# Income and Livelihoods in the War in Afghanistan

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**Abstract**

We explore the impact of the insurgency and military deployment on the livelihoods of local communities in Afghanistan. We use monthly wages and commodity prices at the provincial level over the period 2003-2009 and look for their response to conflict events and ISAF deployment. Overall we find that prices are more sensitive to deployment than to attacks. Commodity prices are not significantly affected by insurgent violence, consistent with coping strategies already in place. On the opposite, military deployment is associated with an increase in the levels of wages and commodity prices, as ISAF is a new source of uncertainty.

*Keywords:* Afghanistan, Consequences of Conflict, Coping Strategies, Military Deployment

## 1 INTRODUCTION

The coverage of the war in Afghanistan in the media and in academic discussions has been primarily driven by the huge number of NATO and civilian casualties and the deterioration of the level of security in most part of the country. Reports and analyses

have mainly focused on the factors affecting the rise in Talibans's activities across the countries and ISAF's approaches to counter-insurgency. However, quantitative analyses have never explicitly dealt with the impact that both the insurgency and the international military deployment could have on the economic conditions of the local communities. We assume that as a result of physical insecurity and the interruption of local markets, Afghans may decide to employ different income-generating strategies to cope with the conflict shock. We further assume that this will be reflected in local market prices of commodities and, thus, we want to investigate whether prices respond differently to different type of conflict events.

The literature on coping strategies in a state of war suggests that assets play an important role in reducing the variability of consumption in environments characterized by income risks (Bundervoet, 2010). Prices of goods directly affect asset values, capital gains, and decisions on holding and selling inventories.[1] Prices are also a critical determinant of the overall level of revenues across the provinces. This means that changes in the level of prices can have adverse consequences for rural poverty. With this in mind, we put together a dataset on monthly market prices of wheat, sheep, diesel and the wage of one day of unskilled labour as they can capture the returns from engaging in their respective activities and thus proxy the different choices of livelihoods of people. Almost a half of all Afghan households depends on income from agriculture where wheat is the main crop. One in every four of the population depends on livestock thus the price of one year old female sheep is used as an indicator of the purchasing capacity of those households that are mainly reliant on income from livestock (pastoralism). One third of the population depends on non-farm labour thus

the wage of one day of unskilled labour proxies for the purchasing capacity of households relying on casual labour as main income. Finally, diesel is a main commodity and it is held as an asset, together with wheat and meat stocks.

One of the coping strategy adopted in Afghanistan entails having members of the family involved in different types of trades, as a matter of diversifying income (Goodhand, 2005). This highlights the use of social networks as a way of coping with adverse shocks. We argue that given that Afghanistan has been in a conflict for almost four decades, there must be coping strategies in place and therefore little or no response to attacks and violence between insurgent factions. By using wages and commodity prices, we can differentiate the effects of conflict on existing markets between employment and exchange i.e. the buying and selling of commodities (see e.g. Justino, 2009). Moreover, by distinguishing between violence and ISAF casualties we find a way to circumvent the coping strategies argument. ISAF deployment is a relative new phenomenon in this conflict and its strategies change continually; this allows us to disentangle the response of old coping strategies to a new type of event.

We interpret the type of conflict events in terms of perceptions they create. Jones (2011) outlines that one of the main reasons for insurgents to consider reintegration are the perceptions on who is winning the war. Perceptions can drive the prices of commodities due to the haggling processes inherent to Afghan society. We consider the effects of levels of attacks and an indicator of their occurrence. The latter helps us identify the uncertainty effect due to a simple change from peace to violence and the former the effect of each additional attack. We also explore the effect of military deployment on market prices. We use hostile and non-hostile casualties. Increases in

hostile casualties would carry the perception of increasing violence and that ISAF is losing the war, which entails uncertainty about the rule of law. Non-hostile causalities indicates the deployment of NATO troops without necessarily indicating the occurrence of fighting. In fact, we expect that local procurement of goods and services will contribute to an increase of both commodity prices and wages.

While a number of factors influence domestic food prices, e.g., the seasonality of production within a year and adverse weather conditions, we expect insecurity to play a big role in determining price levels. This is important given that high food prices have a negative impact on the livelihood of people. Significant and frequent changes in the direction and magnitude of food prices make both smallholder farmers and poor consumers increasingly vulnerable to poverty. While price fluctuations can put at risk decisions made by farmers about what and how much to produce, soaring prices reduce the purchasing capacity of the most vulnerable groups. Because food represents a large share of farmer income and the budget of poor consumers, small price increases have large effects on real incomes. In addition, smallholder farmers are less likely to invest in measures to raise productivity when price changes are unpredictable (e.g. FAO, 2011). Thus, even short episodes of high prices for consumers or low prices for farmers may lead to poverty traps.

Conflict has always been part of the everyday life of Afghans, yet studies on the economic impact of violence in the country are sparse. Giustozzi (2008, 2009) provides excellent background material on the Afghan polity and society in times of war, including issues of warlordism and nation-building. These books also give further references to a large qualitative literature on Afghanistan, only a small proportion of

which has been cited in this paper. Two quantitative studies are most closely related to ours. D'Souza and Jolliffe (2012a) explore how differences in the level of conflict across provinces influence food security and show a negative correlation between conflict and food security. More interestingly, they find that food price increases have a large impact on food security in provinces with lower levels of conflict. [2] We observe that peace disruptions are associated with higher volatility of prices, which directly affects food security. Yet, we find a relatively small association between conflict and prices. Ciarli et al. (2010) examine the relationship between conflict and entrepreneurial activity. They show small direct negative effects of conflict on the likelihood of household to engage in small businesses. This insight suggests that entrepreneurs adapt to a permanent state of violence and continue to operate regardless, implying the adoption of coping strategies. Most of the above studies use data on households on a yearly basis. We employ higher frequency monthly information on commodity and labour prices and conflict events on the provincial level. There are two main advantages of using monthly data: first, the use of higher frequency indicators allows us to identify the immediate effects of conflict events. Second, by using monthly variations, we can control for seasonality given that temperatures vary dramatically across seasons (D'Souza and Jolliffe, 2012b).

We investigate whether changes in prices respond to security incidents and to what extent they are affected by the presence of ISAF forces. We find that prices are not particularly responsive to insurgency-driven violence but are positively associated with the number of ISAF casualties..

# 2 LITERATURE REVIEW

War devastates life, health, and living standards; it also disrupts physical infrastructure and human capital, and may alter social and political institutions (Blattman and Miguel, 2010). Turmoil leads to decreased and uncertain supplies of necessities and affects consumption patterns (Hess, 2003). Recently, Gates et al. (2012) find that war has also negative effects on progresses in meeting the UN Millennium Development Goals. The centrality of the costs of conflict to development is also duly covered by Brück and De Groot (2012) and Smith (2013).

Despite a growing number of quantitative studies on war-torn countries, it is not clear how exactly violent conflict affects production and well-being and how individuals cope with conflict. This is due to the inherently difficulty in gathering data and analyzing the effects of armed conflicts on households and the ways in which households in turn respond to conflicts. Brück and Schindler (2009) investigate how conflicts damage households' core functions and their choice of coping strategies. Justino (2009, 2012) explore the economic channels through which war may affect the responses and adaptation mechanisms of individuals. She distinguishes between direct and indirect effects, and shows that the indirect effects are channelled through markets, political institutions, and social networks.

In the present study we mostly consider the first channel i.e. markets and we ask what the effect of violence on commodity prices is. Given the inherent sensitivity of market prices to uncertainty, they become a potential source of information about the extent of an effect of conflict on the economy. Empirical evidence on price effects of armed conflict is scarce though some evidence has reported an increase in prices of

staple food (Verpoorten, 2005). Moreover, the destruction of infrastructure should increase transaction costs for households involved in market exchanges who may decide to return to subsistence activities (Bozzoli and Brück, 2009; Justino, 2009). Prices can also be kept artificially high during conflicts if farmers choose to hide crops so they do not get raided (Azam et al., 1994). However, price increases may be more than offset by decreases in prices of commodities produced due to assets sold by the household e.g. livestock (Verpoorten, 2009), as well as the decrease in access to exchange markets. The channels and intensity of the impact and people vulnerability to conflict vary in terms of their asset endowments, the characteristics of the production and their location (Brück and Schindler, 2009).[3] Thus, the effect of conflict on prices might not be generalizable and the sign depends on the coping strategies adopted at the local level.

Studies on how labour markets are shaped by violent conflicts are also sparse. Serneels and Verpoorten (2012) find that areas that experienced genocide in Rwanda have higher returns to labour compared to other areas. While, as the authors suggest, we may expect the mass killings to increase returns to labour, if surplus labour was substantial, these returns may remain low in absolute terms. Case studies also suggest that conflict entails losses of human capital, resulting from household investment trade-offs between education and economic survival (Justino et al., 2011). Moreover robust effects of mass violent conflict are found on fertility (Schindler and Brück, 2011) while violence may also cause pessimism about people's future prospects (Brück et al., 2011). These effects may in turn cause a chain reaction and influence the labour market. Whether the net effect on wages is positive or negative is not obvious

and should be treated as an empirical question. In the following study, we tackle this question.

Overall, in the specific case of Afghanistan, we might expect conflict to have a small effect on wages and commodity prices because of coping strategies developed over the last 30 years. Arguably, individuals are accustomed to a conflict environment and have developed consumption smoothing strategies. There is evidence that coping schemes have been developed before the start of our sample period (see e.g. Goodhand, 2005). Therefore, both the sign and the significance of conflict on prices and wages are unclear and debatable.

Finally, our paper is related to the literature exploring the effect of military deployment on the local economy. One largely overlooked aspect is the considerable amount of resources invested by the international community to stabilize the country. Questions are often raised about the counter-productive effects of the presence of international actors. Yet, a lack of reliable economic data on the host country, which are difficult to collect in times of war, especially in the remote rural areas, has often been a hurdle to empirical studies on the economic impact of military intervention in theatre. Carnahan et al. (2007) collected field in eight active missions[4] and suggest an immediate upsurge in economic activity associated with the restoration of basic security. Moreover, they find that the spending from international staff allowances (e.g. purchase of local goods and services) and local procurement provided a stimulus to the local economy. Using survey and administrative data from post-war Liberia, Mvukiyehe and Samii (2010) suggest that deployments seem to stimulate local markets and boost employment possibilities and incomes. Finally, Caruso et al. (2012)

find that a reduction of conflict-related loss of crops in Sudan is more pronounced in areas secured by the UN.[5]

Afghanistan is a very interesting case in this respect, as the country hosts the biggest and longest military operation undertaken by NATO since its creation. Therefore, the economic impact of ISAF on the host economy can be both indirect, through improved security and direct, from the demand for local goods and services to job training. On one hand, ISAF deployments can improve the level of security and reduce the perception of risk, thus lowering market prices. On the other hand, the relatively large amount of economic resources poured into a developing country may overheat the local markets, thus increasing prices. The net effect is not clear-cut and needs to be determined from the data.

## 3 DATA

We collected information on commodity prices, wages, security incidents and ISAF deployment over the period 2003-2009. Prices have been recorded in 7 provinces: Badakhshan, Faryab, Ghowr, Herat, Kabol, Kandahar, Nangarhar. These provinces are heterogeneous in characteristics between them (in terms of population, geographic location, language), but together they are likely to be representative of the whole of Afghanistan. Kabol, Kandahar and Herat are the three most populous provinces in the country, Nangarhar is the fifth, Badakhshan the sixth and Faryab the eight out of 34 by population. They are also representative of the four main languages spoken in the country i.e. Pashto, Dari Persian, Turkmen and Uzbek. Figure 1 presents the distribution of the provinces of our sample on a map of Afghanistan. Together, they

represent more than one third of the total population, have a combined area of 221,800 $Km^2$ out of 647,500 $Km^2$ and are geographically distributed across the whole country.

[Figure 1 here]

We measure violence and security in several ways. First, we look at the effect of all types of security incidents, ranging from suicide bombings to coordinated assaults on military compounds, to see the cumulative effect of conflict. Second, we measure the disruption of peace with an indicator for the monthly occurrence of violence in a given province to eliminate the effects of outliers. Third, we analyze the violence connected to the presence of international military actors, captured by the number of ISAF casualties. Moreover, we separate between hostile and non-hostile casualties, and use the reported location to measure casualties by province. While both hostile (e.g. RPG attack, suicide car bomb) and non-hostile casualties (e.g. illness, vehicle accident) indicate the presence of ISAF forces, non-hostile casualties should be less influenced by the occurrence of fighting. ISAF patrols may increase the perception of security and drive insurgents out of some regions. At the same time, areas where ISAF forces fight and perish are bound to be relatively more insecure. Our data on the Afghan conflict comes from the Worldwide Incidents Tracking System (WITS), US National Counterterrorism Center. This dataset is event-based, and includes information on the event type, date, location, whether the perpetrator is an Islamic Extremist/Sunni or unknown, and the number of deaths, wounded and kidnapped in each event.[6] Daily data on coalition deaths comes from iCasualties.org , which are based on press

releases from the US Department of Defense and CENTCOM. We then aggregated the data by month. The database lists every casualty by name, cause of death, and location and follows a rigorous recording methodology. [78] Figure 2 shows the monthly trends in incidents and ISAF casualties. The shaded gray areas depict the variations across Afghan provinces.

[Figure 2 here]

We gathered monthly US$ selling prices of 1 kg of wheat; a one year old female sheep; 1 liter of diesel; and wage for 1 day of unskilled off-farm labour. Prices are from the Vulnerability Analysis and Mapping (VAM) Market Data, World Food Programme and characterize different market places. Figure 3 displays wage and commodity prices.

[Figure 3 here]

In Tables 1 and 2 we present the summary statistics, the definitions of our variables and the source.

[Tables 1 and 2 here]

The impact of armed conflict on markets is still subject to debate and it is not clear whether changes in the level of violence should be associated with changes in commodity prices. Moreover, coping strategies may be already in place, and there may be little or no effect of violence on prices and wages, given that Afghanistan has been in a state of conflict since the late 1970s. However, violence is associated with a higher

state of uncertainty e.g. about one's own life, and we observe in Figure 2 a steadily increasing trend. Therefore, we expect some effect of violence on prices even if small.

We use wages to capture the equilibrium between the supply of labour by the household and the demand for labour from off-farm sources. Wages peaked in the months following the surge of violence, in 2004, and has been growing ever since the return of the insurgents in the country (Figure 3). However, if surplus labour is steady, these returns may remain stable. We treat labour wage as a flexible and accessible smoothing tool, as it gives short term remuneration and it does not require investment costs. This activity requires safety, it gives a comparable high return but its variation is higher than other activities. Therefore, we expect wages to be sensitive to violent episodes.

Violence can have important effects on prices of investment-intensive goods such as herding and wheat cultivation. These activities require year-round care and can be disrupted by conflict and uncertainty. This disruption might lead to a fall in the returns and so decrease the likelihood of incurring the initial investment. Afghanistan is a net importer of wheat and any risk faced at the local level could be compensated by imports. Livestock prices may also react to insecurity. In particular, high uncertainty may lead to people selling their livestock, thereby conflict would have a negative effect on prices (Verpoorten, 2009). However, sheep herding might yield luxury goods, wool and meat, and this would still make it a valuable investment. Arguably, prices of luxury goods such as wool should have higher prices during conflict duration due to uncertainty and transport shocks to herds.

Finally, the variation of the price of diesel, an input for production, serves us to evaluate how intermediate goods and markets are affected by the conflict. The price of diesel tracks closely the world prices for this commodity, therefore a big part of the variation is exogenous. However, if part of the local variation can be explained by violence it would give us a clue on how the local markets are disrupted by the conflict. This would reveal the presence of local issue such as significant problems with transportation and price speculation, whether intentional or as the result of stock insurance. Furthermore, we expect smaller effect of violence on wheat and diesel than on wages and sheep because prices are driven by the international markets (see Figure 3) and local demand can be met by imports.[9]

## 4 SECURITY AND DEVELOPMENT IN AFGHANISTAN

In the period covered by our study the Afghan economy has experienced strong economic growth, with real gross domestic product (GDP) growth rate averaging 11 percent per year. Yet, after decades of war and political instability, and a long-lasting western military intervention (i.e. ISAF), Afghanistan remains one of the world's poorest countries. Its population, estimated at almost 30 million, remains largely rural and mostly uneducated. Development indicators published by the World Bank and the UN rank Afghanistan at the bottom of virtually every category, including nutrition; infant, child, and maternal mortality; life expectancy; and literacy. The country is also at the lowest levels of global human security, according to the Human Development Index. To provide more background material, we now describe the main features of security and livelihood in the country, including the presence of informal institutions

and the labour market. Findings from the NRVA (2008)[10] reveal that 11 percent of all shocks faced by households are due to security, while 60 percent are due to returning refugees, leading to the re-establishment of old feuds and labour competition. As a reaction, the coping strategies most often adopted by households are food reduction as of 34 percent and expenditure reduction as of 41 percent. 35 percent depend on help from the community, 9 percent work in aid programmes and 11 percent pursue alternative work strategies. In this section we will elaborate on the opportunities in the last three strategies and the illegal opportunity of opium production, and we try to explore how they can be affected by insecurity and military deployment.

### (a) Social Institutions

The impact of conflict on livelihood strategies cannot be adequately addressed without a discussion on institutional changes; in fact how local communities sustain social cohesion in response to violence and how different forms of local governance emerge to provide public goods clearly affect our expectations regarding the impact of conflict on commodity prices and wages.

The Afghan economy involves complex networks of exchange and association, governed by rules of exchange, codes of conduct and hierarchies which are reinforced through a number of strategies such as inter-familial marriage, gifts and partnerships (Nordstrom, 2000; Goodhand, 2005). A recent large study on urban livelihoods in Afghanistan suggest that social networks, in particular family dynamics, can be considered a livelihood asset (Beall and Schutte, 2006). Jones (2011) outlines the main sources of information for individuals: friends, neighbours and village chiefs. In fact,

the extent of family support to income-earning activities and the very composition and structure of families influence households' ability to diversify livelihood strategies to maximize income (see Moser, 1998). Local communities are constant repositories of social care and poverty shocks can push individual to rely on social networks to survive. Beall and Schutte (2006) show that when people are above the subsistence level (in urban areas as much as anywhere else) social support systems and networks that offer mutual benefits continue to be operative and effective although when shocks are relentless, this reciprocal support could come under strain. Yet, social cohesion and cooperation between family members, neighbors and friends, as well as inter-community relations can be affected by violence; in particular the ability of people to rely on community relations to access credit and employment opportunities can change as a consequence of war (see Justino, 2012). Whether the overall impact is positive or negative is still a debated issue. On one hand, conflict can have a detrimental effect on the level of trust within communities while social interactions may well feed into the conflict (Kalyvas, 2006). On the other hand, exposure to conflict can increase individual participation to social and political activities (e.g. Bellows and Miguel, 2009). As Justino (2012) points out, the impact of conflict on social relations will depend on the pre-war level of integration within each community, the extent of the breakdown of social cohesion during the conflict and the possibility to forge new networks during and after the conflict. Therefore the extent to which social networks can reduce the adverse consequences of war, by e.g., reducing the sensitivity of market prices to uncertainty, needs to be tested indirectly through an analysis of conflict shocks on prices.

The NRVA provides statistics on useful proxies for the extend of social networks in Afghanistan. The variables are marriages and migration patterns. Starting with the family, the average household size in Afghanistan is 7.2 people [11]. Around one third of the populations is part of a household with more than 10 members. 22 percent of the households live in a house shared with others. These figures draw a demographic picture of close-knit families and communities. Several studies (see for e.g. in India, Rosenzweig and Stark, 1989) have found that marriage patterns across villages mimic consumption smoothing strategies, another way to cope with idiosyncratic shocks like weather at the village level. Turning to Afghanistan, we can observe a similar strategy, as 7 percent of intra-province migrants did migrate for marriage related issues.

Migration patterns are another important channel of establishing a social network. If local labour market conditions do not permit employment, then a member of the family would have to look for a job elsewhere. It is more likely that this would be done with the help of far-away living cousins than randomly picking a village, if only to avoid information and transaction problems. 13 percent of households house a migrant.[12] 7 percent out of surveyed households saw a member leave to look for better conditions (work or security reasons, mainly), with 15 percent of them within the same province[13]. These last respondents have indicated that security and protection have been the main reason for moving. This confirms the findings of Goodhand (2005) with respect to the possibility of the social networks to provide help in coping with shocks. We consider this as evidence that given one month of a time, the information about an attack in a remote district of a province will be widely-known and used as an argument in price haggling, thus reflected in the equilibrium prices we observe.

A second important aspect is the possible emergence of informal institutions in response to lawlessness and insecurity. Local governance structures may replace weak or inexistent formal institutions in regulating the access of households to land resources, productive actives, funds and education opportunities. Politics and economic decisions are conducted ”locally” at the district and village level (Goodhand, 2005). Afghanistan has three customary organizations: *shuras* (village councils), *maliks* (village executives), and *mullahs* (village law givers). These organizations emerged before the consolidation of a central state and have survived decades of war. They resolve disputes and provide public goods to citizens, such as access to water and credit, extract a fee for their services and are held accountable for what they extract (Brick, 2008). The research on the emergence of local institutional structures in absence of the government's rule of law is still underdeveloped (see Vlassenroot and Raeymaekers, 2004; Justino, 2012). In fact, whether different forms of local governance are effective in improving living conditions through the provision of local public goods and the enforcement of property rights and social norms is again an empirical question. While informal institutions which favor rent-seeking and corruption can only worsen the living conditions of the households under their administration and territorial control, organizations that promote the rule of law and establish appropriate norms of social behavior may be welfare enhancing (see e.g. Bellows and Miguel, 2009) and therefore facilitate coping strategies during conflict.

If violence and the absence of a state improves trust and solidarity at the local level, then the overall negative effect of conflict on livelihood should be mitigated. On the opposite, rent-seeking behaviours and a reinforcement of violence through inter-

group cooperation and association is likely to worsen the living conditions of the local communities. In this respect, our paper can shed some light on the endogenous relationship between political and social institutions and the well-being of individuals and inform the current debate on the role that social capital and social networks play in determining variations in the coping strategies of local communities in Afghanistan.

### (b) Security and Aid

As Figure 2 shows, insecurity in Afghanistan has dramatically increased since 2004, two years after the fall of the Taliban. This is primarily a result of the insurgency's growing strength. Much of the violence occurred in Southern Afghanistan (e.g. Kandahar, Helmand), but insecurity has also spread northwards (e.g. Kunduz), to cover the majority of Afghan provinces. According to the data, the Afghan National Army, the Afghan National Police and ISAF forces are the most frequent targets, but there have also been a substantial number of civilian casualties. In 2008 and 2010, many Afghan provinces registered a record number of attacks (see Figure 2). Most of the violent events are usually attributed to the Taliban-led insurgency.

The function of the ISAF forces is to suppress violent challenge to the Afghan government by assisting it in the establishment of a secure and stable environment and reducing the capability and will of the insurgency. The mandate also explicitly refers to improvements in the socio-economic development.[14] To understand how coping strategies have changed over the period 2001-2009, we need to analyze the two channels through which ISAF has a direct impact on the host county economy. In fact, while the agricultural sector is extremely dependent on weather conditions

(timely rainfall, drought, spring floods) and regional price volatility, the labour market is heavily influenced by military deployment and the ensuing military aid.

Firstly, NATO/ISAF is the single largest spender in Afghanistan and offers a number of job opportunities to locals. According to NATO sources,[15] the United Kingdom alone has been employing over 2 300 Afghans, which represents USD 2.94 million to the Afghan economy per annum. Moreover, from 2005 to 2009, the US Government employed over 20,000 Afghans and procured more than USD 4 billion worth of local goods and services. In particular, NATO says ”Increasing local procurement in Afghanistan is considered the most important step in promoting the development of the Afghan private sector and supporting the economic development of the country.”[16] The local procurement affects the housing, retail and service markets and the labour force. We should expect an immediate upsurge in economic activity as a consequence of the international mission subsistence allowance (MSA) spent on the local economy, local mission procurements and wages paid to locally hired staff. The presence of the military deployment has fostered the transport sector, given the demand for fuel, equipment, and food transportation by road. The construction sector has also grown as a consequence of international contracts or sub-contracts as larger foreign-owned firms have subcontracted public contracts to smaller Afghan companies. This sector is labour-intensive and employs poorly skilled and often casual labourers, whose wages are the focus of our analysis. In fact, we use data on the wage of one day of unskilled non-farm labour which does not include agricultural wage labour or sharecropping. According to the NRVA (2007/08), a significant proportion of these unskilled daily jobs are in the construction sector.

Secondly, the security umbrella provided by ISAF also encourages non-state actors, such as NGOs, and government development agencies, to direct aid and assistance to host countries. In fact, it is frequently the case that military operations start at the same time as increased developmental assistance.[17] According to Hogg et al. (2013), between 6 to 10% of the working population has benefited from aid-financed short-term job opportunities, such as the cash-forwork projects promoted by WFP, UNDP and USAID programs.[18]

Aid has funded essential services, including education, health and infrastructures. More importantly, the official development assistance from the international community has significantly contributed to the livelihoods of low-income groups (ILO, 2012). Aid flows during 2001-05 were relatively small, in line with a much more limited international military intervention. However, in the face of an intensifying Taliban insurgency, international troops and aid sharply increased after 2005 as many forces moved into the south of the country, with a further surge from 2008/09. The total amount of aid in recent years amounted to approximately the overall GDP of the country.[19] If anything, this suggest a strong impact of the presence of military actors on employment opportunities in the country, which has been increasing throughout the sample period. This also provides us with variation that would arguably allow us to identify the differential effect of the ISAF-related violence on prices.

### (c) Commodities and Labour

We assume that individuals can choose from a number of legal activities (e.g. wheat and cereal production, sheep-farming, off-farm casual labour). Most frequently

farmers decide what to plant and how to allocate labour and land on their own. For example, in the 2003-2004 season, 87 percent of poppy growers and 81 percent of non-poppy growers decided independently the allocation of land between opium and wheat (UNODC, 2004). Wheat is not only the main legal crop in rural Afghanistan, it is also the key staple food, accounting for over half the caloric intake of population (Persaud, 2010). Such a high prevalence of consumption makes wheat, by considerable margin, the most significant agricultural market to evaluate in relation to food security.

Overall, there is strong seasonal behaviour in prices in agricultural markets in Afghanistan. The breakdown by month reveals general hikes in wheat prices around harvesting times in spring and autumn (see Figure 3). The major wheat harvest in May-June puts most of the food on the market. During the winter months there is little additional food coming onto the market from domestic production and stocks need to be sufficient to last until spring. Adverse weather conditions can create pressure on prices, like the periods of inadequate rains and snowfall during 2008. Certainly, wheat and diesel prices in Afghanistan are also correlated to international market prices, thus explaining a common trend across provinces. In the period 2003-2009, the dramatic increase in global food prices has been accompanied by peaking diesel prices. Sheep and labour prices follow more idiosyncratic variations across provinces, with pronounced differences in the level of revenues. For households that spend the majority of their budgets on food, high volatility in both revenues and commodity prices led to a severe erosion of purchasing power, disproportionally affecting poor

households. Therefore, if violent occurrences drive consumption prices up, poor household will be most sensitive to these shocks.

Shedding more light on the nature of the employment opportunities, the NRVA (2008) provides a wealth of information on Afghanistan's labour market characteristics. One of the most striking figure is the low unemployment rate (7 %), which according to the report, indicates that people cannot afford being unemployed, rather than a well-performing labour market. The report also suggests that many workers are not engaged in jobs that provide them with sufficient and secure income. Agricultural activities are the main livelihood strategies for the Afghan population: 55 % of households are engaged in farming and 68 % have livestock.[20] Only in urban areas people engage in a wider variety of industries, including trade (29 %), services (18 %) and public administration (14 %). Poverty and a lack of income-generating opportunities drive many Afghans to migrate to neighbouring countries, with Iran being the destination of almost two-third of recent labour migrants. On the reverse, improved economic conditions in the last decade have led to refugees from previous conflicts returning to Afghanistan.

By far the largest part of the Afghanistan's economy is the informal sector which, according to a report by the World Bank (Byrd, 2008), accounts for 80 to 90% of the total economic activity and largely determines the real income of Afghan households. In particular, 3% of GDP and around 350,000 employees are accounted for by the formal economy, which only includes businesses that are registered and pay taxes (Byrd, 2005). Informal employment provides poor households with an immediate source of income, yet families end up being more vulnerable with irregular, low-

paying jobs that often force them to deploy women and children for additional income. The two biggest types of employment are self-employment and casual wage labour, both of which provide low and erratic incomes and are highly seasonal (Beal and Schutte, 2006). While a further distinction between the informal and the formal sector would be extremely interesting, reliable data on the labour market are either absent or unreliable, despite the fact that statistics development is a priority for both the government and donors (ILO, 2012).

### (d) Opium

The labour market is dominated by an agricultural sector, which provides very low income, and a services sector, the main driver of the strong economic growth in recent years (ILO, 2012). Violent conflict has destroyed some legal markets, such as the livestock trade in Badakhshan, while at the same time has pushed individual towards quick return activities, in particular the opium production. Afghan families spread risks by diversifying entitlement portfolios and poppy cultivation plays a big part of this risk-spreading strategy (Goodhand, 2005). Opium is the country's biggest export - Afghanistan provides 93 per cent of the global supply of opium, according to the several reports from the United Nations Office for Drugs and Crime. Opium trade lies at the intersection between commodities and security. While the persistence of poverty is an important driver of poppy cultivation, a survey undertaken by UNODC (2006) finds that that a lack of rule of law and a high level of insecurity are important factors affecting the choice to grow opium.

Many factors contributed to the development of opium cultivation in the country, in particular the almost complete collapse of central government after the Soviet withdrawal; the warring tribes' need for sources of financing; and the fact that opium is a crop well adapted to the prevailing weather conditions. Indeed, opium is relatively drought-resistant, and due to a limited irrigation system in many areas, its cultivation is preferable to wheat. Average yield in Afghanistan is about 40 kg/ha compared to 10 kg/ha in Burma, former major global producer of illicit opium (UNODC, 2008). Moreover, dry opium is easy to store and transport; the poor state of roads and stocking facilities in the country give it an advantage over other crops (Martin and Symansky, 2006).

As any labour-intensive crop, opium is particularly appropriate for a labour-rich and capital poor country. It generates jobs in on-farm casual work (e.g. weeding and harvesting) and in the non-farm rural sector. However, opium cultivation is not the main occupational opportunity in the country. According to the United Nations Office for Drug and Crime, in 2009 poppy cultivation created 5.6 jobs per hectare (UNODC, 2009a). Approximately one in seven Afghans is reportedly involved in some aspect of the trade, with 6.5 per cent of the population involved in growing poppy (UNODC, 2009b).

An interesting question is whether the (perceived) lack of security affects prices and thus makes illegal activities more or less profitable. Yet, the causal line from opium to conflict should be treated with caution, because this line can be drawn in reverse. According to different issues of the UNODC Opium Survey, there is a strong revenue appropriation mechanism on lootable resources: violence might be over the

opium cultivation and controlling the plantation can finance the insurgency. Lind et al. (2010) show that ISAF hostile casualties have a significant impact on annual opium production.[21] Given the problem of reverse causality between opium prices and the level of violence that would not permit us to make credible inference - i.e. regional instability and insurgency may be fuelled by the Afghan opiate industry (see e.g. Bove and Elia, 2013, for an empirical analysis) - we only focus on legal occupational opportunities and we include opium prices as a robustness check in the Appendix. The mechanisms connecting the opium market and the political violence in the country are explored in details by Rubin (2000), Giustozzi (2007) and Goodhand (2008).

## 5 ECONOMETRIC MODEL

In our empirical model we look at how different conflict occurrences affect the wages and prices of everyday consumption goods. In the baseline specification we consider the reduced form relationship for each price independently:

$$P_{i,p,t} = \alpha P_{i,p,t-1} + \beta V_{c,p,t-1} + \mu_p + \delta_m + \varepsilon_{i,p,t} \quad (1)$$

where the logged price $P_{i,p,t}$ of good i in province p in period t is explained by past violence ($V_{c,p,t-1}$), past month price ($P_{i,p,t-1}$), month fixed effects ($\delta_m$) and province-specific fixed effects ($\mu_p$). $\delta_m$ and $\mu_p$ capture seasonality and geographical features (like latitude and elevation), ethical composition, etc.[22] which play an important role in determining prices' fluctuations. The coefficient $\beta$ measures the percentage price changes for each additional occurrence of violence. Identification of the effect of

conflict comes from the assumption that commodity prices are exogenous and do not predict violence or ISAF deployments.[23]

We choose to use the lag of the independent variables to take the issue of information spreading into account. Earlier lags do not seem to hold predictive power and do not change results. The long time frame of our panel (72 months) allows the bias due to lagged dependent variables to tend to 0 (Nickell, 1981; Kelly, 2006). Only the prices of wheat and diesel exhibit a unit root, which is another rationale for the use of lagged dependent variables in the estimating equation.

We perform several robustness checks. First, we repeat our estimation including the price of opium as a control variable, the main drawback of this robustness checks is the decreased number of observations, casting a doubt on the comparison with the baseline.[24] Second, we perform the same estimation as in the main analysis on a sub-sample which excludes the province of Kandahar. This province saw one of the highest levels of fighting and thus it might drive some of the effects we find. Third, we transform the data into first differences and repeat the main analysis. For reasons of brevity we include tables with these results in the appendix but we comment where we have found evidence for the concern about the robustness of our results.

### (a) Empirical results

Table 3 provides estimates for the effects of conflict events on labour. The top of the columns shows the measure of violence used as an independent variable, while the dependent variable is unskilled labour wage. From all columns we can see that the wage is positively affected by past values. In column 1 we examine the effect on all

types of attacks on wages and we notice a barely significant positive effect. An additional attack in the previous month has a small positive effect on wages in the current one. In column 2 we examine the effect of attacks as a dummy variable that takes on the value 1 if there were attacks in a given month and 0 otherwise. This variable is not affected by presence of outliers and serves as a more parsimonious measure of attacks. From the summary statistics we can see that there are no attacks roughly half of the time. This variable seems to have a higher effect than the levels of attacks but with a larger standard error, leading us to believe that the disruption of peace and the uncertainty associated with the number of attacks influence the bargaining process for wages. One potential channel of influence could be that the risks associated with traveling and flexibility are increasing the bargaining power of employees, so they succeed in securing a higher wage on average. Or, there are less labourers willing to take up the risks associated with flexible traveling, and more labourers turn to other opportunities, causing an increase in market wages. A third possibility is that the loss of life has a small direct negative effect on labour supply.

In the third, fourth and fifth columns we investigate the effect of ISAF hostile and non-hostile casualties and we find a small positive effect of each additional casualty, almost constant across variables and twice bigger than the effect of attacks. Only non-hostile casualties are associated with a significant positive effect. This partially lends support to the possibility of increasing wages in reaction to local procurement of services. The presence of NATO troops increases the level of wages, while fighting activities associated to the ISAF presence (i.e. hostile casualties) do not show an influence on their own. The effects of peace disruptions and non-hostile

casualties are robust in size and significance to the exclusion of Kandahar, the inclusion of opium price as a control variable and to first differences estimation. *Per se*, these effects could be considered moderate - the mean wage is 3 USD and the effect of violence varies from 1.7 percent associated increase in wages from an addition disruption of peace, while an additional casualty is associated with 0.5 percent increase.

[Table 3 here]

Table 4 shows that attacks and disruptions of peace are not associated with forces that determine the price of sheep. This may suggest that since herding is a relatively mobile activity (flocks can move), any fighting on the local level can be avoided. However, ISAF deployments affect the selling prices of sheep, given the significance of the coefficient for hostile casualties and the combined positive effect of hostile and non-hostile casualties. We mentioned earlier the information sources of Afghanis. Given that the variable attacks pools all types of incidents and the close links of villagers to insurgents[25], probably they are not able to forecast the ISAF strategies[26] and this is why it is not possible to avoid fighting theaters. This effect is robust in first differences. However, when we estimate this specification without the province of Kandahar, the most violent province, we find no effect. When we control for opium prices, non-hostile casualties seem to command the only significant negative association. This could be due to a presence of the rule of law in conflict-ridden opium provinces [27] that puts an end to the effectiveness of earlier strategies, for e.g. an end to speculation of prices. However, we do not find such an effect in the general case. These

patterns makes sheep herding the one commodity that is most resistant to conflict, providing a stable source of income.

[Table 4 here]

In Table 5 we see that wheat prices are mainly influenced by deployment. Wheat is equally influenced by hostile and non-hostile casualties. The positive association between wheat prices and NATO presence may be driven by the purchasing of local agricultural products and fuel. The effects of hostile casualties on wheat disappears in the absence of Kandahar in the sample. As we said, Kandahar is the province with the highest level of violence, where wheat and opium are the crops competing for the same land. Yet, the positive impact of non-hostile casualties on wheat prices is robust to this exclusion: this means that results can be explained by the mere presence of ISAF forces, rather than the occurrence of fighting activities. The size of the effects are robust to the inclusion of opium price as a control. We also find that the effect of all ISAF casualties to be most robust across specifications. As we said above, it is also often the case that non-state actors, such as NGOs, and government development agencies, deploy when security is provided by military actors. Therefore, international assistance on the ground could overheat the wheat market and causes important increases in wheat prices. In total, we find that one additional non hostile casualty is associated with .4 percent increase in wheat prices, while a hostile casualty is associated with .2 percent increase. A further reason for alarm is that these small price increases would hit continuously the purchasing power of poor households. Yet, they also slightly increase the gains from allocating land to wheat production. While the net

effect seems small, it is still worthy of consideration, given that Afghanistan is a net-importer of wheat and prices should track closely the world prices, yet they are still influenced by local circumstances.

The same cannot be said about the prices of diesel. On Table 6 we observe a lack of effects of violence on diesel prices. Only non-hostile casualties seem to be positively associated with diesel prices, and this could be explained by the local procurement effects of the ISAF presence. Moreover, the exclusion of Kandahar makes diesel prices unresponsive to both violence and deployment. Yet, as we control for opium prices we find a robust positive effect of deployment on prices, with effect varying from .7 percent for non-hostile casualties to .4 for hostile. Opium producing provinces could drive this effect as they have less rule of law as a rule, which allows for speculations with the prices of goods. Active war theaters with heavy ISAF presence add the effect of conflict uncertainty. The increase in prices of diesel could be associated with the particular coping strategy of holding stocks of this liquid asset, as a way to smooth consumption. However, we find strong evidence of this only when we account for the relationship between opium and violence. The positive effect is smaller and less significant for the general sample.

[Table 5 and 6 here]

Furthermore, Table 7 presents the interrelationships between the different livelihoods. We have included opium prices in this analysis to the detriment of the number of observation, yet this allows us to draw wider conclusions. We observe that the price of diesel is complementary to the price of wheat.[28] The two prices move

together and have a positive association. Diesel is not used in the production of wheat, so the positive sign might reflect a transport cost associated with the final selling price of wheat. We also note the peculiar substitution patterns between sheep herding and wheat. While an increase in the price of wheat is associated with a decrease in the price of a sheep, the reverse effect is positive. The former could be consistent with the fire-selling of cattle as a way to smooth consumption, while the latter hints at an increase in the demand for wheat once herders have in increase in their purchasing capacity.

A substitution pattern could be claimed in the relationship between opium price and labour wages. As opium prices rise, the price for labour diminishes, and vice versa. It is important to note that with our labour variable we measure off-farm labour wages, which are a substitute to farm labour wages, which are natural inputs to the production of a labour intensive crop such as opium. This could reflect more people choosing to grow opium, thus lowering the price and increasing the demand for off-farm labour. Whether this is the case and what is the actual mechanism is another empirical question, which we leave for future research.

A surprising finding is that we find no effect of opium prices on wheat prices, given that the crops theoretically compete for the same land. Yet, an increase in wheat prices is associated with an almost 8 percent decrease in opium prices. One has to bear in mind that the average price of wheat is but .3 USD, while the price for opium is 134 USD, albeit associated with a risk of eradication. While wheat prices follow the world ones, it would be difficult for them to be significantly influenced by local opium prices. Yet, as they increase wheat becomes a more attractive crop and the price of opium

should grow in order to compensate for this and to keep the current allocation. This discrepancy remains again as a note for further research.

[Table 7 here]

Overall, we notice that conflict has a positive effect on prices. The effect is higher for prices that are relatively more variant. The small size of the effect is consistent with coping strategies already in place and implicit risk aversion. From evidence from the NRVA (2008), we know that only 11 percent of the shocks faced by households are related to insecurity and this could further explain the small effect on prices. Given that Afghanistan has been in a state of conflict for the past 30 years, this channel can explain the lack of (or small) effect of all attacks on prices. However, the ISAF are a new source of uncertainty. They do not share their strategies with the local population and there are no adaptation mechanisms at play. Overall we find that prices are more sensitive to deployment than to attacks. In particular we see a positive effect of ISAF deployment on prices. Price increases are affecting the vulnerable population and, thus, ISAF deployment leads to an increase in demand, driving market prices up and potentially harming the poor portion of the population.

### (b) Local Effects

In this section we will compare the effects of violence in two distinctly different provinces - Kandahar and Badakhshan. Kandahar lies in south east of Afghanistan, on the border with Pakistan. The major ethnic group are Pashtuns. Geographically, Kandahar is mostly flat. The climate is subtropical arid and it is characterized by mild

winter and dry summers. The livelihoods for households are mainly agriculture (28 percent), livestock (8 percent), opium (4 percent), non-farm labour (34 percent) and trade (29 percent), according to NRVA (2005). Of the households, who own livestock 37 percent own sheep. The shocks faced by households were mostly natural disasters (38 percent), while insecurity accounted for 24 percent of the shocks for 2005.

Badakhshan is a mountainous region to the north east of the country, bordering on Tajikistan, China and Pakistan. It has a humid subtropical climate, with hot and dry summers and moderate winters. The major ethnic group are Tajiks. Most households are involved in agriculture (55 percent), livestock (24 percent), opium (7 percent), non-farm labour (29 percent) and trade (32 percent) (NRVA, 2005). Every second household owning livestock cares for sheep. Most of the shocks faced in 2005 were natural disasters (94 percent) and agricultural (26 percent), with 3 percent for insecurity.

According to the NRVA (2008), the frequency of household shocks due to returning refugees is 1 percent in Kandahar and 84 percent in Badakhshan. This reflects the local perceptions about the security situation in the province. The first one is notorious for the number of security events, while the second has in total 4 ISAF casualties for the sample period, as can be seen in Table 8. Furthermore, in our data we observe 10 times more attacks in Kandahar than in Badakhshan, with violence in Kandahar occurring every month, while in Badakhshan in only half of the sample period. Clearly, these 2 provinces differ in the level of conflict experienced. This can be considered also as evidence of more pessimistic expectations in Kandahar [29], than in Badakhshan, which would imply lower probability to develop activities such as herding and crop

production, which require initial investment, and lower investment in labour market skills, thus implying higher prices for capital-intensive goods and lower average wage for Kandahar.

[Table 8 here]

Among the similarities between the two provinces is that they were both opium producers at some point during our sample period. Another similar circumstance is that the average prices of wheat are also the same, consistent with a direct correspondence between the local and world price of this commodity, as shown in Table 8. The average price of diesel is slightly higher in Badakhshan, .66 USD per liter, versus .58 in Kandahar. The similarities, as observed in Table 8, end here. Dry opium is worth on average 50 percent more in Kandahar, than in Badakhshan, which could indicate that local supply in the latter province is higher as revealed by the percentages of households with opium livelihoods listed above.[30] There is a certain variability to this figure, the price of opium in Kandahar has been much more variable with a standard deviation 6 times higher than the one of Badakhshan. This could certainly be linked to the diverse levels of conflict experienced by the two provinces, but our data does not allow us to make a causal claim. Furthermore, the average daily wage for labour is 1 dollar higher in Badakhshan than in Kandahar, which is surprising given that the labour market in the former province is more competitive due to higher security and returning refugees.

In total, we observe evidence for a larger presence of ISAF in Kandahar than in Badakhshan, together with lower labour wages and higher sheep and opium prices.

This is consistent with the coping strategies argument and with differential pessimistic expectations about prospects. A province like Kandahar has been exposed to conflict far longer and thus prices and wages do not react to violence, as they do in a calmer province such as Badakhshan. Furthermore, the other difference between the two provinces is the intensity of the ISAF deployment and the population size, which has a direct effect on labour wage. While the comparison between these provinces does not allow us to draw causal conclusions, when we control for the factors that differ across provinces, such as weather patterns, population and others (by including fixed effects in the econometric model) we do find that violence in general is not significantly associated with wages. When it is - in provinces where ISAF casualties increase, so do wages and other prices. Thus, the various effects of ISAF-related casualties must have led to more increases in prices in Kandahar, than in Badakhshan. This notion is further strengthened when we consider the baseline results and the ones in the robustness checks on a sample excluding Kandahar. These results inform us that this has been the case with wheat and sheep prices. Additionally, the effect of deployment as measured by non-hostile casualties, is persistent in both sets as results, revealing to us that increases in deployment may have led to increases in prices.

# 6 CONCLUSIONS

War is a destructive event. Political instability and insurgency have strong adverse effects on economic development and a detrimental impact on the well-being of individuals. The destruction and loss of life are not the only cost of conflict. The lack of physical safety, the disruption of important infrastructures and the interruption of

local markets make coping strategies in wartime an important issue. Yet, it is not clear whether and how violence and the presence of external military actors in a country affect the opportunities and livelihoods of people. Our study explores the impact of insurgency-related violence and ISAF deployment on the opportunities for income of the local communities in Afghanistan. As the country has been suffering from chronic violence and lawlessness for decades, we consider survivalist activities across a range of occupational choices, such as farming, pastoralism, off-farm activities and casual labour.

We find evidence that coping strategies are already in place, consistent with the long conflict history of Afghanistan. In particular, commodity prices are not significantly associated with levels of attacks. We also disentangle the effect of deployment from the effect of coping strategies. Given that ISAF are a new actor in the Afghan civil war, military deployment is associated with an increase in the level of wages and prices of wheat and sheep. Surprisingly, local events influence the price of wheat, whose variation tracks closely the world price, showing that local price speculation could be a threat to vulnerable households. Similar effects are found with the prices of diesel in some provinces. Considering implications for the employment and exchange opportunities for households, sheep-herding is the activity that is least susceptible to conflict related shocks, while off-farm casual labour and wheat prices are more volatile. Finally, we explore the inter-relationships between the prices of different goods. We find that wheat and diesel are complements, in a way that can be referred to the cost associated with the transport of wheat.

We provide novel insights into the domestic and conflict related determinants of sudden changes in food prices and the possible effects on an economically vulnerable population. This is particularly crucial in conflict areas, which may be most susceptible to food price shocks, but which usually have little quantitative data on violent events. Identifying the impact of war on food and commodity prices is an important step in understanding how conflict affects household well-being.

## NOTES

1 Verpoorten's (2009) study on coping strategies in wartime, for example, uses cattle sales to explore whether peasants sold cattle to smooth consumption.

2 A recent work by D'Souza and Jolliffe (2012b) also explores the impact of rising wheat prices on household food security in Afghanistan. They find large falls in the value of per capita food consumption and significant trade offs between quality and quantity as households move away from nutrient-rich foods toward staple foods. While their work brings interesting insights on the impact of food prices on Afghan households, they do not explicitly deal with conflict and do not include any measure of violence or instability.

3 Also, there might be substantial differences across sectors, as industries dependent on either capital or transactions are most vulnerable to conflict (Vothknecht and Sumarto, 2011).

4 UNMIK (Kosovo); UNMISET (Timor-Leste); UNAMSIL (Sierra Leone); MONUC (Democratic Republic of Congo); MINUSTAH (Haiti); ONUCI (Coˆte d'Ivoire); UNMIL (Liberia); and ONUB (Burundi).

5 A comprehensive survey of peacekeeping economic impacts at both local and regional levels, including trends of how military interventions may develop until 2020, is offered by Tejpar (2009).

6 The dataset includes 6080 episodes in the period considered.

7 See for a thorough discussion to date of conflict event data in Afghanistan Schutte (2012)

8 Complete documentation of iCasualties.org's methodology is available at http://icasualties.org/. Accessed

April 15, 2013.

9 For example, in 2008, during the food crisis, prices of wheat in Afghanistan rose because the main importer,

Pakistan, banned exports of this primary commodity. See for more information Persaud (2010)

10 The National Risk and Vulnerability Assessment Afghanistan 2007/08, available at *http* : *//ec.europa.eu/europeaid/where/as* 08 *full report en.pdf*

11 This and the following numbers are taken from the NRVA (2008) report.

12 Of these migrants, 22 percent originate from the same province.

13 More than 60 percent of these immigrants go abroad. These figures are biased by the fact that whenever whole households left no one could respond to the survey. Maybe as a result of this, the authors of the NRVA admit that some figures are difficult to reconcile.

14 See *http* : *//www.isaf.nato.int/mission.html*.Accessed 25 April 2013.

15 See *http* : *//www.aco.nato.int/page*26911751.*aspx*. Accessed 25 April 2013.

16 See *http* : *//www.nato.int/cps/en/natolive/official texts* 62851.*htm*. Accessed 25 April 2013.

17 The ILO (2012, p.43) claims that there is a strong geographic correlation between the presence of international troops and the geographic focus of most donors: "USAID, DFID and up to 2010 CIDA (to mention the biggest government donors with the highest number of troops in Afghanistan) have disbursed their funds with priority given to where their troops are deployed in order to support their military strategy. The USAID map of projects is an exact replication of the security incidents map: USAID funds are being allocated in areas according to their level of insecurity (80% in the South and East), DFID is spending around 20% of their funds in Helmand only, while the French are spending 40% of their total civilian aid in Tagab and Surobi districts."

18 There are also areas where international actors such as the UN and the WFP distribute food aid, which may cause a depression in prices. Yet, field observations show that food aid is not commonly sold in the market place, thus should not significantly affect our marker prices. It can be deduced that

food distributed to the most vulnerable is used or stored for future consumption and not sold to traders (Favre, 2005).

19 The country's GDP has almost grown four-fold between 2001 and 2009. Such increase is mainly due to the communications, transport, and construction sub-sectors, which have benefited from the international inflows.

20 The average number of major livestock per household is 13, including cattle, oxen, horses, donkeys, camels, goats and sheep.

21 Clemens (2008) explores the potential for source-country drug-control policies to reduce opium production. He suggests that substantial increases in crop eradication would be needed to achieve moderate reductions in production.

22 Figures 2 and 3 display clearly variations within provinces.

23 As we said, this condition does not hold for opium, so we excluded it from the main analysis.

24 Monthly prices of dry opium are provided by the UNODC Global Illicit Crop Monitoring Programme. Data are broken down at the level of 15 provinces: Nangarhar, Laghman, Kunar, Hilmand, Kandahar, Badghis, Herat, Ghowr, Farah, Nimroz, Takhar, Badakhshan, Faryab, Kunduz, Balkh.

25 Another aspect of the coping strategies is to have one member of the household with insurgents and one member collaborating with ISAF (Goodhand, 2005).

26 Partially due to strategic incentives on the part of ISAF.

27 By including opium prices in our estimation we capture part of the variation that is at the root of the nexus between opium production and insurgence.

28 The simple correlation between them is 0.81

29 For related literature see Brück et al. (2011)

30 Another possibility is that the opium trading routes passed through Badakhshan.

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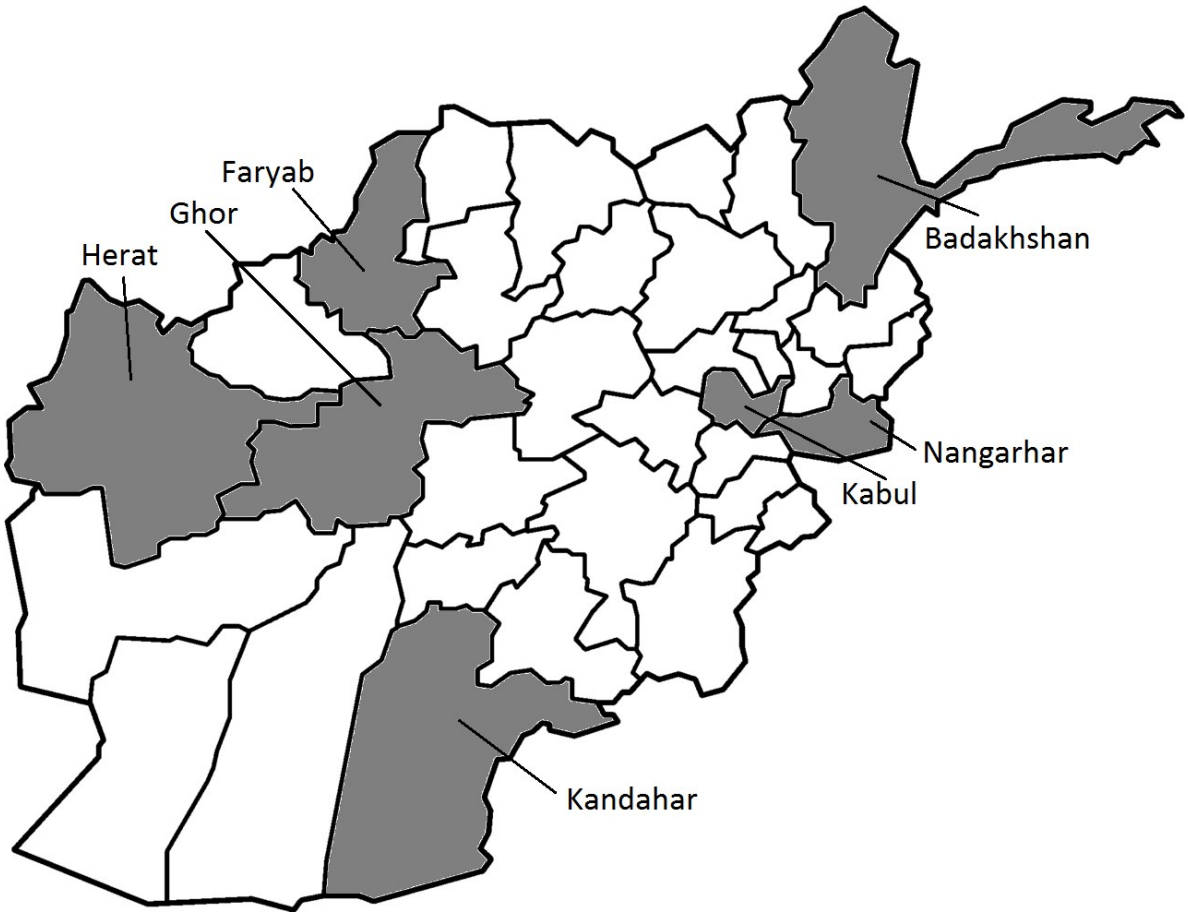


Figure 1: Map of Afghanistan and the provinces in our sample

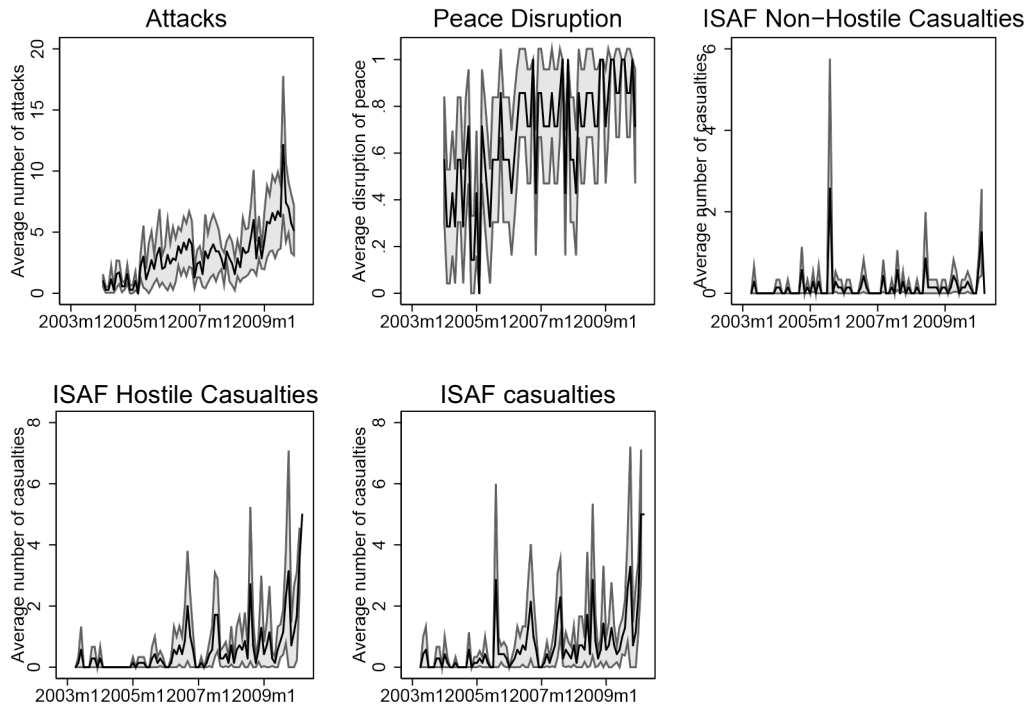


Figure 2: Security incidents and ISAF casualties with the monthly standard deviation (in grey) around the cross-sectional mean (black). The vertical axis measures number of attacks or casualties. Authors' calculation based on records from iCasulaties.org and the Worldwide Incidents Tracking System (WITS), US National Counterterrorism Center

Wheat Labour

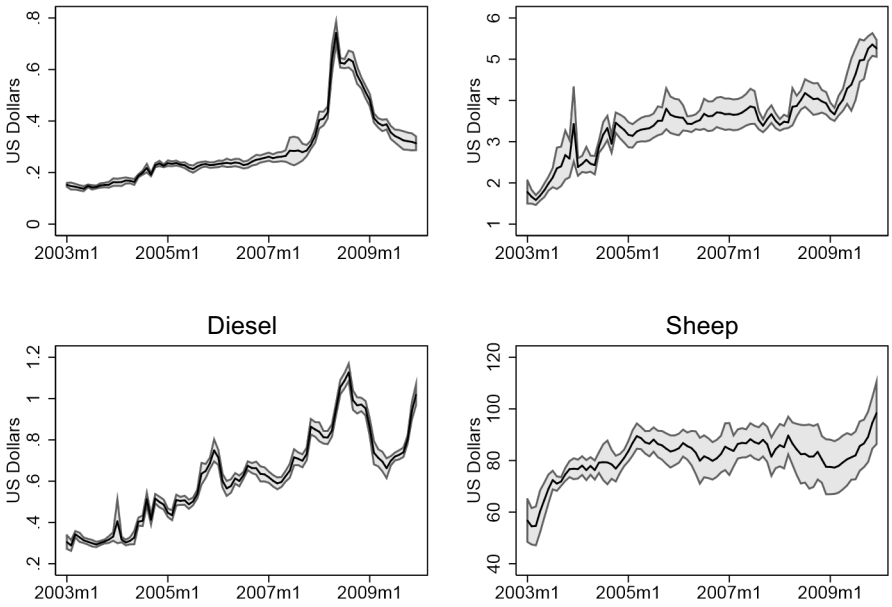


Figure 3: Wage and Commodity Prices with the monthly standard deviation (in grey) around the cross-sectional mean (black). The vertical axis measures price in US dollars. Source: Vulnerability Analysis and Mapping (VAM) Market Data from Afghanistan main cities, World Food Program

Table 1. Descriptive Statistics

| | Mean | Standard Deviation | Between Variation | Within Variation | Observations | Panels | Months |
|---|---|---|---|---|---|---|---|
| Labour Wage | 3.51 | 0.98 | 0.55 | 0.84 | 517 | 7 | 74 |
| Wheat Price | 0.30 | 0.15 | 0.04 | 0.14 | 517 | 7 | 74 |
| Sheep Price | 81.62 | 15.69 | 7.87 | 13.79 | 517 | 7 | 74 |
| Diesel Price | 0.64 | 0.22 | 0.13 | 0.21 | 517 | 7 | 74 |
| Opium Price | 134.28 | 78.66 | 36.90 | 70.98 | 376 | 6 | 63 |
| Attacks | 3.16 | 4.29 | 3.12 | 3.18 | 504 | 7 | 72 |
| Peace Disruption | 0.68 | 0.47 | 0.26 | 0.40 | 504 | 7 | 72 |
| Non-hostile | 0.20 | 0.92 | 0.22 | 0.89 | 650 | 7 | 93 |
| Hostile | 0.79 | 2.25 | 1.20 | 1.92 | 650 | 7 | 93 |
| ISAF | 0.99 | 2.54 | 1.34 | 2.17 | 650 | 7 | 93 |

Table 2: Variables used in the econometric estimation

| Name | Definition | Source |
|---|---|---|
| Labour Wage | US$ prices of one day of unskilled labour | World Food Program |
| Wheat Price | US$ prices of 1 kg of wheat | World Food Program |
| Sheep Price | US$ prices of a one year old female sheep | World Food Program |
| Diesel Price | US$ prices of one liter of diesel | World Food Program |
| Opium Price | US$ farm-gate price of 1 kg of dry opium | UNODC |
| Attacks | N. deaths, wounded and kidnapped | Worldwide Incidents Tracking System |
| Peace Disruption | Dummy taking a value 1 when Attacks is positive | Worldwide Incidents Tracking System |
| Non-hostile | Non-Hostile ISAF casualties | iCasualties.org/ |
| Hostile | Hostile ISAF casualties | iCasualties.org/ |
| ISAF | Hostile and Non-Hostile ISAF casualties | iCasualties.org/ |

Table 3: The Impact of Violence on Labour Wage

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | 0.003* | 0.017** | 0.005*** | 0.005 | 0.005* |
| | (0.001) | (0.005) | (0.001) | (0.002) | (0.002) |
| Labour Wage (lagged) | 0.860*** | 0.876*** | 0.878*** | 0.872*** | 0.871*** |
| | (0.037) | (0.039) | (0.045) | (0.046) | (0.046) |
| Constant | 0.181*** | 0.149** | 0.119** | 0.128** | 0.129** |
| | (0.047) | (0.049) | (0.045) | (0.047) | (0.046) |
| Observations | 450 | 450 | 510 | 510 | 510 |
| R-squared | 0.876 | 0.875 | 0.869 | 0.870 | 0.870 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed unskilled labour wage. Estimation includes month and province fixed effects.

Table 4: The Impact of Violence on Sheep Price

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | 0.001 | 0.004 | -0.001 | 0.003*** | 0.002** |
| | (0.001) | (0.016) | (0.001) | (0.001) | (0.001) |
| Sheep Price (lagged) | 0.931*** | 0.934*** | 0.918*** | 0.913*** | 0.914*** |
| | (0.009) | (0.009) | (0.017) | (0.018) | (0.018) |
| Constant | 0.302*** | 0.287*** | 0.358*** | 0.377*** | 0.373*** |
| | (0.041) | (0.042) | (0.075) | (0.078) | (0.077) |
| Observations | 450 | 450 | 510 | 510 | 510 |
| R-squared | 0.890 | 0.890 | 0.898 | 0.898 | 0.898 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed sheep price. Estimation includes month and province fixed effects.

Table 5: The Impact of Violence on Wheat Price

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | -0.002* | -0.013 | 0.004** | 0.002** | 0.003*** |
| | (0.001) | (0.016) | (0.001) | (0.001) | (0.001) |
| Wheat Price (lagged) | 0.955*** | 0.952*** | 0.963*** | 0.962*** | 0.961*** |
| | (0.008) | (0.007) | (0.004) | (0.004) | (0.004) |
| Constant | -0.011 | -0.007 | -0.014 | -0.015 | -0.015 |
| | (0.016) | (0.015) | (0.014) | (0.014) | (0.014) |
| Observations | 450 | 450 | 510 | 510 | 510 |
| R-squared | 0.937 | 0.937 | 0.949 | 0.949 | 0.949 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed wheat price. Estimation includes month and province fixed effects.

Table 6: The Impact of Violence on Diesel Price

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | 0.001 | -0.002 | 0.007** | 0.002 | 0.003 |
| | (0.001) | (0.014) | (0.002) | (0.003) | (0.002) |
| Diesel (lagged) | 0.910*** | 0.917*** | 0.944*** | 0.943*** | 0.941*** |
| | (0.006) | (0.007) | (0.012) | (0.014) | (0.013) |
| Constant | -0.073*** | -0.071*** | -0.052* | -0.052* | -0.052* |
| | (0.009) | (0.006) | (0.022) | (0.022) | (0.022) |
| Observations | 450 | 450 | 510 | 510 | 510 |
| R-squared | 0.920 | 0.920 | 0.935 | 0.935 | 0.935 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed diesel price. Estimation includes month and province fixed effects.

Table 7: The Substitution Complementarity Table

| | (1) Labour Wage | (2) Sheep Price | (3) Wheat Price | (4) Diesel Price | (5) Opium Price |
|---|---|---|---|---|---|
| Labour Wage (lagged) | 0.630*** | 0.027 | -0.035 | 0.209 | -0.162** |
| | (0.140) | (0.019) | (0.036) | (0.149) | (0.056) |
| Sheep Price (lagged) | 0.064 | 0.884*** | 0.062** | 0.042 | 0.010 |
| | (0.060) | (0.038) | (0.020) | (0.028) | (0.047) |
| Wheat Price (lagged) | -0.029 | -0.037** | 0.915*** | 0.094* | -0.077*** |
| | (0.029) | (0.014) | (0.015) | (0.038) | (0.017) |
| Diesel (lagged) | 0.044 | -0.028 | 0.123** | 0.736*** | -0.012 |
| | (0.063) | (0.021) | (0.043) | (0.089) | (0.031) |
| Opium Price (lagged) | -0.140** | -0.048* | 0.036 | 0.022 | 0.807*** |
| | (0.035) | (0.019) | (0.040) | (0.039) | (0.019) |
| Constant | 0.778*** | 0.657** | -0.428 | -0.547* | 0.993*** |
| | (0.151) | (0.186) | (0.272) | (0.217) | (0.233) |
| Observations | 353 | 353 | 353 | 353 | 343 |
| R-squared | 0.764 | 0.880 | 0.939 | 0.912 | 0.896 |
| Number of provinces | 6 | 6 | 6 | 6 | 6 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the dependent variable. Variables are a log transformation of the respective prices. Estimation includes month and province fixed effects.

Table 8: Comparison between Provinces

| | Badakhshan | | Kandahar | | |
|---|---|---|---|---|---|
| | Mean | Standard Deviation | Mean | Standard Deviation | P-value |
| Labour Wage | 4.07 | 1.01 | 3.25 | 0.90 | 0.00 |
| Wheat Price | 0.31 | 0.14 | 0.29 | 0.14 | 0.26 |
| Sheep Price | 74.53 | 15.08 | 87.43 | 15.51 | 0.00 |
| Diesel Price | 0.66 | 0.19 | 0.58 | 0.21 | 0.02 |
| Opium Price | 100.31 | 21.71 | 151.11 | 118.38 | 0.00 |
| Attacks | 0.94 | 1.56 | 9.49 | 6.14 | 0.00 |
| Peace Disruption | 0.47 | 0.50 | 0.96 | 0.20 | 0.00 |
| Non-hostile | 0.01 | 0.11 | 0.42 | 0.93 | 0.00 |
| Hostile | 0.03 | 0.24 | 3.34 | 4.12 | 0.00 |
| ISAF | 0.05 | 0.26 | 3.75 | 4.43 | 0.00 |

The first column details the names of the variables, while the second and fourth show their means for the provinces of Badakhshan and Kandahar with respective standard deviations in the next column. The last shows the p-value for a t-test for difference in means for the 2 provinces.

# A Including Opium Price

The four tables in this section present the results when we estimate our empirical model including the price of opium as a covariate.

Table A.1: The Impact of Violence on Labour Wages

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | 0.001 | 0.018** | 0.007** | 0.003 | 0.004 |
| | (0.001) | (0.006) | (0.002) | (0.003) | (0.003) |
| Labour Wage (lagged) | 0.809*** | 0.815*** | 0.658*** | 0.658*** | 0.655*** |
| | (0.037) | (0.035) | (0.121) | (0.122) | (0.122) |
| Opium Price (lagged) | -0.066** | -0.067*** | -0.149** | -0.145** | -0.144** |
| | (0.018) | (0.015) | (0.056) | (0.056) | (0.056) |
| Constant | 0.532*** | 0.518*** | 1.086** | 1.067** | 1.068** |
| | (0.106) | (0.095) | (0.402) | (0.399) | (0.400) |
| Observations | 331 | 331 | 353 | 353 | 353 |
| R-squared | 0.786 | 0.787 | 0.761 | 0.760 | 0.761 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 . The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed labour wage. Estimation includes month and province fixed effects.

Table A.2: The Impact of Violence on Sheep Prices

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | -0.000 | 0.007 | -0.002** | 0.003* | 0.001 |
| | (0.000) | (0.019) | (0.001) | (0.001) | (0.001) |
| Sheep Price (lagged) | 0.924*** | 0.926*** | 0.897*** | 0.896*** | 0.896*** |
| | (0.018) | (0.017) | (0.032) | (0.031) | (0.032) |
| Opium Price (lagged) | -0.034* | -0.031** | -0.019* | -0.015 | -0.017 |
| | (0.014) | (0.011) | (0.009) | (0.011) | (0.010) |
| Constant | 0.503*** | 0.473*** | 0.549** | 0.534** | 0.545** |
| | (0.105) | (0.076) | (0.170) | (0.168) | (0.167) |
| Observations | 331 | 331 | 353 | 353 | 353 |
| R-squared | 0.832 | 0.833 | 0.874 | 0.875 | 0.874 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed sheep price. Estimation includes province and month fixed effects.

Table A.3: The Impact of Violence on Wheat Prices

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | -0.002 | -0.011 | 0.004** | 0.002 | 0.003* |
| | (0.001) | (0.019) | (0.001) | (0.001) | (0.001) |
| Wheat Price (lagged) | 0.972*** | 0.973*** | 0.965*** | 0.966*** | 0.965*** |
| | (0.021) | (0.020) | (0.018) | (0.018) | (0.018) |
| Opium Price (lagged) | 0.015 | 0.023 | 0.002 | 0.005 | 0.006 |
| | (0.043) | (0.038) | (0.026) | (0.027) | (0.027) |
| Constant | -0.063 | -0.098 | -0.017 | -0.033 | -0.037 |
| | (0.190) | (0.158) | (0.106) | (0.116) | (0.113) |
| Observations | 331 | 331 | 353 | 353 | 353 |
| R-squared | 0.932 | 0.932 | 0.936 | 0.936 | 0.936 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed wheat price. Estimation includes month and province fixed effects.

Table A.4: The Impact of Violence on Diesel Prices

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | 0.001 | -0.003 | 0.007*** | 0.004** | 0.005*** |
| | (0.001) | (0.018) | (0.001) | (0.001) | (0.001) |
| Diesel (lagged) | 0.895*** | 0.896*** | 0.875*** | 0.874*** | 0.872*** |
| | (0.010) | (0.010) | (0.025) | (0.025) | (0.024) |
| Opium Price (lagged) | -0.029 | -0.033* | -0.055** | -0.050** | -0.050** |
| | (0.016) | (0.014) | (0.015) | (0.016) | (0.016) |
| Constant | 0.052 | 0.075 | 0.203* | 0.177 | 0.173 |
| | (0.072) | (0.068) | (0.089) | (0.090) | (0.092) |
| Observations | 331 | 331 | 353 | 353 | 353 |
| R-squared | 0.889 | 0.889 | 0.898 | 0.898 | 0.899 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed diesel price. Estimation includes month and province fixed effects.

# B Results without Kandahar

The four tables in this section present the results when we estimate our empirical model on a sample excluding the province of Kandahar.

Table B.1: The Impact of Violence on Labour Wages

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | 0.004 | 0.018** | 0.005*** | 0.005 | 0.005 |
| | (0.002) | (0.005) | (0.001) | (0.005) | (0.003) |
| Labour Wage (lagged) | 0.847*** | 0.858*** | 0.851*** | 0.849*** | 0.849*** |
| | (0.041) | (0.041) | (0.052) | (0.054) | (0.053) |
| Constant | 0.162*** | 0.142** | 0.120** | 0.122** | 0.122** |
| | (0.040) | (0.042) | (0.045) | (0.047) | (0.046) |
| Observations | 379 | 379 | 427 | 427 | 427 |
| R-squared | 0.787 | 0.787 | 0.782 | 0.782 | 0.782 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed labour wage. Estimation includes month and province fixed effects. The coefficient on lagged labour wage is significantly different from 1.

Table B.2: The Impact of Violence on Sheep Prices

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | 0.001 | 0.004 | -0.001 | 0.003 | 0.001 |
| | (0.001) | (0.017) | (0.001) | (0.002) | (0.002) |
| Sheep Price (lagged) | 0.936*** | 0.937*** | 0.916*** | 0.915*** | 0.916*** |
| | (0.008) | (0.010) | (0.021) | (0.022) | (0.021) |
| Constant | 0.283*** | 0.274*** | 0.370** | 0.374** | 0.372** |
| | (0.033) | (0.046) | (0.092) | (0.093) | (0.092) |
| Observations | 379 | 379 | 427 | 427 | 427 |
| R-squared | 0.827 | 0.826 | 0.855 | 0.856 | 0.855 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed sheep price. Estimation includes month and province fixed effects. The coefficient on lagged sheep price is significantly different from 1.

Table B.3: The Impact of Violence on Wheat Prices

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | -0.004** | -0.015 | 0.004** | 0.001 | 0.003** |
| | (0.001) | (0.017) | (0.001) | (0.001) | (0.001) |
| Wheat Price (lagged) | 0.952*** | 0.950*** | 0.961*** | 0.961*** | 0.961*** |
| | (0.007) | (0.007) | (0.004) | (0.004) | (0.004) |
| Constant | -0.018 | -0.017 | -0.023 | -0.023 | -0.023 |
| | (0.017) | (0.018) | (0.016) | (0.016) | (0.016) |
| Observations | 379 | 379 | 427 | 427 | 427 |
| R-squared | 0.931 | 0.930 | 0.943 | 0.943 | 0.943 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed wheat price. Estimation includes month and province fixed effects. The coefficient on lagged wheat price is significantly different from 1.

Table B.4: The Impact of Violence on Diesel Prices

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | 0.002 | 0.000 | 0.006*** | -0.003 | 0.001 |
| | (0.001) | (0.014) | (0.001) | (0.006) | (0.004) |
| Diesel (lagged) | 0.907*** | 0.913*** | 0.940*** | 0.941*** | 0.939*** |
| | (0.006) | (0.007) | (0.015) | (0.016) | (0.015) |
| Constant | -0.084*** | -0.079*** | -0.049 | -0.049 | -0.049 |
| | (0.010) | (0.007) | (0.025) | (0.024) | (0.025) |
| Observations | 379 | 379 | 427 | 427 | 427 |
| R-squared | 0.903 | 0.903 | 0.920 | 0.920 | 0.920 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed diesel price. Estimation includes month and province fixed effects. The coefficient on lagged diesel price is significantly different from 1.

# C First Difference Results

The four tables in this section present the results when we estimate our empirical model with first difference transformation.

Table C.1: The Impact of Violence on Labour Wages

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | -0.000 | 0.004 | 0.003** | 0.001 | 0.002 |
| | (0.001) | (0.006) | (0.001) | (0.001) | (0.001) |
| Labour Wage (lagged) | -0.093* | -0.094* | -0.241* | -0.242* | -0.241* |
| | (0.040) | (0.039) | (0.110) | (0.110) | (0.110) |
| Constant | -0.026* | -0.025* | -0.055** | -0.055** | -0.055** |
| | (0.011) | (0.011) | (0.020) | (0.020) | (0.020) |
| Observations | 443 | 443 | 503 | 503 | 503 |
| R-squared | 0.101 | 0.101 | 0.126 | 0.125 | 0.126 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable in first differences used in the estimation. The dependent variable is log transformed labour wage in first differences. Estimation includes month fixed effects.

Table C.2: The Impact of Violence on Sheep Prices

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | -0.000 | -0.001 | -0.001 | 0.002** | 0.001 |
| | (0.001) | (0.005) | (0.001) | (0.001) | (0.001) |
| Sheep Price (lagged) | 0.179** | 0.179* | 0.217*** | 0.221*** | 0.219*** |
| | (0.072) | (0.074) | (0.053) | (0.053) | (0.054) |
| Constant | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 |
| | (0.007) | (0.007) | (0.005) | (0.005) | (0.005) |
| Observations | 443 | 443 | 503 | 503 | 503 |
| R-squared | 0.049 | 0.048 | 0.055 | 0.058 | 0.057 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed sheep price. Estimation includes month fixed effects. All price variables are transformed in first differences.

Table C.3: The Impact of Violence on Wheat Prices

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | -0.001 | -0.002 | 0.001 | 0.003* | 0.002** |
| | (0.001) | (0.009) | (0.001) | (0.001) | (0.001) |
| Wheat Price (lagged) | 0.148** | 0.148** | 0.104 | 0.106 | 0.106 |
| | (0.049) | (0.049) | (0.056) | (0.056) | (0.056) |
| Constant | 0.035** | 0.035** | 0.030** | 0.030** | 0.030** |
| | (0.010) | (0.010) | (0.010) | (0.010) | (0.010) |
| Observations | 443 | 443 | 503 | 503 | 503 |
| R-squared | 0.085 | 0.084 | 0.055 | 0.057 | 0.057 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed wheat price. Estimation includes month fixed effects. All price variables are transformed in first differences.

Table C.4: The Impact of Violence on Diesel Prices

| | (1) Attacks | (2) Peace Disruption | (3) Non-hostile | (4) Hostile | (5) ISAF |
|---|---|---|---|---|---|
| Violence (lagged) | -0.001 | -0.001 | 0.003* | 0.003 | 0.003* |
| | (0.001) | (0.012) | (0.002) | (0.002) | (0.001) |
| Diesel (lagged) | -0.112 | -0.110* | -0.201** | -0.204** | -0.203** |
| | (0.058) | (0.055) | (0.058) | (0.057) | (0.057) |
| Constant | -0.054*** | -0.054*** | -0.029 | -0.028 | -0.028 |
| | (0.010) | (0.010) | (0.026) | (0.026) | (0.026) |
| Observations | 443 | 443 | 503 | 503 | 503 |
| R-squared | 0.240 | 0.240 | 0.188 | 0.189 | 0.190 |

Robust standard errors clustered at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 The top of the column shows the violence variable used in the estimation. The dependent variable is log transformed diesel price. Estimation includes month fixed effects. All price variables are transformed in first differences.