118 | 0.118 | 0.116 | 0.116 | 0.049 | 0.049 | 0.289 | 0.289 | 0.287 | 0.287 | 0.178 | 0.178 |
| Cells F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 40,623 | 40,623 | 40,623 | 40,623 | 40,623 | 40,623 | 40,623 | 40,623 | 40,623 | 40,623 | 40,623 | 40,623 | 40,623 | 40,623 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell $p$.
*** p<0.01, ** p<0.05, * p<0.1
The dependent variables are dummy variables defined at the household level specifying the type of activity of the household (see Table 1 for definitions). Conflict measures are computed at the cell level (see Table 2 for definitions). All conflict measures, except for peace_days and p_shockins, are divided by 1000. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 19: ***LPM pooled cross-section estimates of conflict effect on PEA (2005-2008).*** *A households is defined as entrepreneurial when a PEA contributes to the household income at any level of income.*

*Source: own computation based on NRVA, AWD, and GDELT*

| VARIABLES | (1) bus | (2) bus | (3) se_na | (4) se_na | (5) Low_K | (6) Low_K | (7) High_K | (8) High_K | (9) agric | (10) agric | (11) agr_sub | (12) agr_sub | (13) agr_sale | (14) agr_sale |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| nn_noconflict | 0.176** | 0.161*** | 0.036 | 0.036 | 0.001 | 0.003 | 0.035 | 0.033 | 0.430** | 0.421** | 0.220 | 0.210 | 0.210 | 0.211* |
| | (0.089) | (0.053) | (0.117) | (0.112) | (0.155) | (0.153) | (0.099) | (0.097) | (0.188) | (0.182) | (0.193) | (0.180) | (0.135) | (0.127) |
| l1_nn_noconflict | | 0.144*** | | 0.008 | | -0.014 | | 0.021 | | 0.090 | | 0.091 | | -0.002 |
| | | (0.028) | | (0.053) | | (0.049) | | (0.039) | | (0.173) | | (0.112) | | (0.080) |
| R-squared | 0.058 | 0.059 | 0.130 | 0.130 | 0.099 | 0.099 | 0.053 | 0.053 | 0.253 | 0.254 | 0.248 | 0.249 | 0.173 | 0.173 |
| Cells F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell *p*.
*** p<0.01, ** p<0.05, * p<0.1
The dependent variables are dummy variables defined at the household level specifying the type of activity of the household (see Table 1 for definitions). The no-conflict measures is computed at the level of the cell and divided by 1000. It mainly accounts for events recorded by the US Army in the war diaries, and which do not involve firing. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 20: ***LPM pooled cross-section estimates of the presence of troops on PEA (2005-2008).***

*Source: own computation based on NRVA and AWD*

| VARIABLES | (1) bus | (2) se_na | (3) Low_K | (4) High_K | (5) agric | (6) agr_sub | (7) agr_sale |
|---|---|---|---|---|---|---|---|
| ncum_conf | 0.0566 | 0.249** | 0.355*** | -0.106* | 0.485*** | 0.434*** | 0.0509 |
| | (0.0868) | (0.122) | (0.0783) | (0.0622) | (0.150) | (0.130) | (0.0793) |
| Constant | 0.0669*** | 0.304*** | 0.179*** | 0.125*** | 0.0430 | 0.0744 | -0.0314 |
| | (0.0196) | (0.0393) | (0.0335) | (0.0281) | (0.0667) | (0.0611) | (0.0315) |
| R-squared | 0.058 | 0.131 | 0.101 | 0.053 | 0.254 | 0.249 | 0.172 |
| Cells F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 | 40,672 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell *p*.
*** p<0.01, ** p<0.05, * p<0.1
The dependent variables are dummy variables defined at the household level specifying the type of activity of the household (see Table 1 for definitions). The conflict measure is the sum of material events in the same are from 2001 until the year before the household is surveyed. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 21: ***OLS pooled cross-section estimates of cumulative conflict (since 2001) on PEA (2005-2008)***

*Source: own computation based on NRVA and GDELT*

| VARIABLES | (1)<br>bus | (2)<br>bus | (3)<br>agric | (4)<br>agric | (5)<br>se_na | (6)<br>se_na |
|---|---|---|---|---|---|---|
| n_event4 | 0.076 | 0.087 | 0.191 | 0.497 | 0.540 | 0.131 |
| | (0.357) | (0.309) | (0.748) | (0.782) | (0.357) | (0.433) |
| l1_n_event4 | | -0.025 | | -0.709 | | 0.946** |
| | | (0.250) | | (0.603) | | (0.380) |
| R-squared | 0.046 | 0.049 | 0.187 | 0.227 | 0.091 | 0.107 |
| perc_ShockInsec | -0.004 | | 0.086 | | -0.032 | |
| | (0.011) | | (0.059) | | (0.028) | |
| R-squared | 0.046 | | 0.187 | | 0.091 | |
| Cells F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 53,941 | 53,941 | 53,941 | 53,941 | 53,941 | 53,941 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell $p$.

*** p<0.01, ** p<0.05, * p<0.1

The dependent variables are dummy variables defined at the household level specifying the type of activity of the household (see Table 1 for definitions). Conflict measures are computed at the cell level (see Table 2 for definitions). All conflict measures, except for peace_days and p_shockins, are divided by 1000. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 22: ***LPM pooled cross-section estimates of conflict effect on PEA (2003-2008).***

*Source: own computation based on NRVA and GDELT*

| VARIABLES | (1)<br>n_agrica1 | (2)<br>n_agrica1 | (3)<br>n_agrica3 | (4)<br>n_agrica3 |
|---|---|---|---|---|
| n_event4 | 17.002 | 22.788 | -0.615 | 0.255 |
| | (16.632) | (18.588) | (0.912) | (0.940) |
| l1_n_event4 | | -13.589 | | -2.043** |
| | | (13.069) | | (0.864) |
| R-squared | 0.130 | 0.130 | 0.237 | 0.237 |
| perc_ShockInsec | 1.357 | | -0.044 | |
| | (1.826) | | (0.057) | |
| R-squared | 0.130 | | 0.237 | |
| Cells F.E. | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes |
| Observations | 55,752 | 55,752 | 55,752 | 55,752 |

Notes: Cluster robust standard errors in parentheses, the cluster is the cell $p$.

*** p<0.01, ** p<0.05, * p<0.1

The dependent variables are count ($n\_agrica1$ and $n\_agrica2$) and dummy ($n\_agrica3$) variables defined at the household level specifying the number of agricultural asset of the household (livestock or capital) and the ownership of land. The equation is estimated with a linear model (OLS). Conflict measures are computed at the cell level (see Table 2 for definitions). All conflict measures, except for peace_days and p_shockins, are divided by 1000. All equations are estimated with the control variables described in Tab. 9, year and cell fixed effects.

Table 23: ***LPM pooled cross-section estimates of conflict effect on agricultural assets (2003-2008).***

*Source: own computation based on NRVA and GDELT*

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