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Abstract

How do foreign powers disengage from a conflict? We study the recent large-scale security transition from international troops to local forces in the context of the ongoing civil conflict in Afghanistan. We construct a new dataset that combines information on this transition process with declassified conflict outcomes and previously unreleased quarterly survey data. Our empirical design leverages the staggered roll-out of the transition onset, together with a novel instrumental variables approach to estimate the impact of the two-phase security transition. We find that the initial security transfer to Afghan forces is marked by a significant, sharp and timely decline in insurgent violence. This effect reverses with the actual physical withdrawal of foreign troops. We argue that this pattern is consistent with a signaling model, in which the insurgents reduce violence strategically to facilitate the foreign military withdrawal. Our findings clarify the destabilizing consequences of withdrawal in one of the costliest conflicts in modern history and yield potentially actionable insights for designing future security transitions.

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1 Introduction

Foreign military occupations typically end with a security transition, in which international forces transfer military and police powers to local allies. Such foreign-to-local security transitions are difficult to manage (Lake, 2016). This is due to the likely survival, in one form or another, of anti-government elements that triggered the foreign military intervention to begin with. Therefore, a successful security transition is crucial for the economic and political development of the local state that emerges in the wake of military interventions. Yet surprisingly little is known about the conflict dynamics of countries experiencing a foreign-to-local security transition. Our paper relies on rich microlevel data to study the impact of the large-scale security transition that marked the end of Operation Enduring Freedom in Afghanistan—NATO's long-running military campaign.

Since 1960, at least 115 foreign military occupations have ended (Collard-Wexler, 2013) (see Figure 1). A substantial percentage of these interventions involved the withdrawal of troops and redeployment of weaponry to local allies. As Figure 1 reveals, security transitions remain an important economic and policy issue as a large number of military occupations remain active globally. Even though the historical record is riddled with security transitions, nearly all microlevel empirical research on counterinsurgency focuses on understanding the economic and political drivers that explain how military interventions *begin* and how conflict strategies and warfighting tactics evolve within an *ongoing* campaign. How foreign campaigns *end* has been mostly ignored in this literature (Berman and Matanock, 2015). Empirical work on this topic is naturally constrained by the lack of consistent conflict data during the transition period, in particular for unsuccessful transitions. Our paper relies on unique data sources that were collected continuously during the transition process, which enables us to address the knowledge gap around exit strategies after foreign interventions.

Conflict patterns during and after security transitions—which mark the end of a foreign intervention or occupation—are theoretically ambiguous. A security transition may shift provision of policing and formal military operations from well trained and equipped foreign fighters to unseasoned local forces using unfamiliar or outdated technology. Even if local fighters are capable, they may lack legitimacy, commit unintended harm to civilians, or deliberately discriminate against ethnic rivals, undermining economic welfare and damaging public confidence in the quality and stability of host nation institutions. Local forces might also transfer weaponry and other warfighting capital to unregulated paramilitary groups (Dube and Naidu, 2015). Under these conditions, insurgent operations are likely to increase, and their control over previously contested territory may consolidate. On the other hand, local forces might actually be more capable of integrating with communities within their operational zone and extracting information from non-combatants about insurgent operations (Lyall et al., 2015). Insurgents might also find it more difficult to mobilize support for attacks on host nation forces as opposed to foreign soldiers. Knowledge of the human terrain and difficulties motivating violence against conationals or coethnics could translate to reduced insurgent activity and increased counterinsurgent effectiveness. Furthermore, insurgents may directly and strategically respond to plans of foreign forces to withdraw troops by changing their underlying tactics and targets (Bueno de Mesquita, 2013; Wright, 2016; Vanden Eynde, 2018). Lastly, security transitions may be poorly coordinated between foreign and local forces, leading to political and tactical disorder and further enhancing tensions and conflict. Importantly, there is no existing empirical evidence on the relative significance of these different mechanisms in the context of security transitions.

To study how security transitions from foreign to local forces influence insurgent activity and counterinsurgent effectiveness, we examine the large-scale transfer of policing and military power from the International Security Assistance Force (ISAF) to host nation forces in Afghanistan at the end of Operation Enduring Freedom. Characteristic of other foreign military interventions, the occupation of ISAF displaced the incumbent regime and assisted in the installation of an ostensibly democratic government in 2001. During the occupation, foreign forces coordinated under the auspices of NATO helped train and equip local police and military forces. Planning for the transition of security provision from ISAF to Afghan forces began as early as 2010, and was formally announced in 2011. The transition was staggered, and coordinated around administrative districts. Over three years, and five transition tranches, all of Afghanistan's districts were transferred from ISAF to Afghan control.

We estimate the impact of the security transition on conflict dynamics using exceptionally granular data. Data limitations may be a central reason for why there have been no prior quantitative studies on the impact of security transitions. We are uniquely positioned to overcome this obstacle. Since the start of major ISAF operations, a system to collect comprehensive conflict data from ISAF and host nation forces was set up to track significant activities, referred to as SIGACTS. These event data are geotagged and timestamped, and document dozens of different types of insurgent and security force operations. Access to this database was secured through formal declassification channels and represents the most complete catalog of conflict activity during Operation Enduring Freedom currently available (Shaver and Wright, 2016). We combine this observational data with microlevel survey data collected by NATO (using local contractors) through the Afghanistan National Quarterly Assessment Research (ANQAR) platform. The primary aim of the survey was to provide and collect data on perceptions of the security situation from Afghan citizens across the country in a systematic manner. We have obtained restricted access to the complete survey records of around 370,000 individual respondents across dozens of quarterly waves from 2008 to 2016. These surveys include multiple questions measuring respondent's perceptions of security conditions, the extent of local security provision and perceptions of territorial control. These measures will allow us to validate our findings based on conflict measures, and to distinguish between potential mechanisms.[1]

Our empirical analysis sheds light on the two main phases of the security transition. The first phase is the onset of the transition marked by a sequence of public announcements providing lists of districts where security responsibility is to be handed over to local forces from a given date onwards. The second phase is the actual physical withdrawal and closure of military bases hosting NATO troops. To estimate the effect of the onset of the security transition, we use a difference-in-difference approach. We exploit the staggered schedule of transition announcements that occurred across five tranches. This allows us to pool five difference-in-difference estimators to study the effect of the onset of the security transition on conflict outcomes, comparing localities where the Afghan National Security Forces (ANSF) took over security to those where

[1] Existing work rarely combines observational and survey data on conflicts. Exceptions are Gould and Klor (2010), and Jaeger et al. (2015), who use survey evidence on the Israeli-Palestinian conflict.

ISAF is still in charge, before and after the security transfer. The geographic precision of our conflict data enables us to employ a high resolution spatial matching design as an alternative to our district-level analysis. Our results show that the local announcement of the security transition schedule led to a short-term decline in local violence. This pattern holds both for conflict measures drawn from the SIGACTS database as well as ANQAR survey instruments measuring security perceptions of the local population. This improvement in security outcomes appears to have gone hand-in-hand with a substantial upward shift in civilian perceptions of the efficacy of local security forces.

Our second empirical exercise focuses on the physical withdrawal of NATO troops. Using a newly constructed data set of individual base closures and handovers, we employ a novel instrumental variables strategy exploiting operational and logistical constraints to the organization of the troop withdrawal. This approach helps us to address concerns about the endogeneity of the decision to close bases in one area earlier compared to others. Our IV strategy relies on cross-sectional variation in the travel distance between individual districts and ten major logistical hubs. These ten hubs were central to the withdrawal as they had military grade airports that could physically accommodate the heavy cargo airplanes that were used to transport arms and troops out of the country. Our findings suggest that following the second phase of the transition—the physical withdrawal of troops and closure of military bases—violence significantly surged and perceptions of security worsened substantially. We address potential violations of the exclusion restriction directly by accounting for the correlation between logistical constraints and other measures of population and market proximity. While our empirical design allows us to fully control for the direct effect that the first phase of the security transition had on conflict, we also combine the analysis from both phases in a single framework. Overall, the pattern that emerges suggests that the transition onset announcement is associated with an improvement in the security situation, while the physical withdrawal of NATO troops is marked by a dramatic worsening of security.

We argue that these two pieces of evidence are consistent with insurgents strategically drawing down their forces ('lying low') until after counterinsurgents sufficiently raised the cost of local re-intervention. We develop a simple model that rationalizes this logic and treats the initial reduction in violence as a costly signal sent by the Taliban to ISAF. As ISAF cannot directly observe the local capacity of the Taliban relative to the ANSF, it bases its decision to stick to a fixed withdrawal timeline on observed levels of violence during the transition period. A high-capacity Taliban can then decides to 'lie low' as part of a pooling equilibrium, which facilitates ISAF's withdrawal, and increases the ability of the Taliban to inflict violence when the transition is completed. Official documents of the US Department of Defense interpreted the initial phases of the transition as a success, which is consistent with the idea that the Taliban effectively understated their true capacity. Public opposition to the war in most Western troop sending countries may have incentivized insurgents to make the transition appear successful until it became excessively costly for political and military leaders to revert back. As such, ISAF's public commitment to a timeline for a troop withdrawal—an often criticized tactical decision—may have undermined the success of the security transition.

Even if we lack a direct test of the 'lying low' strategy described above, the most plausible alternative interpretation of our violence patterns can be investigated directly. In principle, the reduction in violence during the transfer phase and its rise after the withdrawal of foreign troops could have been driven by complementarities between ISAF and the ANSF. Relying on a range of empirical tests, we find no evidence of such complementarities between ISAF and the ANSF. We can also rule out other plausible alternative explanations. We pay particular attention to SUTVA violations inherent in designs in which spatial spillovers or displacement effects are possible. This paper is the first to leverage new econometric techniques to directly tackle this issue in the context of the conflict literature. Rather than invoking conventional spatial models that require the researcher to pre-specify the extent to which conflict processes interact across spatial,[2] we leverage the work by de Paula et al. (2019) and adopt it to the specific issue at hand: learning the pattern of spatial spillovers of conflict, and then using that information to directly control for the spillovers.

We contribute to several strands of literature in economics and political science.

[2]For a seminal contribution on the estimation of spatial models with fixed interaction matrix, see **?**. A review of estimation of network models can be found in **?**

Prior work on the economics of civil war has largely focused on factors that cause insurgencies to emerge (Fearon and Laitin, 2003; Collier and Hoeffler, 2004; Miguel et al., 2004; Nunn and Qian, 2014; Bazzi and Blattman, 2014; Berman et al., 2017), rather than how insurgents strategically respond to shifts in military power as occupations draw to a close. In most countries, state capacity is central to these dynamics (Besley and Persson, 2009, 2010; Powell, 2013; Gennaioli and Voth, 2015; Esteban et al., 2015; Sanchez de la Sierra, 2017).[3] In Afghanistan, recent work by Condra et al. (2018) shows that the Taliban have disrupted core democratic institutions (elections), which undermines the government's state building efforts. Our study emphasizes another key component of Afghanistan's state building process—the gradual transfer of security to local forces. Also in line with Condra et al. (2018) we document how the strategic use of violence by the Taliban may have had an impact on the subsequent consolidation of political control by government forces. More broadly, our paper fills an important gap in the literature on interventions in civil wars, by examining the conflict dynamics of a foreign-to-local security transfer.

A growing number of recent papers study security and development interventions that occur *within* conflicts. These studies have produced mixed results. On the one hand, development projects have been found to reduce conflict in Iraq (Berman et al., 2011), India (Fetzer, 2014), and Afghanistan (Beath et al., 2013), which could be because they allow counter-insurgency forces to win "hearts and minds" or because they raise the opportunity cost of participating in conflict. But, evidence from the Philippines (Crost et al., 2014) and contested areas in Afghanistan (Sexton, 2016) suggests that development projects could also increase violence, possibly because the insurgents try to disrupt these programs. Nunn and Qian (2014) argue that food aid could even extend the duration of conflicts by funding its participants indirectly. Violence within conflicts may also respond to warfighting tactics. Dell and Querubin (2016) show that US bombing runs in Vietnam increased operations of Viet Cong forces, in line with earlier work by Kocher et al. (2011). A tactical choice in civil wars that is particularly relevant for our paper is whether to rely on coethnic fighting units. Lyall

[3]Many papers study the interaction between two groups, often a government and a rebel movement, even if real world conflicts involve complex alliances between many actors in a network König et al. (2017).

(2009) finds that coethnic forces in Chechnya were more effective than entirely foreign (Russian) forces. However, the deployment of foreign and coethnic forces in Chechnya occurred throughout the conflict, and was not linked to an exit strategy. None of these papers on economic or security interventions in conflict zones examine what happens when foreign powers try to leave a war.

In parallel to the literature on interventions in ongoing conflicts, a growing number of papers study post-conflict societies. Existing work has found that development aid and reconciliation programs can improve social cohesion after war (Fearon et al., 2009; Cilliers et al., 2016). Voigtlander and Voth (2012) find that denazification policies implemented by occupying forces in Germany after the World War II had long-run effects on anti-Semitic attitudes. Related work has shown that the experience of war veterans can profoundly shape the societies they return to (Jha and Wilkinson, 2012; Vanden Eynde, 2016), and that individual exposure to war violence could increase prosocial behavior (Bellows and Miguel, 2006; Blattman, 2009; Gilligan et al., 2014; Bauer et al., 2016). This literature has produced rich insights in the legacies of conflict, but it tends focus on settings in which the conflict has clearly ended. This could be the case if there is a credible peace agreement. As highlighted by Fearon (2004), commitment problems preclude durable peace agreements in many civil wars. Our paper tries to understand these complex environments, in which severe security threats may outlive foreign interventions and successful exit strategies are crucial for whether countries can transition to "post-conflict" status.

Lastly, by leveraging the framework developed by de Paula et al. (2019), we bring a new econometric tool to the conflict literature. Geocoded conflict-event data has become an extremely valuable resource in conflict research. Yet concerns about spatial spillovers and violations to the SUTVA assumption implicit in the difference-in-difference estimation strategies so commonly used in the field become more severe as the spatial aggregation of data becomes more precise. In the literature, spatial dependence is typically modelled through spatial autoregressive processes (see, for example, Berman et al., 2017; Mueller et al., 2017; Ferrara and Harari, 2018; McGuirk and Burke, 2020).[4] Yet, as spatio-temporal autoregressive models require the researcher

[4] Tapsoba (2018, 2019) introduces flexible kernel density estimation that are more general to the

to pre-specify the dependence structure (e.g., physical proximity), the correction bundles explicit and implicit assumptions about the decay of autocorrelation. Existing approaches are insufficient in the presence of autocorrelation driven by factors unknown to the researcher. This is likely the case when studying conflict dynamics, where the use of violence may be linked across locations through factors beyond physical distance.[5] We instead use the framework by de Paula et al. (2019) to learn about the pattern of spillovers from within the data itself.

Our study also yields potentially actionable insights regarding one of the costliest conflicts in modern history. Since 2001, the United States alone has invested 1.07 trillion dollars in combat operations, economic assistance, and soldier healthcare directly related to the war in Afghanistan. The Pentagon estimates that continuing annual costs of US operations after the security transition are roughly 45 billion dollars; roughly six times Afghanistan's yearly national budget. The human toll of the war has also been substantial. As of April 2018, ISAF had lost 3,547 soldiers in combat operations. In addition to these troop fatalities, more than 31,000 civilian deaths have been documented during the conflict. The security transition marked a turning point in the conflict, and it has been the subject of fierce political debates at all its stages: when it was first announced, when it was implemented, and after it had been completed. The evidence we present demonstrates how the withdrawal of foreign forces influenced the stability of local political actors and institutions and how future transitions might be managed more effectively, addressing a significant gap in our understanding of a topic of immense economic and policy significance.

The paper proceeds as follows. First, we provide background on the security transition in Afghanistan. Second, we introduce and describe the data used in this investigation. Third, we review the empirical strategies we employ and, in section four, we present the main results. Section five discusses the mechanisms that could drive our findings, providing a simple conceptual framework as well as discussing the external validity. Section six concludes.

commonly used spatio-temporal autoregressive models used.

[5]For example, Limodio (2019) suggests that financing and capital flows across cities in Pakistan may be an important driver of conflict between spatially quite disconnected cities. Manacorda and Tesei (2019) point to the importance of the internet connectivity in explaining the spatial and temporal spread of anti-government mass mobilizations.

2 Context and Data

2.1 Timing of the security transition

The ongoing war in Afghanistan, which started in 2001, saw a large number of NATO countries participate in ground operations, under the umbrella of International Security Assistance Force (ISAF). ISAF's role, according to UN Security Council Resolution 1386, was explicitly to assist the Afghan Interim Authority in rebuilding government institutions and providing security. From its inception, the mission was conceived as a temporary intervention, and the first steps towards a security transition were taken in November 2009, when then-President Karzai announced the desire to see a complete transition by the end of 2014. The US subsequently announced that the transition process would begin in 2011. In July 2010, the Joint Afghan-NATO Inteqal Board (JANIB) was established to implement the transition process. JANIB selected a first tranche of districts for which the ANSF took over security, and President Karzai announced these districts in March 2011. The process was completed in five tranches, with an official transition ceremony to mark the completion of the transfers at the end of 2014. These events are depicted on a timeline in Figure 2. The official *transfer of security responsibility* is the first phase of the broader transition process, with *ISAF base closures* and the ultimate physical withdrawal of ISAF troops as the second phase. The next subsections discuss these two transition phases in detail.

2.2 Security transfer: assignment to transition tranches

In November 2010, the Joint Afghan NATO Inteqal Board (JANIB) convened for the first time.[6] Under the leadership of Dr. Ashraf Ghani (appointed by President Karzai as the Chairman of the Afghan Transition Coordination Commission) and co-chaired by ISAF Commander General Petraeus and NATO representatives, the JANIB confirmed the 2011-2014 transition timeline. It emphasized stability and self-sufficiency as goals of transition. In February 2011, JANIB recommended the geographic areas assessed as prepared to begin the transition process. Authorization to proceed from

[6]Inteqal is the Dari and Pashtu word for *transition*.

Stabilization into Transition was decided by JANIB based on the following factors:[7]

1. The capability of the ANSF to shoulder additional security tasks with less assistance from ISAF;
2. The level of security in the area and the degree to which the local populace was able to pursue routine daily activities;
3. The development of local governance structures, so that security would not be undermined as ISAF assistance diminished;
4. Whether the force level and posture of ISAF forces could be readjusted as the ANSF expanded its capabilities and as threats to security were reduced.

Although these criteria suggest a rules-based approach, the actual assessments and recommendations of the JANIB board were not made public and remain classified.[8] The final decision on the assignment to transition tranches was taken by the Afghan cabinet, where political considerations played an important role too, implying divergence from the intention of following a rules-based approach. For example, President Karzai is reported to have aimed at an ethnically- and regionally-balanced first tranche, resulting in the inclusion of districts in the first tranche that were not recommended.[9] It was noted in 2012, that while NATO provided thorough security assessments "ultimately, the transfer decision lies with President Hamid Karzai and his principal advisor for transition, Ashraf Ghani. Complex political considerations, including ethnic balancing, at times influence the transfer decisions, despite ISAFs advice."[10] Concerns over whether the JANIB board stuck to the initial aspiration set out in the Lisbon NATO summit of a conditions-based, not calendar-driven process is

[7] UK Parliament, Defence Committee, "Written Evidence from the Ministry of Defence", session 2012-2013. See also https://tinyurl.com/ya58xbzv.

[8] In principle, a condition-based tranche assignment could have relied on a quantitative assessment. Any subsequent ranking could be leveraged in a regression discontinuity approach. However, we have been able to confirm neither the use of a ranking system nor the algorithm that could have been used in a quantitative assessment. Perhaps most importantly, the final tranche sequence was assigned by the Afghan government, not JANIB, and deviated from the board's assessments in notable cases.

[9] See the Department of Defense Report, available https://tinyurl.com/ya58xbzv.

[10] Vanda Felbab-Brown, Brookings Institution, "Afghanistan Field Trip Report VII: The Overall Transition in Afghanistan", https://tinyurl.com/y9fzwkba.

highly questionable. As the process continued, the assignment of districts to different transition tranches became more and more opaque.[11]

While the allocation of districts to transition tranches was subject to discretion, NATO's commitment to five tranches between 2011 and 2014 imposed severe constraints on the timing of the security transfers. The districts and their assignments to the ultimate transition tranches are presented in Panel B of Figure 3.[12] Our various difference-in-difference strategies will exploit the temporal variation generated by the transition process, which we will discuss in detail in Section 3. We present event study evidence and pre-treatment effects to address concerns about endogeneity in the tranche assignments.

It is important to highlight that the security transfers marked a real shift in responsibility, but did not represent a complete break. While ISAF troops were transferred out of lead combat roles, the coalition maintained a supporting and advisory role even after the transition. These trends are evident in Figure 4. This figure plots the share of recorded events in the SIGACTS conflict dataset we describe in the next section that involved coalition and/or Afghan security forces together. Prior to the transition onset, as ISAF is preparing Afghan forces for the handover of security responsibility, joint operations increase. This increase captures the fact that Afghan Forces are deployed to the field. Towards the end of the transition, Afghan forces absorbed the vast majority of all operations on their own. The transition announcement thus marks the gradual handover of security responsibility to local forces, which typically took between 3-12 months to complete, during which which NATO gradually shifted into an oversight and supporting role. The date of the announcement of a tranche and which districts would participate in each wave was public information. We consider these security transfers the first phase of the transition process. The second phase of the transition was the formal withdrawal of troops and the closure of ISAF installation, which we describe in the next subsection.

[11] Afghan Analyst Network, "Opaque and Dilemma-Ridden: A look back at transition", https://tinyurl.com/ybqnzjxz.

[12] We exclude Nimroz and Daykundi provinces from our main sample, as they did not have a Provincial Reconstruction Team and hence did not experience a security transition. We also exclude Mihtarlam district, as different parts of the district were transitioned at different points in time.

2.3 Base closures

Over the course of ISAF's engagement, up to 140,000 NATO troops operated out of an estimated 825 physical bases scattered across Afghanistan. The withdrawal of most NATO forces saw the closure, demolition, or handing over to Afghan Security Forces of nearly 800 of these bases. The vast majority of these bases were small tactical positions, such as Observation Posts, or check points, that were hosting—at most—small troop consignments (SIGAR, 2016). Only a handful of bases still remain in NATO operation under ISAF's small scale Resolute Support follow up mission that currently involves around 15,000 troops and started officially on January 1st, 2015.

Collecting data on base-level deployments from more than 51 troop sending countries proved a major challenge. Nevertheless, we identified a robust method for measuring and coding base closures by focusing on a set of military facilities that regularly were mentioned in the Department of Defense's Periodic Occupational and Environmental Monitoring Summary (POEMS). The POEMS provide information about the physical environment and environmental hazards of main bases along with a list of names of smaller bases out of which NATO troops operated.[13] Unfortunately, the POEMS does not provide exact location information or exact data when bases ceased to be used for operations.[14] However, we use the list of 338 main base locations extracted from POEMS and we conduct a systematic search of sources and references for each base. In particular, we searched video and image hosting platforms for timestamped video and image footage as many soldiers on deployment shared material on social media; we further conducted systematic searches of main news sources using the LexisNexis and Factiva news databases, along with standard search engine queries. For most bases we have several name variations as bases were sometimes named after fallen soldiers and our list also includes a substantial number of bases that were not

[13]We restrict ourselves to the likely set of larger bases such as Forward Operating Bases (FOBs), Camps, Combat Outposts (COPs), and bases hosting the Provincial Reconstruction Teams (PRTs). While no clear size ranking exists, Camps tend to be bigger than FOBs, which in turn are larger than COPs. The PRTs are particularly important as most were operated by multinational forces.

[14]Currently, the best available deployment data is the Order of Battle (ORBAT) platform. This data focuses on tracking troop level deployments, which are typically assigned to bases (as opposed to tracking base operation explicitly). Relative to the data we have compiled, a substantially smaller set of distinct physical bases with location information (44) are present in ORBAT. We thank Tarek Ghani for sharing access to the ORBAT platform.

exclusively under US command.

For a subset of 170 bases out of 338 main bases we were able to identify the district in which they are located as well as confirming when the base was either Closed, Handed over to the Afghan Security Forces, or Retrograded/Demolished using the aforementioned secondary sources. We cannot confirm whether an individual base that was handed over to the ANSF saw a subsequent deployment of Afghan forces. It is also likely that our sample is biased towards including bases that were physically not demolished but handed-over. Given the lack of spatial accuracy and the potential measurement error, we aggregate the information to the district level, computing the date in which the last base was either retrograded or handed over in a district. Lastly, we also obtained data on the public handover ceremonies that were usually held at the end of the formal withdrawal process in the provincial capitals. Since our base closure data does not provide us with a date for all districts in a province, we infer the physical withdrawal date based on these handover ceremonies, which formally mark the end of the transition process.

Base transitions and withdrawals tend to happen after the formal transfer of security responsibility (i.e. the first phase of the transition). Panel A of Figure 5 presents the timing of the transition tranche announcement relative to the recorded transition ceremony or base closure in months. The pattern that emerges is quite evident: base closures and handovers were happening earliest (lighter shades)—relative to the transition onset date—in remote areas relative to a few geographic centers. We will argue and document a host of compelling anecdotal evidence that this pattern is a consequence of the logistic organization of the withdrawal process and not a coincidence or artifact of dataset construction.

2.4 Exploiting logistic constraints to construct an instrument for the sequencing of base closures

The physical withdrawal of ISAF troops and material was a significant logistical challenge, which was impeded by several factors that we exploit to inform the construction of an instrumental variable to isolate as-if random variation in the sequencing of the physical closure of ISAF bases. First, being landlocked, the closest accessible sea port was Karachi, Pakistan. From Afghanistan, Karachi can be reached by crossing the Khyber Pass in the east, or via the Chaman border crossing in the south. Early into the transition, Pakistan closed the borders for in- and out-bound NATO supplies for seven months in 2011 and 2012, following an American air strike that accidentally killed 24 Pakistani troops near the ill-defined border between the two countries in November 2011. Unreliable access to Pakistan continued and the challenge to navigate the treacherous south as well as the Khyber Pass limited the ability to transport equipment via the most economical route to Karachi.[15]

Second, the only alternative land-based route was also constrained. In principle, the so-called "Northern Distribution Network" gives access to Uzbekistan through the northern border crossing of Hairatan (Sanderson and Petersen, 2010). From there, the Soviet-era rail system could be utilized to eventually reach the Black Sea and Europe. But land transports on this route need to traverse the 3,900-meter-high Salang Pass, which is vulnerable to avalanches and landslides.[16] Further, as a US General William Fraser highlighted in a Senate hearing, the "existing agreements with Tajikistan, Kyrgyzstan, and Kazakhstan allowed equipment that is now in Afghanistan to pass through their territory as the war draws down—but not any weapons."[17] This implied that only light armored vehicles with the weapon systems removed could be transported via the Northern route. This proved a severe problem as the convoys needed to be armed to defend themselves against attacks. Further, bureaucratic hurdles at the border crossing implied significant delays and backlogs, which vastly limited the use of this route (see e.g. Felbab-Brown, 2012).

Third, transport of equipment, material and personnel for long distances within Afghanistan is challenging due to the exposure of the convoys to attacks and due to limitations on the road infrastructure. While being only slightly smaller than Texas—which has around 501,000 kilometers of roads—Afghanistan has a road network of

[15] Equipment crawls through Afghanistan to Pakistan, The Tribune Pakistan, `https://tinyurl.com/yaw7cpef`.

[16] The Big Retrograde, The Economist, `https://tinyurl.com/yapfzsor`.

[17] U.S. General Says Closure Of Pakistan Supply Routes Complicates Afghan Pullout, Radio Free Europe, `https://tinyurl.com/ycotacza`.

only 42,150 kilometers out of which only 12,350 kilometers are paved.[18]

Fourth, the scale of the logistical task was enormous by any standard. It is estimated that the US alone had USD 36 billion worth of equipment in the country. Roughly 3% of ISAF bases would subsequently remain under NATO control under the small scale Resolute Support follow up mission.[19] The remaining bases needed to be handed over to the ANSF or be retrograded, which in many cases meant that they were physically destroyed. For this, heavy machinery like fork-lifts and caterpillar tractors were needed. Throughout this process, the ongoing security challenge was a constant concern, resulting in the adoption of special measures to ensure that equipment remaining in Afghanistan could not be turned into weapons.[20] It was estimated that the US needed to move an estimated 90,000 twenty foot shipping containers of equipment together with 50,000 vehicles. Overall, the dozens of troop-sending countries participating in ISAF are thought to have moved at least 70,000 vehicles and 120,000 containers (Loven, 2013).

The scale of the withdrawal operations along with the significant logistical challenges faced by ISAF forces implied that a small set of nodal bases with airfields suited for heavy duty cargo machines played a crucial role. These nodal bases informed both the timing and geographic sequencing of the pullout. The key nodes that were used were Bagram Airfield near Kabul, along with Kandahar Airfield in the south and Camp John Pratt near Mazar-i-Sharif in the north. These bases served as significant Retrograde Sort Yards to consolidate the materials. Seven smaller Forward Retrograde Elements were established to handle smaller cargo planes and to consolidate materials and equipment from bases within the vicinity.[21] The consolidation of materials around main airhubs was necessary as the transport constraints by land implied that only heavy duty long-haul transport planes, such as the Boeing C-17 Globemaster, could economically transport military gear out of Afghanistan. A dedicated route with up to seven trips a day was established between Kuwait and Afghanistan. From Bagram Airfield alone, the 455th Expeditionary Aerial Port Squadron lifted out 84,000

[18] See `https://tinyurl.com/ybozco6k` and `https://tinyurl.com/yrkmrh`.

[19] A salute for Afghanistan retrograde efforts, Army Times, `https://tinyurl.com/yarnd86s`.

[20] Getting Out Of Afghanistan, Fast Company, `https://tinyurl.com/y9dxz3au`.

[21] These were located at bases near Kabul, Jalalabad Airport, Shindand Airbase in the West, Camp Dwyer, FOB Shank and Camp Bastion.

tons of cargo (or 1,083 fully loaded Boeing C-17 carrying each 77.5 tons) between January and August 2014, as well as 134,000 passengers.[22]

As indicated, smaller or remote bases were handed over first with materials being consolidated around larger bases. This is best illustrated using an example. Forward Operating Base (FOB) Torkham in Momand Dara district of Nangarhar province was formally handed over to the ANSF on December 18th, 2013. The base was located right on the border with Pakistan; despite the relative proximity of a transit point to leave Afghanistan, most of the equipment from FOB Torkham was sent 73 km inland to Jalalabad Airfield by road and using sling-loaded CH-53 helicopters. From there, materials were transferred an additional 185 kilometers to the Bagram Airfield north of Kabul. There, the equipment was finally loaded on to heavy duty C-17 Globemaster military cargo airplanes flying to Kuwait.[23]

The above discussion suggests that access to a small subset of NATO air-ready bases was crucial up until the last stages of the military pullout. As a consequence, bases were closed from the outside in, consecutively starting with the outlying bases with difficult or limited access to these central transport hubs. We use this information, together with information on the available road network, to construct a variable capturing the travel distance on the least cost path to one of the ten logistical hubs. The resulting instrument is presented in Panel B of Figure 5. We will show that our results are robust to controlling for a host of other distance measures, most importantly distance to the nearest airport of any type (i.e. including airfields not suited for military planes or heavy cargo).

2.5 Measuring Conflict Activity and Perceptions

In order to study the evolution of conflict around the transition, we rely on two novel microlevel datasources that will allow us to combine results from institutionally tracked conflict data with detailed survey data.

[22] NATO's Afghan Drawdown Poses Logistics Challenges, Aviation Week, https://tinyurl.com/ybyaq8gb.

[23] See https://tinyurl.com/ydhadfd2.

2.5.1 Significant Activities Event Data

Afghanistan provides a rich environment for investigating security transitions, and as we describe below, our study overcomes several critical obstacles that usually limit the ability to draw meaningful and robust inferences. We rely on newly declassified microdata collected by ISAF and local national security partners. Throughout the ongoing conflict, these security forces have tracked insurgent attacks by documenting the approximate time and precise location of attacks perpetrated against them or reported to them. This dataset includes more than 200,000 individual observations of insurgent attacks between 2008 and 2014, each of which is identified by attack type (e.g., direct fire attack, improvised explosive device). These data were secured by Shaver and Wright (2016).

Afghan insurgents undertook several primary types of attacks throughout the war involving direct fire and IEDs as well as other combat activity. Direct fire includes attacks perpetrated at close range (direct line-of-sight encounters). Individual insurgents (often acting in groups) carry out these attacks in a variety of ways. IEDs tend to be directed against moving targets (e.g., vehicle patrols and convoys) and are typically placed on or immediately around roadways. Our data also tracks indirect fire combat events. Indirect fire refers to attacks that include mortars and rockets, which can be launched from much greater distances, but tend to be far less accurate. Nevertheless, even when mortars and rockets fail to strike their intended target, they often create loud explosions that can be heard over relatively large distances.

2.5.2 Afghanistan Nationwide Quarterly Assessment Research Survey Data

Our survey evidence relies on the Afghanistan Nationwide Quarterly Assessment Research (ANQAR) platform. ANQAR tracks civilian attitudes toward government, anti-government entities, and coalition partners. Survey responses are collected on a quarterly basis by a local contractor. Before administering a survey wave, local elders are contacted to secure permission for enumerators to enter sample villages.[24]

[24] Blair et al. (2014) note that ANQAR Wave 13 had high refusal and non-contact rates in several provinces. Although NATO did not keep records of participation and non-contact rates before Wave 16, we have been given access to data on these rates for survey rounds 16 through 38. We plot these Supporting Information (see Figure A1). The cooperation rate exceeds 94% in all rounds, with an

When enumerators could not access sampled villages, intercept interviews were used to collected information from residents traveling in neighboring areas (Child, 2016). Questions vary by survey wave, but the questions most relevant to our investigation are consistently included. Although early waves have higher non-response rates than later waves, these rates are consistently lower (5-10%) than comparable nation surveys in the United States and Europe. We have restricted access to data from 2008 to 2016, covering roughly 370,000 respondents, through a data-sharing agreement with NATO. Summary statistics of SIGACT and ANQAR data are presented in Table 1.

2.5.3 Other data sources used

We rely on digital placemats from ISAF archives to link districts to Regional Commands, and we classify districts using a standardized administrative map compiled by the Empirical Studies of Conflict (ESOC) research group. All events and survey waves are rectified to match this map. We incorporate information from Afghan Commander's Emergency Response Program (CERP), which is a military-led scheme for small-scale development projects. These data were obtained through formal channels.[25] In addition, our empirical analysis will include detailed land cover data, grid cell population data, as well as measures of elevation and terrain features that we exploit in our empirical designs.

3 Empirical strategy

Our paper studies the impact of the two main phases of the security transition: (1) the transfer of control from ISAF to the ANSF and (2) the physical withdrawal of ISAF troops. We rely on different strategies to estimate these effects, which we detail in this section. Lastly, we discuss in detail how we leverage new methods from spatial econometrics allowing us to flexibly control for for conflict displacement.

average of 96%. The refusal rate during this period never exceeds 5% (mean = 3.5%). The non-contact rate similarly ranges from 1.9% to 3.9% (mean = 3%). These are consistent with or better than national surveys conducted in the United States (such as ANES) and other developed countries (BHPS in the UK and HILDA in Australia). These diagnostic trends give us confidence in the overall design and implementation of the survey.

[25] We thank Duncan Walker for his collaborative work in processing this data.

3.1 Security transfer to ANSF

Our baseline empirical strategy is a difference-in-difference approach, comparing districts in which the security transition has been implemented to non-treated districts, before and after the transition.

$$y_{d,r,t} = \alpha_d + \beta_{r,t} + \gamma \times ANSF_{d,t} + \eta_d \times t + \epsilon_{d,t} \quad (1)$$

In the equation above, d indicates the district, r the Regional Command (RC) and t the quarter. $ANSF_{d,t}$ switches on when ANSF takes over from ISAF. At the district and quarter level our outcome measures $y_{d,r,t}$ come from both, the SIGACTS incident and ANQAR survey data. While the SIGACTS data contains finer timestamps, the ANQAR survey data are collected quarterly. In order to maintain consistency, we use the quarterly frequency for the district-level analysis. We allow each district to follow a specific linear trend $\eta_d \times t$, and we allow for regional command specific non-linear time effects ($\beta_{r,t}$). The RC, indexed by r, served as most important organizational units in ISAF and it is possible that reporting practices differed by regional command, hence the choice of the time fixed effects.

Our preferred outcome for the SIGACTS data at the district level is the logarithm of incidents (plus one). This specification allows us to capture changes on the extensive and intensive margin, but is not sensitive to vertical outliers.[26] Our estimate of the coefficient γ captures the causal impact of the security transition as long as conflict in districts in different transition tranches where following common trends. As discussed in the background section, the selection into different transition tranches was based on a variety of factors, which were not clearly linked to *trends* in violence. To validate our estimates, we provide important evidence in support of the common trends assumption based on event studies around the transition dates and based on the estimation of pre-treatment effects. We introduce these tests later. As a baseline, consider Table A1, which shows that several baseline characteristics were not balanced at the district level. However, more violent districts are not systematically allocated

[26]Our results are robust to using alternative transformations of the dependent variable. While in the paper, we focus on district-level data, in appendix B we present an alternative identification strategy that makes use smaller grid-cells and work with binary binary violence outcomes.

to later tranches. There are few significant differences between violence levels when we compare tranches 1 to 2, 3 to 4, and 4 to 5. Only tranche 3 appears to have been significantly more violent compared to its previous tranche.[27] Our basic district-level panel includes district specific linear time trends to alleviate the concerns associated with these baseline differences.

3.2 ISAF troop withdrawal

At the end of the transition process, the vast majority of ISAF troops physically left Afghanistan. While the troop withdrawal was made possible by the transfer of control to the ANSF, its timing was not mechanically linked to the formal security transfers. Unlike the transfer process, which was constrained by a fixed schedule in 5 tranches, the decision to close or hand over individual bases was highly discretionary. Hence, the identification of the effect of the withdrawal is particularly challenging. We try to overcome these identification concerns by exploiting the importance of logistical constraints for the withdrawal process. As described in section 2.4, a small number of military grade airports acted as crucial logistical hubs during the withdrawal process. We hypothesize that bases that were furthest removed from these airports saw their ISAF troops leave first once the transition process started (i.e., after 2011). We use a a least cost path algorithm (illustrated in Figure 5) to calculate distances from every district to the nearest military airport, and we use the interaction of this distance measure with a dummy for the post-2011 period as an instrument for the ISAF troop withdrawal. The corresponding first stage is:

$$c_{d,t} = \alpha_d + \gamma \times ANSF_{d,t} + \lambda \times \text{Distance to Hub}_d \times \text{Post}_t + \beta_t \times X_d + \eta_d \times t + \epsilon_{d,t} \quad (2)$$

$c_{d,t}$ is a dummy indicator that switches to 1 when the last military base has closed in the district according to our dataset. This outcome is defined at the district level, and its construction is described in detail in section 2. We keep the security transfer in this specification, as it typically precedes the withdrawal. To isolate the effect of distance

[27] As a robustness check, we present treatment effects by tranche and we confirm that our results are not driven by tranches 1 to 2, or 3 to 5.

to military airports, our main specifications will control for time-varying effects of the distance to the nearest airport (of any type) as well as distance to the province border (i.e., these distance measures enter X_d). A more demanding specification includes tranche-specific time effects, which fully absorb any level effect of the transition captured by the variable $ANSF_{d,t}$, thus relying only on the within-tranche variation to estimate λ.

In the second stage, we model violence outcomes $y_{d,t}$ with the following specification:

$$y_{d,t} = \alpha_d + \gamma \times ANSF_{d,t} + \kappa \times \hat{c}_{d,t} + \beta_t \times X_d + \eta_d \times t + \epsilon_{d,t} \quad (3)$$

For the exclusion restriction to hold, the differential effect of the distance to military grade airports after 2011 on conflict outcomes can only operate through the withdrawal of ISAF troops. This assumption could be violated if our distance measure proxies for, as an example, market integration. The inclusion of time-varying effects of other market-oriented distances like distance to any type of airport in our vector of covariates X_d addresses this concern. As the base closure measure is defined at the district level, this is the most natural unit for us to examine. However, the distant matched pair (grid) specification can easily be augmented with the (instrumented) base closure measure $w_{d,t}$, which we consider as a robustness check.

3.3 Conflict displacement

We now consider a specification that adds displacement effects on the differences-and-differences (Equation 1) and instrumental-variable specification (Equation 3). One potential concern is that insurgent activity is likely highly mobile, and the transition to ANSF might have induced a strategic reallocation to other districts. In this case, spillovers may affect the identification of transition effects – both at the onset and at the withdrawal.

We consider a specification with spatial spillover effects to account for possible transition externalities. In what follows, we focus on the spatial version of the differences-in-differences specification (1) with spatial controls. The instrumental-variable version follows with minimal changes. We implement a specification of the form

$$y_{i,r,t} = \alpha_d + \beta_{r,t} + \gamma ANSF_{i,t} + \delta \sum_{j=1}^{N} w_{i,j} \cdot ANSF_{j,t} + \rho \sum_{j=1}^{N} w_{i,j} \cdot y_{j,r,t} + \eta_d \times t + \epsilon_{d,t} \tag{4}$$

where $w_{i,j}$ captures the extent to which district j affects i. The spillover effects may happen in either of two ways. First, the network effect may originate directly from the transition itself: given a set of weights, the term $\sum_{j=1}^{N} w_{i,j} \cdot ANSF_{j,t}$ is a combination of the transition onset indicator $ANSF_{j,t}$ across all other districts $j \in \{1, \ldots, N; j \neq i\}$. Thus the parameter δ captures the extent to which conflict in district i is affected by the handover from ISAF to ANSF in other districts. Following Manski (1993), this is referred to as "exogenous effects." Second, the term $\sum_{j=1}^{N} w_{i,j} \cdot y_{j,r,t}$ collects the extent to which conflict in district i is affected by conflict in other districts, and the scalar ρ measures the intensity though which it spreads. Again following Manski (1993), this term is referred to as "endogenous effects." The distinction between endogenous and exogenous effects is important because only the former generates spatial multiplicative effects. Finally, the presence of district-time linear interactions and regional command-time nonlinear effects control for the correlated effects. We do not place any distributional assumption on the structure of the error term $\epsilon_{d,t}$.

A few special cases of Equation (4) are of interest. First, if $\delta = \rho = 0$ there are no spillover effects and the specification above boils down to Equation (1). Second, setting only $\rho = 0$ leads to spillover specification with controls for exogenous effects. We offer both the versions with $\rho = 0$ and freely estimated without restrictions, such as typical in models of social interactions (**?**). It is worth also mentioning that if either ρ or δ are not equal to zero, than identification of the treatment effects through the standard differences-in-differences in model (1) might be compromised as untreated units suffer from spillovers from the treated ones, and the comparison between treated and control no longer accounts for the treatment (transition) effects (SUTVA violation). This is particularly relevant as, throughout the exercise, our interest is in evaluating the robustness of the estimates of γ with respect to alternative formulations of the spillover effects.

The choice of the set of weights $w_{i,j}$ attracts particular prominence in our context because it reflects the extent to which the insurgents are able to displace across districts. This is the case for example, in Mueller et al. (2017), Ferrara and Harari (2018) and McGuirk and Burke (2020) where $w_{i,j}$ depends on some inverse function of distance; or in Berman et al. (2017) where it reflects ethnic control of mines in Africa. In turn, this would translate into specific assumptions on the mechanism that underpins conflict displacement. This is particularly limiting as it is not ex-ante clear how the insurgency displaces in space. In reality, insurgent activity is potentially highly mobile, and the transition to ANSF might have induced a strategic reallocation of insurgent activity to districts elsewhere. Furthermore, it would be in their interest to obfuscate their displacement strategy, so as not to make their movements predictable by the occupying forces. In such case, the weights can hardly be assumed to be ex-ante known by the empiricist.

To circumvent this issue, our main specifications leverage on a novel estimation strategy to recover the weights $w_{i,j}$ along with the parameters γ and δ from within the data itself. To do so, we apply the method in de Paula et al. (2019) which allows us to fully and flexibly recover the network of interactions from panel data. The method provides a high-dimensional technique to deal with a large number of parameters implicit in estimating the full interaction matrix. Furthermore, the authors show that w_{ij}, $i, j \in \{1, \ldots, N\}$ and the parameters ρ, γ and δ are globally identified under certain assumptions based on the network asymmetry, and similar to the peers-of-peers identification strategy (**?**; **?**). We review and expand on the methodology in the Appendix A.

4 Main Results

The discussion first focuses on the effect of the security transfer to ANSF, and then estimates the separate impact of the ISAF troop withdrawal, along the lines discussed in our empirical strategy.

4.1 Phase I: Security transfer to ANSF

Table 2 shows the effects of the security transition for important conflict outcomes captured in our military records—fatal events, direct fire attacks, and IED explosions. Our baseline difference-in-difference specification at the district level shows that the intensity of violence dropped sharply when the ANSF became responsible for security provision. The estimated decline is around 10% for all outcomes. While the inclusion of district-specific trends and RC $\times$ time fixed effects weakens the results slightly, the estimated effects remain large and precisely estimated in this demanding specification. To validate our estimates, we introduce a number of event studies, which are presented in Figure 6. They provide compelling evidence of the common trends assumption that underlies our difference-in-difference estimates. We see very flat trends prior to the security transition and marked drops, once security responsibility had been formally handed over to ANSF, which is indicated by the vertical line in the subfigures. In Figure 7, we present coefficient estimates from our main specification for a wider set of violence outcomes. These additional outcomes include fatal events involving security forces, civilians, and insurgents, as well as indirect fire attacks. Across this broader set of violence measures, we observe consistent drops in conflict measures after the responsibility for security provision has been transferred to ANSF.

We present the analysis of the spatial spillovers on Table A3 for the SIGATCs data.[28] In Column (1), we replicate the coefficients from the differences-in-differences analysis. Columns (2)-(7) initially implement standard spatial spillover regressions with known and given proximity matrices (e.g., Ferrara and Harari, 2018). More specifically, we define as two districts as "connected" if they are neighbors, neighbors-of-neighbors, if they are within neighboring provices, if geodesical distance is smaller than 250km and 500km, and if the driving distance is smaller than 500km. As motivated in Subsection 3.3, those specifications are rather restrictive as they impose very strong assumptions behind the mechanism of displacement. We thus also utilize the data itself to inform about the pattern of spillovers. This is accomplished by

[28]We do not implement a similar version for the ANQAR data because the data is unbalanced. **?** document that non-classical measurement errors arise when the network is composed of sampled units.

estimating the weights $w_{i,j}$, and the results are seen in Columns (8)-(10) for various specifications. To slightly reduce the dimensionality of the problem, we assume the districts which are too distant (with driving distance above 500km and 1000km) are unconnected and thus $w_{i,j} = 0$. In all cases, we observe that the majority of the point estimates for the treatment effects are robust to the inclusion of displacement effects.

Table 3 shows results for ANQAR survey responses. The ANQAR data are only available at the district level and, for consistency, we report results for the most demanding specifications at this level. Table 3 includes measures that are systematically collected across the multitude of different ANQAR survey waves independently from the SIGACTS data. These results suggest that the shift in security perceptions matches the changes we observed in the tactical reports. An increased share of respondents reported security improved in the last 6 months after the ANSF took over security (column 1). They also perceive that the Taliban had grown weaker since the transition (column 2), even if this effect is marginally insignificant. Moreover, respondents were more likely to have seen the Afghan National Army (ANA, i.e. the most important component of the ANSF) in their village at least once a month (column 3), and they were more likely to respond that the Afghan forces bring security to their area (column 4). This suggests that the formal transfer of security responsibility during the transition process is clearly perceived as such. The consistency of our results across data types (military records and individual survey evidence), together with our demanding empirical designs, gives us confidence in the robustness of this core finding.[29] Yet, as shown in column 5 of Table 3, the security transfer does not appear to have affected the perceptions of the local population about who is actually in control of their area. This suggests that the security transfer, while being associated with improvements in the perceived security situation, seems to have failed at shifting the underlying fundamentals of the conflict. This result foreshadows our findings regarding the second phase of the security transition.

[29] In particular for the quality of the SIGACTS data may have been affected by the security transition itself (despite continuous collection throughout NATO's withdrawal (as evidenced in Panel A of Figure A2). The consistency across the two data sources is thus reassuring.

4.2 Phase II: Withdrawal of ISAF troops

The initial transfer of security to the ANSF was followed by the gradual closure of ISAF bases. As discussed in section 2.3, the logistical challenges of organizing the troop withdrawal imposed a certain structure on the military pullout. We instrument the sequence of base closure with the interaction of the distance to the closest military airport hub and a dummy for the post-2011 period (see equations 2 and 3). Table 4 presents the first stage results and confirms that our interacted distance measure does a good job predicting the timing of base closures in a district. This remains true when we control for time-varying effects of the transition tranche in column (2), as well as distance to the closest airport of any type (i.e. including non-military airports) and province borders in column (3).

We take the instrumental variable strategy and contrast our IV estimates with the naive OLS results in Table 5. The OLS results are presented in Panel A and suggest that base closures are not associated with any significant changes in conflict outcomes. As we argued earlier, the OLS estimates could suffer from endogeneity problems, as the decision to close a base is highly discretionary. In particular, if bases are closed earlier in districts where violence is decreasing, the OLS coefficient would suffer from a downward bias, masking any violence-enhancing effect of troop withdrawal. Panel B of table 5 presents our IV results. When we use our instrument for the base closure, using our measure of travel distance to the nearest military airport interacted with a post-2011 dummy, we find positive effects of the base closure dummy on our main conflict outcomes in columns (1) through (6). In fact, as we highlight by contrasting the direct effect of the transfer in the previous section with the effect of the base closures in columns (1), (3), and (5), the increase in violence due to the base closures completely offsets the reductions in violence due to the security transfer.

This finding is robust to using exclusively *within tranche* variation, by including a set of tranche $\times$ time fixed effects (in columns 2, 4, and 6). Hence, the uptick in violence cannot be explained by a general time pattern that is specific to districts belonging to an individual tranche. Rather, the increased violence appears to reflect an effect that is specific to the physical withdrawal of Western troops—*after and independent from the transfer announcement* we studied in the previous section. In Figure 8 we study a broader set of conflict outcomes at the district level. In Table A4 we confirm those findings and show the estimates are robust to the inclusion of spillover controls.

To what extent do these distinct effects on conflict outcomes map into changes in the perceived security situation? In Table 6, we present results studying ANQAR survey response data. In panel A, we estimate both the effect of the security transition onset, as well as the effect of the (instrumented) physical base closure. The picture that emerges is consistent with our findings from the SIGACTS conflict data: while the transition onset is associated with a marked improvement in the perceived security situation, the physical withdrawal and base closure is associated with a reported worsening of the security situation. In particular, perceptions of the Taliban having grown weaker strongly reverses, suggesting that the Taliban have, indeed, become stronger since bases were closed. In Panel B, we study the same outcomes, yet, only exploiting within tranche variation. This precludes the estimation of the security transfer to ANSF, as this variable is perfectly collinear with the tranche by time fixed effects. Our results remain robust, suggesting that the closure of bases is indeed associated with a significant worsening of the security situation. Before turning to a discussion of the underlying mechanism, we highlight the additional robustness checks that we performed.

4.3 Robustness

In the online appendix, we introduce a range of robustness checks.

Matched distant gridcell pairs. In an attempt to relax the identification assumption that underlies our main district level difference-in-difference approach, we change the unit of analysis to 10×10 km gridcells. This is only possible for the SIGACTs data, as the ANQAR survey data is reported at the district level. In the resulting high-resolution dataset, we construct pairs of matched gridcells using baseline district population, elevation and terrain features, road connections, and land cover data. The gridcell-level outcomes see reductions in violence are that even larger—up to 30%, although it should be kept in mind that this is at the extensive margin and for the subsample of matched gridcells. For more details on the matching procedure, see

Appendix B. For the summary statistics at the gridcell level, see Table A5. Results for the gridcell analysis are presented in Table A6, along with event study graphs in Figure A3.

Tranche-by-tranche effects. We look at heterogeneous effects by tranche in Table A7. We confirm that the effects are not driven by a single tranche. Even if the magnitudes differ across tranches, the signs are consistent and significant for key outcomes in multiple tranches.

Other pre-treatment effects. We study whether the the security transfer to ANSF has effects prior to the treatment announcement for the broader set of of outcomes in Figures A4 and A5. Similar to the event studies already presented, the vast majority of these pretreatment effects are insignificant and small compared to the actual treatment effects.[30]

We next turn to the discussion of the underlying mechanisms, presenting a conceptual framework that captures the effects we observe.

5 Mechanisms

Afghanistan's security transition could affect violence outcomes through a large set of mechanisms, but the evidence presented so far allows us to rule out a number of plausible mechanisms.

5.1 Withdrawal of foreign targets

In principle, the transfer of security to the ANSF could reduce violence because the ability of the Taliban to mobilize was weakened by the ISAF withdrawal. However,

[30]One exception is the pre-treatment effect for "Having seen ANA at least monthly" in Figure A5. It is possible that this effect is just due to chance, or that the Afghan army was preparing the transition by boosting its presence even before the formal transition took place. It is striking though that the impacts in terms of violence measures and general security perceptions show up only after the formal transition. Therefore, we think it is implausible that we are merely picking up the effect of increased ANA presence.

this explanation cannot account for the increase in violence we observe after the base closures. Another interpretation of the reduction in local violence following the security transfer, is that the ANSF are more effective, for example because it monopolizes violence better than the multinational ISAF forces,[31] or because it coordinates more effectively with the local population. However, these mechanisms are in themselves not consistent with the violence-increasing effect of base closures.

5.2 Complementarities during the transition period

Our main results are consistent with the idea that complementarities between ISAF and the ANSF generate improved security outcomes, to the extent that ISAF base closures wipe out the gains in security outcomes that accompany the security transfer. These complementarities could arise because ISAF monitors the ANSF and provides military support. It could also be that NATO countries targeted aid to smoothen the transition process. Another possibility is that the initial reduction in violence results from the impact of the total troop numbers peaking after the onset of the transition but before the withdrawal of troops. Strictly speaking, this mechanism would not require any complementarities, but it is interpretationally close in that it suggests that security force activity was more effective in the transition period thanks to the combination of ISAF and ANA forces. We look for evidence of "improved security force efficiency" in the first phase of the transition a through a variety of tests.

In Table 7 we look at survey responses that could reflect complementarities as well as the construction of small-scale development projects. In column (1), we confirm that the transition process did not affect reported misbehavior by ANA (as measured in the ANQAR survey), which is an outcome for which monitoring should have been

[31] Security provision in large international coalitions can be thought of as the interaction between a principal and many agents, as in the canonical "Moral Hazard in Teams" framework (Holmstrom, 1982). One potential advantage of the security transition in Afghanistan was the reduction in the number of agents responsible for providing security in a given region. Because security was jointly produced by ISAF forces, composed of dozens of troop contributing nations with various conflicting rules of engagement and authorizations for use of force, and host nation forces, the security transition could have radically reduced institutional frictions in the production of security. A monopoly on coercive violence has been theorized to play a critical role in statebuilding. See Auerswald and Saideman (2009) and Auerswald and Saideman (2014) for an excellent in depth discussion of the underlying agency problems.

particularly important. There are also no changes in the perceived importance of complementarities between ISAF and the ANSF in the first phase of the transition (column 2, based on ANQAR). Similarly, there is no evidence that aid, in the context of the US Army's Commander's Emergency Response Program (CERP), was targeted to coincide with the transition process (column 4). In Table 8, we zoom in on tactical support activities. We hypothesize that improved complementarities between ANSF and ISAF should change how support activities respond to the violent events that trigger these interventions. In columns (1) and (2), we see that close air support and medical evacuations are highly correlated with contemporaneous direct fire attacks. There evidence that ISAF base closures reduced these support activities, but crucially there is no evidence that the first phase of security transfer significantly increased the responsiveness to these "trigger events". Column (3) shows that the relationship between IED explosions and IED neutralization activities also did not change significantly during the first phase of the transition. Hence, there is no evidence of changes in war-fighting tactics or behavior after the formal security transfer to Afghan forces in the first phase of the transition. Therefore, the reduction in violence that we observe during the transition period is unlikely to have been the result of improved tactical and logistical support.

It is still possible that an unobserved shock to state capacity occurred just after each local transition announcement and reversed after foreign withdrawal. One such shock might be a large shift in the stock of weapons available to Afghan forces, which were depleted by the time coalition forces exit. Another shock might be coordinated crackdowns during the transition period. However, socks of this type would have observable implications for the levels and *composition* of insurgent attacks. Theoretical accounts, most importantly Powell (2007) and Bueno de Mesquita (2013), suggest insurgents should substitute conventional, labor-intensive combat (e.g., direct fire engagements) for guerrilla style attacks (e.g., IEDs) when faced with capacity shocks. Empirical findings from a variety of contexts yield evidence consistent with such a tactical shift (in the Colombian context see Wright (2016), for the Naxalite conflict in India, refer to Vanden Eynde (2018); Hanson et al. (2009) provides evidence for Iraq, while Wood (2014) studies similar mechanisms in African conflicts). In our setting, we would expect a shock to the Taliban's capacity to induce a downward shift in direct fire and an increase in roadside bomb deployment. We find no evidence of such a composition shift. Instead, conventional and guerrilla attacks each decline during the first phase of the transition and jointly increase after the actual closure of bases. This pattern is more consistent with a strategic choice by the Taliban to reduce all types of violence after the transition, and to step up violence after the troop withdrawal. Such a strategic choice is the key ingredient of the mechanism we introduce in the next subsection.

5.3 Lying Low

One compelling mechanism that could account for our findings is a strategic decision by the Taliban to scale back violence during the transition period. The concern that the Taliban could lie low during the transition period was often raised in the political debate surrounding the process. John McCain argued in 2010: *"If you tell the enemy that you're leaving on a date certain, unequivocally, then that enemy will wait until you leave."* Hillary Clinton challenged this notion: *"They cannot wait us out. They cannot defeat us. And they cannot escape this choice."* From a theoretical perspective, it is important to point out that 'lying low' does not necessarily imply a strategy that is tied to the transition schedule. If the Taliban wanted to 'wait out' ISAF troops, it could reduce violence across Afghanistan as soon as the transition process was announced in 2010. But the local security transfers were particularly important because they created a period in which the relative capacity of the Taliban and the ANSF was revealed to ISAF forces. As such, the Taliban had an incentive to understate its capacity in a manner that was both difficult to detect and confirmed the biases of NATO forces, i.e. that Afghan security forces were ably trained and capable of delivering security on their own. We formalize this logic in a simple game in which violence serves as a signal about the relative capacities of the Taliban and ANSF.

5.3.1 A simple model of Lying Low

Our model studies the interaction between a local Taliban group and an ISAF unit as a signaling game.[32] We assume that the capacity of the ANSF versus the Taliban is $\theta \in \{0, 1\}$, the cost for the Taliban of staging attacks. Importantly, θ cannot be observed directly by ISAF. In the first period of the game, ISAF maintains its full capacity $\rho > 1$, but it has committed not to use any capacity against the Taliban during the transition period. The Taliban chooses the level of attacks $a \in \{0, 1\}$ according to the objective function: $[a - \theta a]$. If the game would end in the first period, it is clear that the Taliban would choose $a = 1$ if $\theta = 0$.

To capture the transition dynamics, we assume that ISAF takes a final decision to maintain capacity or not at the start of period 2. In the parameters of the model, this means ISAF can keep $\rho > 1$ (i.e., the initial level) or to scale down to $\rho = 0$. Maintaining ρ in period 2 costs c. This cost includes the direct cost of maintaining capacity, but it also incorporates the large political costs of maintaining military presence.[33] The public "commitment" to a particular transition timeline contributed clearly to this political cost. For example, NATO repeatedly referred to the transition process as "irreversible" in public briefings[34]. As in period 1, the insurgents attack according to their objective function in period 2. We assume that the Taliban does not just engage with the ANSF in period 2, but also with ISAF, which uses its remaining capacity ρ. So, the second period objective function is: $[a_2 - (\theta + \rho)a_2]$. We give the second period weight $\omega > 1$, as we assume the Taliban puts more weight on the long-term, post-transition period.

The order of the game can be summarized as follows:

[32] We do not model the moral hazard dimension of the transition. Coordination between the international coalition and Afghan forces can be interpreted as an example of "indirect control", as in the framework of Padró i Miquel and Yared (2012). One of the explicit goals of the transition was to incentivize the Afghan government and the ANSF to invest in independent counterinsurgency capabilities. President Obama stated this goal as making it "clear to the Afghan government and, more importantly, to the Afghan people that they will ultimately be responsible for their own country." (President Barack Obama, Remarks by the President in Address to the Nation on the Way Forward in Afghanistan and Pakistan, 1 December 2009). The moral hazard logic would work against our main findings, in that they would give an incentive to the ANSF to lower its effectiveness during the transition period.

[33] For a discussion of the political costs of maintaining a military presence, see Marinov et al. (2015).

[34] Reuters, "NATO sets 'irreversible' but risky course to end Afghan war", 2012, https://tinyurl.com/y7b6m4q7.

1. Nature draws $\theta \in \{0, 1\}$ with $E(\theta) = \lambda$
2. Taliban choose $a_1 \in \{0, 1\}$
3. Taliban receive period 1 pay-off $[a_1 - \theta a_1]$, period 1 pay-off for ISAF doesn't matter.
4. ISAF observes a_1 and chooses $\rho_2 \in \{0, \rho\}$
5. Taliban choose $a_2 \in \{0, 1\}$
6. Period 2 pay-offs for Taliban: $\omega[a_2 - (\theta + \rho_2)a_2]$
7. Period 2 pay-offs for ISAF: $[-a_2 - c\rho_2]$

A pooling equilibrium now exists with $a_1 = 0$ and $\rho_2 = 0$ if $1 - \lambda < c\rho < 1$. In period 2, $a_2 = 0$ if the Taliban has low capacity relative to the ANSF ($\theta = 1$) and $a_2 = 1$ if the Taliban has high capacity. The pooling equilibrium is consistent with the patterns in our data, if the Taliban turns out to be of the high type ex post: violence levels are low during the initial transition period, ISAF withdraws interpreting low violence levels as proof of the effectiveness of the ANSF, and violence levels increases after withdrawal.[35]

5.3.2 Imperfect information during the transition

Official US Department of Defense (DoD) reports suggest that the transition period was perceived to be a (qualified) success. In July 2013, while the transition was still ongoing, the DoD wrote: *"During the reporting period, the ANSF has performed effectively in the field, losing no major bases or district centers to the insurgency and protecting the majority of the Afghan population. Although challenges remain, the ANSF demonstrated an*

[35]Clearly, there are other equilibria. If $c\rho < 1 - \lambda$, then ISAF invests in capacity in period 2 if both the high and low capacity taliban choose $a_1 = 0$. This means that there is no incentive to 'lie low', and a separating equilibrium can arise, with $a_1 = 1$ if ($\theta = 0$) and $a_1 = 0$ if ($\theta = 1$). In period 2, both types inflict no violence, as ISAF has maintained its full capacity. If $c\rho > 1$, ISAF will not invest in maintaining capacity, even if it knows that the Taliban has high capacity ($\theta = 0$). Again, $a_1 = 1$ if ($\theta = 0$) and $a_1 = 0$ if ($\theta = 1$), but now the second period will also see violence by the high capacity Taliban ($a_2 = 1$ if $\theta = 0$).

increasing level of effectiveness."[36] In April 2014, the DoD expressed continued confidence in the capabilities of the ANSF.[37] Interestingly, these reports refer explicitly to ANQAR survey data as evidence that security provision had improved significantly. The security transfer was completed by the end of 2014. A large majority of ISAF bases had been closed at that point. But, in the 2015 fighting season, the conflict takes a turn. The Taliban were suddenly more active than expected. As one US DoD report noted: *"The Taliban-led insurgency remained determined, maintained or consolidated its influence in traditional rural strongholds, dominated the information space, and carried out attacks with an increased frequency compared to a year ago."*[38] These official reports, our microlevel findings, and the aggregate country-wide violence trends are all highly consistent with strategic disengagement by the Taliban during the initial transition process. In particular, the optimism expressed in early ISAF reports could have been the result of effective signaling by the Taliban, who carefully calibrated their use of force around the transition schedule to manipulate perceptions of ANSF capacity.

5.4 Policy Relevance

This study addresses a topic of substantial economic and policy significance: the transition of military control to local forces after an international military intervention. Our findings suggest that insurgents acted strategically around the withdrawal, responding to the two phases differently. Violence decreased after the announcement of the local transition of security forces, but increased after the physical withdrawal of troops. We suggest that the Taliban calibrated their violence to manipulate the signals that ISAF received about the capacity of local security forces as well as the strength of the insurgency. After the political costs of re-intervention were sufficiently high, rebels expanded their combat operations. Withdrawal schedules, thus, might endan-

[36] US DoD, Progress towards Security and Stability in Afghanistan, July 2013, `https://tinyurl.com/ya58xbzv`.

[37] US DoD, Progress towards Security and Stability in Afghanistan, April 2014, `https://tinyurl.com/yaddxqnu`.

[38] US DoD, Enhancing Security and Stability in Afghanistan, December 2015, `https://tinyurl.com/y9jsmdqu`.

ger post-occupation stability by tying the hands of political and military leaders.[39] In this respect, the experience of Afghanistan is not unique. To unpack the policy relevance of the Afghan security transition, we briefly introduce facts from two historical cases. These other security transitions reflect the potential pitfalls of publicly announced withdrawal schedules—the 1989 Soviet transfer of power to Afghan forces and end of US-led operations in Iraq in 2011. Each of these cases reveal similar patterns of insurgent violence declining during the initial phase of the security transition and surging after the final withdrawal of foreign troops.

Soviet forces first entered Afghanistan in 1979 in an attempt to support communist government forces. The mission was narrowly defined as a stabilization effort, intended to help the government consolidate control over the outlying provinces (Gompert et al., 2014). The first formal plans for withdrawal were drafted in 1985. In 1988, the Afghan Geneva Accords were signed, leading to a temporary ceasefire and a publicly announced timetable for Soviet withdrawal in 1989. The subsequent decline in insurgent activity raised expectations about a successful handover of security. However, after the withdrawal, mujahideen forces abandoned the ceasefire agreement and engaged in open attacks on government compounds. By that point in time, the political costs of another intervention were too great. Three years later, Soviet economic assistance was withdrawn and the Afghan government was unable to pay salaries, bribe tribal militias, or manage the economy. During this period of instability, the Taliban emerged, eventually establishing control over most of the country (with the exception of some northern provinces) by 1998. Much like the security transition we study, rebel forces strategically reduced violence levels until after foreign troops withdrew and the political costs of conducting another intervention were prohibitive (Smith, 2014). The subsequent political instability, like the current political situation in Afghanistan, created a window of opportunity for opposition forces to consolidate territorial control without directly confronting well-equipped Soviet fighters.

The transfer of power following the US-led operations in Iraq also exhibits strong parallels to the recent Afghan transition. In 2008, the Status of Forces Agreement laid

[39] Not all interventions end with a formal, staggered withdrawal schedule. The Italian-led intervention in Albania (Operation Alba), for example, rapidly transitioned policing operations back to local forces following a national election (Perlmutter, 1998; Dobbins et al., 2008).

out the timeline for withdrawal. Starting in July 2009, US troops no longer patrolled in urban centers. In September 2010, operational control over primary security provision was handed over to Iraqi troops. During this period, 50,000 US troops remained in Iraq to support the transition and violence decreased sharply. After the Obama and Al-Maliki administrations failed to reach a consensus on legal immunity for US forces, the US prepared for a complete withdrawal by mid-December 2011. The conflict reemerged during and after this phase of the security transition. Several high profile attacks targeted the Iraqi parliament, a number of transferred US military bases, as well as a large-scale insurgent assault on Basra. Following this last phase of the security transition, sectarian violence flared and, within several years, the Islamic State (IS) emerged as a major threat to Iraqi security, where they captured the city of Mosul.

These cases suggest that the patterns of violence we observe in Afghanistan may reflect a broader dynamic as foreign wars end. The security transition we study offers us a unique opportunity to conduct an arguably internally valid assessment of how withdrawals influence conflict dynamics after a foreign occupation. These historical transitions confirm that the insights of our findings may generalize to other contexts including the ongoing peace negotiations with the Taliban.

The Trump administration re-entered negotiations with the Taliban in late 2019 after the failed meeting at Camp David scheduled for the week of September 11. After agreeing to a temporary seven-day ceasefire between combatants, the Taliban coordinated a drawdown of their forces and significantly reduced attack activity. US officials, in turn, agreed to the first phase of a peace deal and it was signed February 29, 2020. This first phase includes releasing 5,000 Taliban fighters from Afghan government prisons and a diplomatic engagement with the elected government of Ashraf Ghani. The signing ceremony, attended by US Special Representative Zalmay Khalilzad and Taliban leader Mullah Abdul Ghani Baradar, was touted as a symbolic victory by the Taliban. Classified intelligence collected since the first phase agreement was signed suggest the Taliban, as with the withdrawal of Soviet forces in 1989 and majority of NATO forces in 2014, are prepared to violate the terms of this peace agreement and overwhelm the Ghani government once US forces withdraw.[40] Despite reassurances from Secretary of Defense Mark Esper that the US would "not hesitate to nullify the agreement," President Trump, when asked about the intelligence suggesting the Taliban were planning to overrun the government, put it more bluntly: "Countries have to take care of themselves... You can only hold someone's hand for so long."[41]

6 Conclusion

Our findings suggest that the short-run impacts of the security transition appeared positive and meaningful. Local forces may have been more capable or Taliban forces were weaker than previously thought. However, these effects reverse themselves during the second phase of the transition, the actual withdrawal period. Our evidence is consistent with a widely documented surge in violence since the end of 2014, when the formal NATO mission officially concluded.

This article makes several contributions to the economics of conflict literature. Prior work has largely focused on the economic causes of civil conflict and, during the course of an insurgency, how government forces can use economic incentives (typically development aid) to quell violence. What is largely ignored is how foreign military occupations end and the conditions under which these security transitions can successfully transfer power to local forces. We also bring together highly detailed conflict microdata with survey measures that enable us to test how combat activity changes during a security transition and, perhaps more importantly, explore how public perceptions and attitudes are influenced by the foreign-to-local handover. This paper opens up a new set of research questions about the industrial organization of coalitions at war, and whether transitions resolve the hazards of jointly producing security through a network of foreign militaries.

Our results also suggest several actionable insights for managing international military interventions. First, announcing a prolonged timeline for withdrawal may

[40] See https://tinyurl.com/w9oq42t (March 2020).

[41] See https://tinyurl.com/tfkrmzr (March 2020) and https://tinyurl.com/w9oq42t (March 2020).

create opportunities for opposition forces to strategically respond to the intervention. In particular, insurgents may, as US politicians frequently decried and our evidence suggests, simply wait out the withdrawal. By conserving their fighting capacity, rebels may implicitly (or explicitly) manipulate the signals that international organizations and coalition forces receive about the relative capabilities of local government forces. Benchmarks may or may not be useful in a context where a rival is "holding their punches". This point is made more poignant by numerous US DoD assessments conducted during the transition, using the same data we employ, that interpreted the short-run reductions in violence we observe as evidence that local Afghan forces were prepared for their long-term mission of providing security after the coalition withdrawal.

Second, local force preparation should be reconsidered. The United States Congress alone allocated 60.7 billion dollars training and arming the Afghan security forces, including their national military and police forces. The Special Inspector General for Afghan Reconstruction (SIGAR) has conducted several high profile investigations of the US effort to enhance Afghan forces, noting widespread corruption in hiring, 'ghost' soldiers, and poor training.[42] The recent declassification of the Afghanistan Papers, a compilation of retrospective interviews conducted by SIGAR, makes this point even clearer: tens of billions of dollars were siphoned from official projects to enrich political elites, warlords, and the Taliban. 129 of the roughly 400 interviews explicitly mention concerns about the role of corruption in undermining economic growth, political stability, and security provision in Afghanistan. Corruption represents a first-order threat to successful security transitions and sustainable state-building efforts. The handover of foreign-owned assets (including vehicles, weaponry, ammunition, basic supplies) was also a notable legal hurdle which may have hindered the preparation of Afghan forces for long-term security provision. Reevaluating how local forces receive training and regularly auditing these forces may stabilize future security transitions.

Finally, future security transitions should maintain stronger data collection efforts even after international forces have withdrawn. Although our survey data enable us

[42] See the SIGAR report at https://tinyurl.com/y9jvavfx.

to track public perceptions of the transition until 2016, our tactical records effectively end earlier. The platform used to collect combat operation activity was used less consistently after the end of the NATO mission. While we are able to estimate the short- and medium-run consequences of the transition using these military records, longer-term dynamics cannot be estimated. Data on other vital information, including Afghan troop levels, also became much less reliable. In general, these data gaps have made it difficult for NATO to monitor how the resources provided to Afghan forces are being utilized. To enable more comprehensive audits of local allies, development and military aid should include more robust data-sharing conditions. How military interventions end may have profound consequences on economic development and political stability. It is therefore imperative to maintain data collection, even after security transitions end, in order to continually inform important economic and policy decisions.

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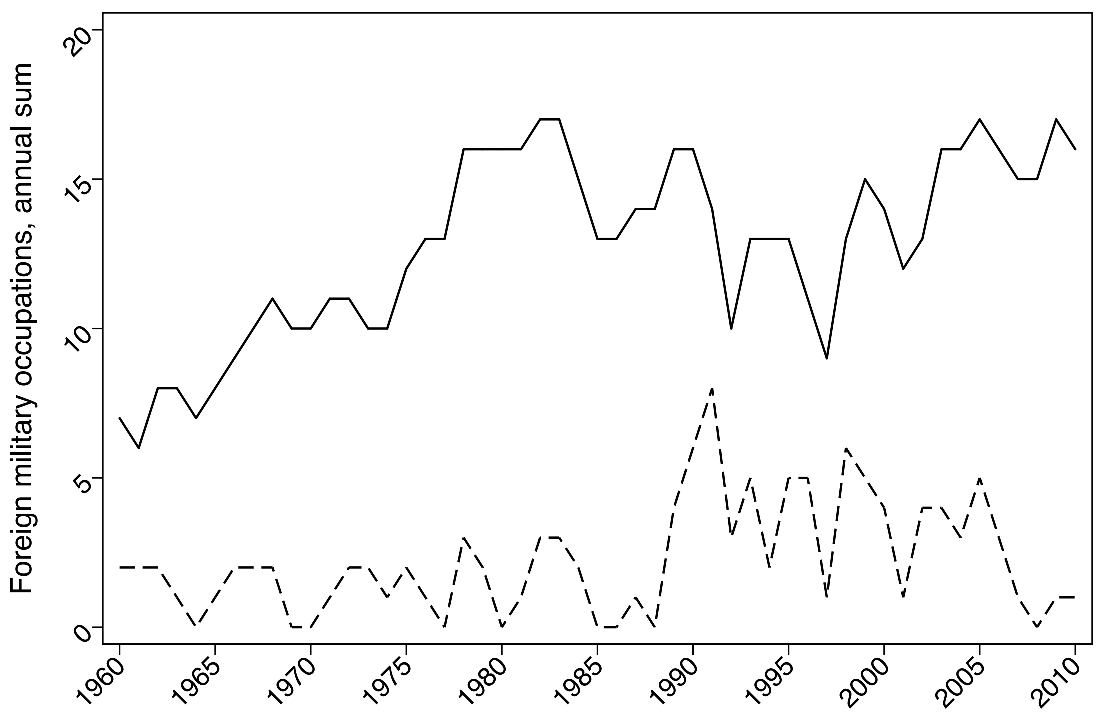
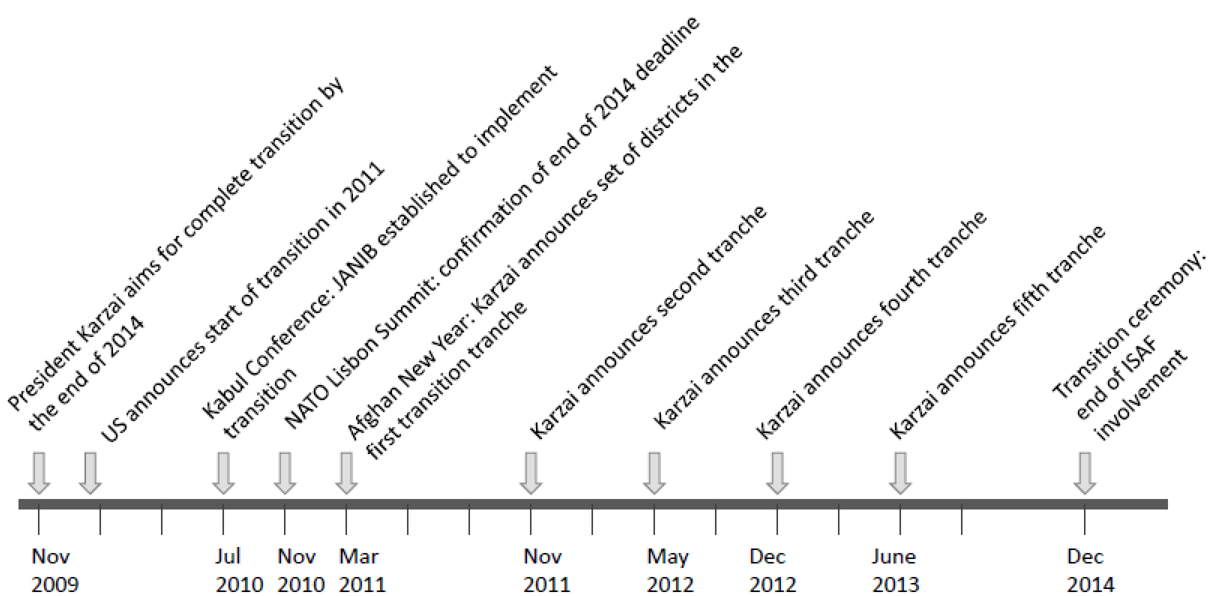
Figures and Tables for the Main Text

Figure 1: Trends in foreign military occupations and intervention terminations between 1960 and 2010.



Notes: annual counts of military occupations globally are noted with a solid black line; military occupation terminations are noted with a dashed line. Data on occupations is drawn from Collard-Wexler (2013).

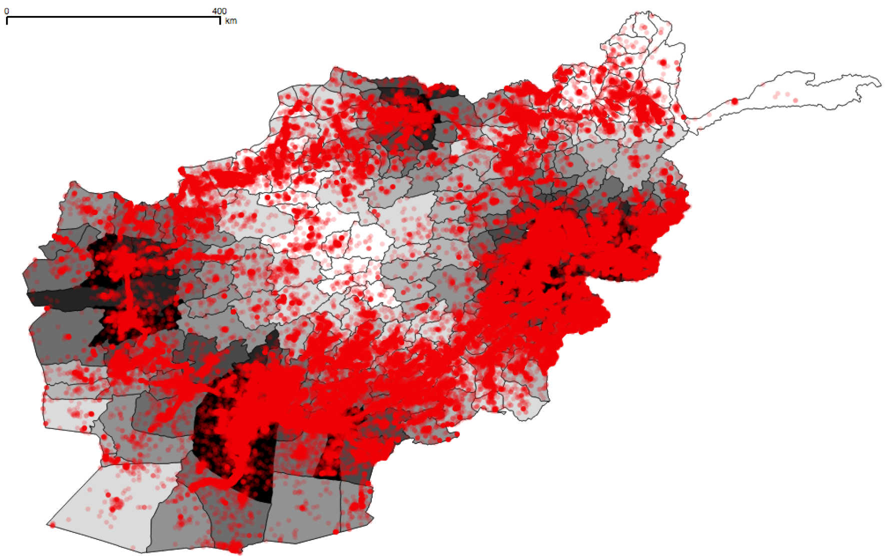
Figure 2: Key dates in the transition process.



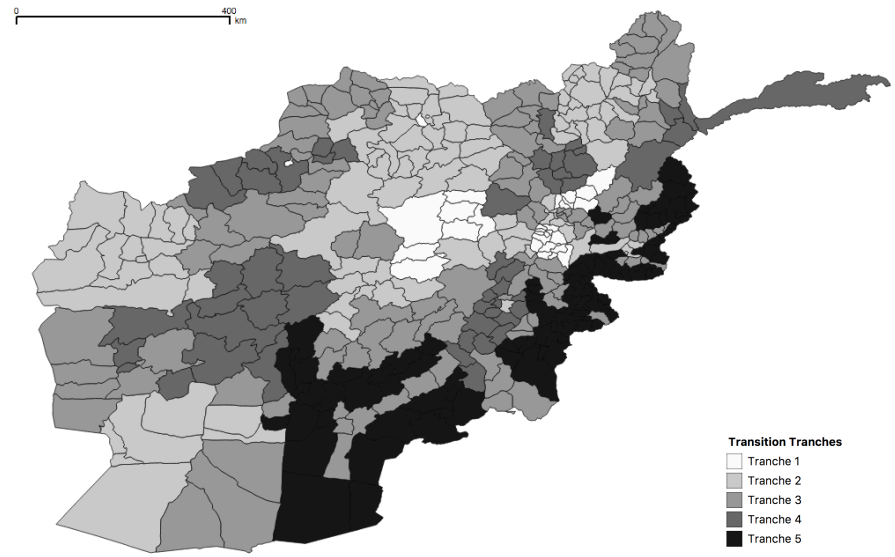
Notes: Dates of the different transition stages were obtained from the NATO publication "Inteqal: Transition to Afghan lead", authors' complement the graphical timeline with additional auxiliary information.

Figure 3: Distribution of conflict intensity and assignment of districts to different phases of the security transfer to the Afghan National Security Forces (ANSF).

Panel A: Conflict intensity

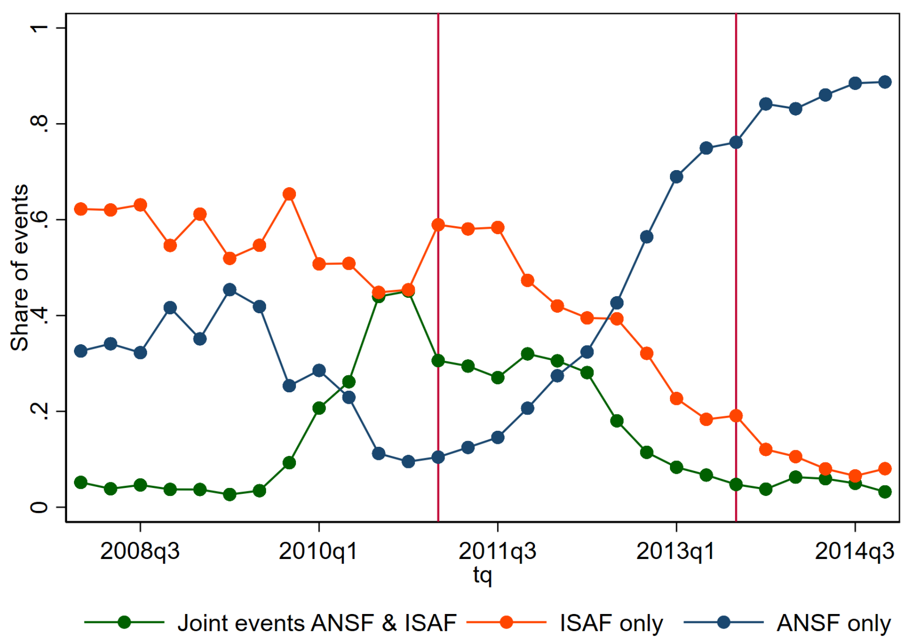


Panel B: Assignment of districts to tranches



Notes: Panel A presents the distribution of conflict events in the SIGACTS data across the country. Panel B presents the different assignments of districts to the five different transition tranches.

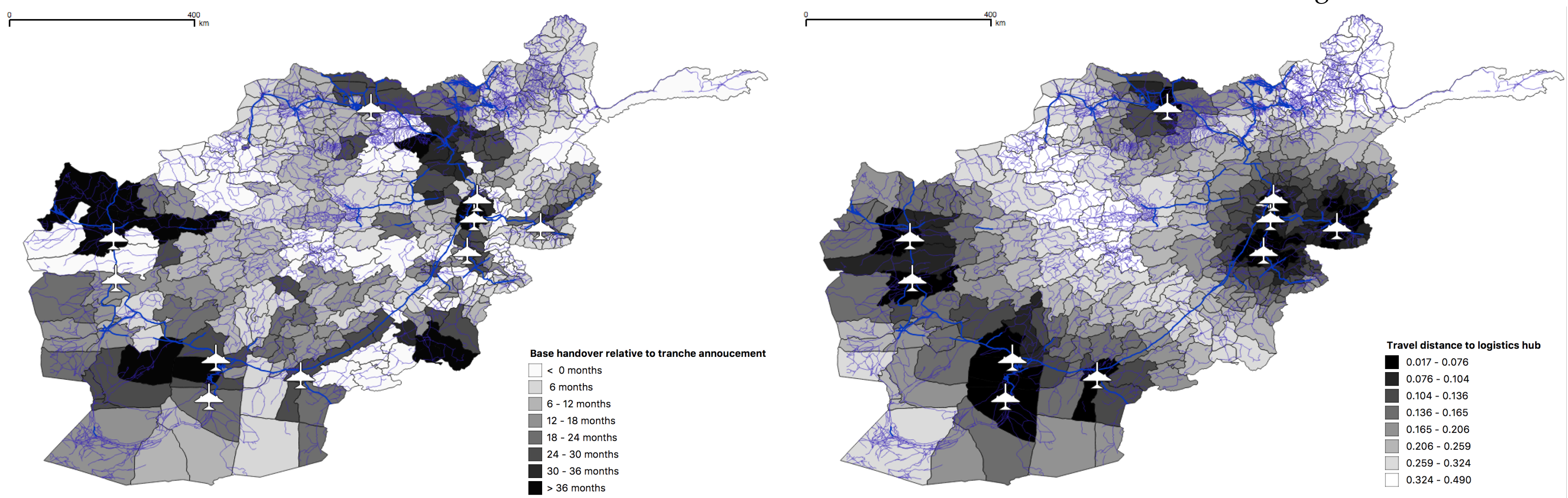
Figure 4: Share of SIGACTS events involving security forces.



Notes: Figure plots the share of events per quarter is calculated using all events (including non-combat activities) that do include information about security forces involved. Afghan security forces (ANSF) includes all armed forces, including local and border police. Vertical line indicates the quarter of the first transition tranche.

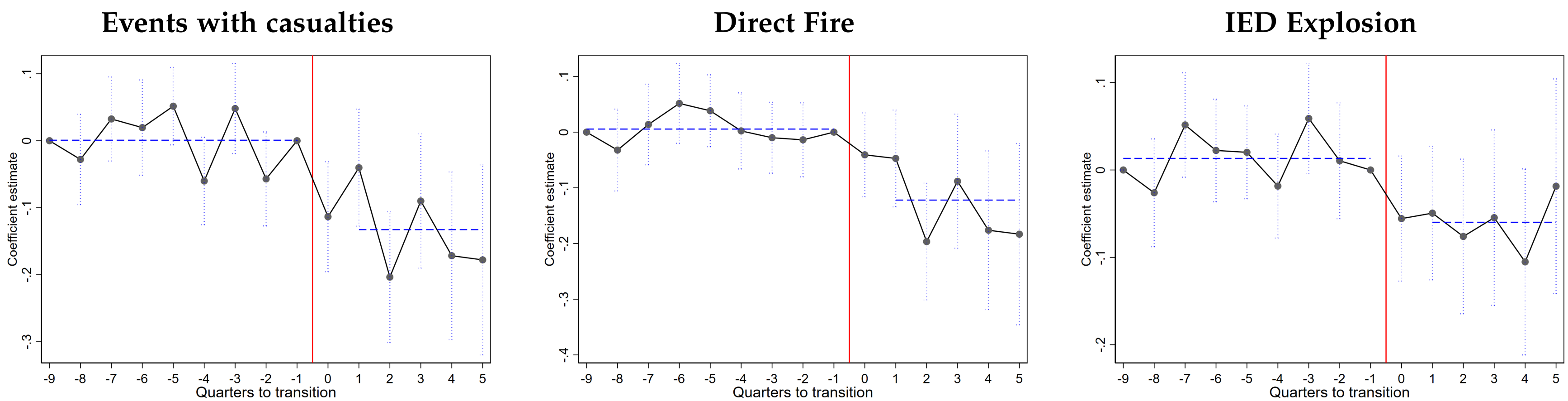
Figure 5: Timing of base handover relative to district tranche announcement and travel distance to nearest retrograde logistic hub

Panel A: Last Base Closure date relative to tranche date — *Panel B:* Distance to nearest logistic hub



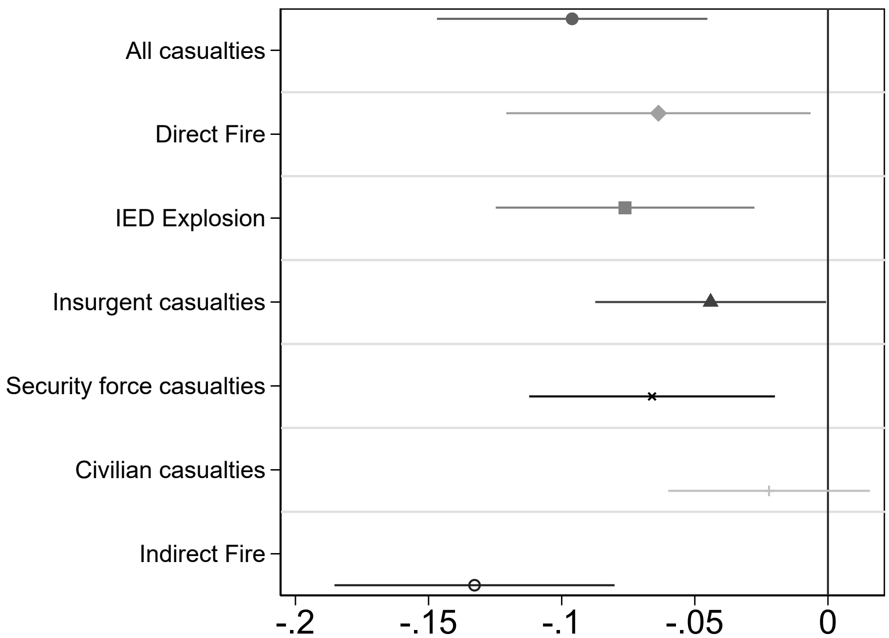
Notes: Panel A visually presents the variation in the timing of the base handover dates relative to the transition onset announcements. If a district is matched with several bases, the date at which the timing that is used is for the base that was last retrograded or handed over. Panel B presents visually the least cost shortest path distance between a district centroid to one of the 10 retrograde logistic hubs used in the withdrawal operation. We assume a unit cost of crossing via paved roads; the cost of crossing via an unpaved road occurs two units of costs per unit of distance, while crossing terrain without roads incurs a cost of 10 units. Least cost paths are computed used Dijkstra's algorithm.

Figure 6: Event Studies around the Security Transfer to ANSF (SIGACTs)



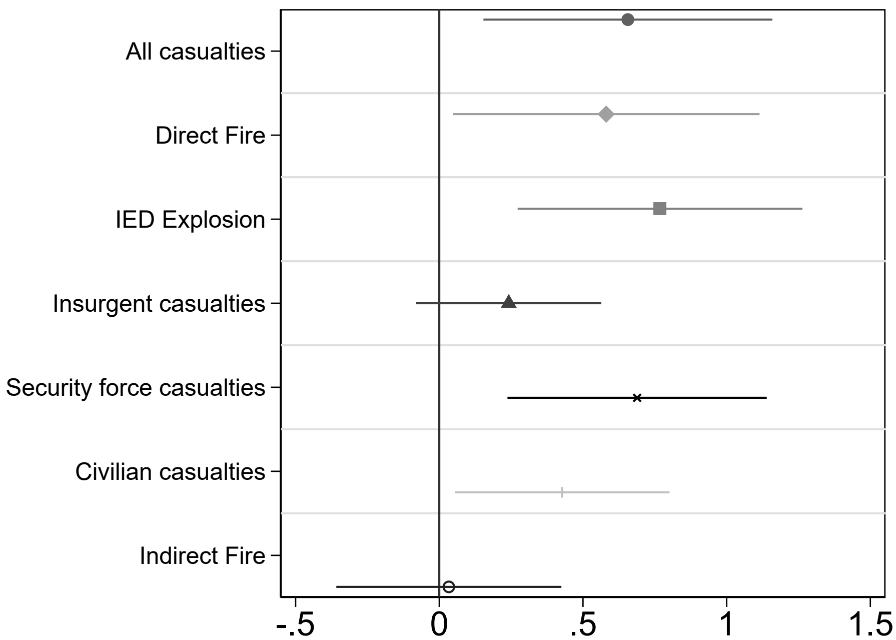
Notes: Event studies around the security transfers to ANSF. Coefficients on "time to ANSF" are shown with 90% confidence intervals. The models are analogous to column (1) in table 2. They include district fixed effects and regional command × time fixed effects.

Figure 7: Effect of the Security Transfer to ANSF on Conflict (SIGACTs)



Notes: Coefficients and 90% confidence intervals on"ANSF" in a model that is analogous to column (2) in table 2. They include district fixed effects, regional command × time fixed effects, and district-specific trends. Full results can be found in the online appendix, in table A2.

Figure 8: ISAF Base Closure and Conflict (SIGACTs)



Notes: Coefficients and 90% confidence intervals on"ISAF Base Closure" in a model that is analogous to column (2) in table 5. All regressions include district fixed effects, regional command × time fixed effects, and district-specific trends. The instrument used for ISAF base closure is the interaction of the travel distance to the nearest military airport and an indicator for the post-2011 period. The IV control set includes distance to any airport × time fixed effects, and distance to province borders × time fixed effects. Outcomes are measured as log plus 1. Full results can be found in the online appendix table A2.

Table 1: Summary Statistics

	Mean (1)	Standard Deviation (2)	N (3)
Panel A: District-quarter level, SIGACTS			
All casualties	5.048	15.548	10976
Direct Fire	9.800	43.122	10976
IED Explosion	3.110	10.343	10976
ANSF	0.362	0.481	10556
ISAF base closure	0.221	0.415	10976
Panel B: District-quarter level, ANQAR			
Security improved in village in last 6 months (share)	0.322	0.220	8889
Taliban grown weaker in last 6 months (share)	0.433	0.234	8170
Seen ANA at least monthly in village (share)	0.685	0.324	8661
ANSF brings most security to area (share)	0.507	0.236	8888
Anti-government elements in control (versus govt, share)	0.185	0.226	8889
Panel C: District level			
Travel distance to nearest military airport (cost units)	18785	10305	392

Notes: Observations at the district-quarter level in Panel A (2008-2014) and B (2008-2016); and district-level level in Panel C.

Table 2: Security transfer to ANSF and conflict (SIGACTs)

	All fatal Events		Direct Fire Attacks		IED Explosions	
	(1)	(2)	(3)	(4)	(5)	(6)
ANSF	-0.134***	-0.096***	-0.131***	-0.064*	-0.070**	-0.076**
	(0.032)	(0.031)	(0.036)	(0.035)	(0.029)	(0.029)
Number of Districts	377	377	377	377	377	377
District time trend	No	Yes	No	Yes	No	Yes

Notes: Regressions at the district-quarter level, covering the period 2008-2014. All regressions include location (i.e. district/gridcell) fixed effects and regional command × time fixed effects. The dependent variable is expressed as log plus one. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Security transfer to ANSF and perception of security (ANQAR)

	Security		ANSF presence and control		
	Improved	Taliban weaker	See ANA Monthly	ANSF brings security	Taliban control
	(1)	(2)	(3)	(4)	(5)
ANSF	0.027*	0.025	0.031*	0.024*	-0.002
	(0.015)	(0.017)	(0.018)	(0.014)	(0.013)
Number of Districts	375	375	375	375	375
RC × Time FE	Yes	Yes	Yes	Yes	Yes
District Time Trend	Yes	Yes	Yes	Yes	Yes

Notes: Regressions at the district-quarter level, covering the period 2008-2016. All regressions include district fixed effects, regional command × time fixed effects, and district-specific trends. The dependent variables measure shares of respondents at the district level. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: ISAF Base Closure First Stage

	ISAF Base Closure		
	(1)	(2)	(3)
Travel distance to military airport × Post 2011	1.728***	1.898***	2.007***
	(0.237)	(0.235)	(0.236)
ANSF	0.193***	0.190***	
	(0.028)	(0.029)	
Number of Grid Cells			
IV control set × time FE	No	Yes	Yes
Tranche × time FE	No	No	Yes

Notes: Regressions at the district-quarter level, covering the period 2008-2016. All regressions include district fixed effects, regional command × time fixed effects, and district-specific trends. The additional IV control set includes the distance to any airport and to the province border. The dependent variable is a binary indicator for the last (observed) ISAF base closure at the district level. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: ISAF Base Closure and Conflict (SIGACTs)

	All Casualty Events		Direct Fire Attacks		IED Explosions	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: District level – OLS						
ISAF base closure	0.002	-0.002	-0.006	0.001	-0.010	-0.010
	(0.035)	(0.037)	(0.040)	(0.043)	(0.029)	(0.031)
ANSF	-0.101***		-0.056		-0.093***	
	(0.031)		(0.036)		(0.029)	
Number of Districts	377	377	377	377	377	377
Tranche × time FE	No	Yes	No	Yes	No	Yes
Panel B: District level – IV						
ISAF base closure	0.656**	0.613**	0.581*	0.506	0.768**	0.734**
	(0.305)	(0.294)	(0.324)	(0.308)	(0.300)	(0.284)
ANSF	-0.202***		-0.146**		-0.213***	
	(0.059)		(0.063)		(0.061)	
Weak IV statistic	48.8	57.9	48.8	57.9	48.8	57.9
Number of Districts	377	377	377	377	377	377
Tranche × time FE	No	Yes	No	Yes	No	Yes

Notes: Regressions at the district-quarter level, covering the period 2008-2014. All regressions include district fixed effects, regional command × time fixed effects, and district-specific trends. The instrument used for ISAF base closure is the interaction of the travel distance to the nearest military airport and an indicator for the post-2011 period. The IV control set includes distance to any airport × time fixed effects, and distance to province borders × time fixed effects. Outcomes are measured as log plus 1. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: ISAF Base Closure and Security Perceptions (ANQAR)

	Security		ANSF presence and control		
	Improved	Taliban weaker	See ANA Monthly	ANSF brings security	Taliban control
	(1)	(2)	(3)	(4)	(5)
Panel A: District Level					
ISAF base closure	-0.177***	-0.205***	0.160**	-0.121**	-0.067
	(0.054)	(0.056)	(0.078)	(0.056)	(0.057)
ANSF	0.062***	0.061***	-0.008	0.044**	0.009
	(0.019)	(0.020)	(0.022)	(0.019)	(0.018)
Weak IV statistic	63.5	63.6	63.4	63.5	63.5
Number of Districts	375	375	375	375	375
Panel B: District Level, Tranche FE					
ISAF base closure	-0.171***	-0.184***	0.132*	-0.127**	-0.062
	(0.053)	(0.055)	(0.075)	(0.053)	(0.056)
Weak IV statistic	71.7	72.2	71.7	71.7	71.7
Number of Districts	375	375	375	375	375

Notes: Regressions at the district-quarter level, covering the period 2008-2016. All regressions include district fixed effects, regional command $\times$ time fixed effects, and district-specific trends. The instrument used for ISAF base closure is the interaction of the travel distance to the nearest military airport and an indicator for the post-2011 period. The IV control set includes distance to any airport $\times$ time fixed effects, and distance to province borders $\times$ time fixed effects. The dependent variables measure shares of respondents at the district level. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: Security Force Activity

	Improper behavior by ANA	ANA needs full international support	ANA will most likely defeat insurgents	CERP spending
	(1)	(2)	(3)	(4)
ISAF base closure	0.009	0.099**	-0.056	-1.392
	(0.092)	(0.048)	(0.054)	(1.177)
ANSF	-0.012	-0.009	0.015	-0.053
	(0.019)	(0.015)	(0.016)	(0.428)
Weak IV statistic	27.2	63.5	63.5	65.3
Number of Districts	360	375	375	377

Notes: Regressions at the district-quarter level, covering the period 2008-2014. All regressions include district fixed effects, regional command $\times$ time fixed effects, and district-specific trends. The instrument used for ISAF base closure is the interaction of the travel distance to the nearest military airport and an indicator for the post-2011 period. The IV control set includes distance to any airport $\times$ time fixed effects, and distance to province borders $\times$ time fixed effects. The dependent variables in columns (1)-(3) measure the share of respondents in the ANQAR survey at the district level. Column (4) contains CERP spending, which is subject to a log plus one transformation. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8: Military Support

	Close air support (1)	Medevacs (2)	IED Found & Cleared (3)
ISAF base closure	-0.017	0.512***	-0.086
	(0.149)	(0.187)	(0.219)
ANSF	0.016	0.001	-0.081
	(0.043)	(0.042)	(0.058)
ISAF base closure=1 × log(Direct Fire)	-0.095	-0.199***	
	(0.076)	(0.066)	
ANSF=1 × log(Direct Fire)	-0.010	-0.017	
	(0.039)	(0.034)	
log(Direct Fire)	0.116***	0.104***	
	(0.015)	(0.013)	
ISAF base closure=1 × log(IED Explosion)			-0.318*
			(0.168)
ANSF=1 × log(IED Explosion)			-0.010
			(0.064)
log(IED Explosion)			0.423***
			(0.023)
Weak IV statistic	25.8	25.8	25.6
Number of Districts	377	377	377

Notes: Regressions at the district-quarter level, covering the period 2008-2014. All regressions include district fixed effects, regional command × time fixed effects, and district-specific trends. The instrument used for ISAF base closure is the interaction of the travel distance to the nearest military airport and an indicator for the post-2011 period. The IV control set includes distance to any airport × time fixed effects, and distance to province borders × time fixed effects. The dependent variables are measured as log plus one. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix to "Security Transitions"

For Online Publication

A Spillover Controls

We write the model above in a more concise notation by collecting the $w_{i,j}$ in a $N \times N$ matrix W. In our case, we have $N = 392$ districts in Afghanistan.[1] Matrix W is often known as the spatial, neighbouring or adjacency matrix. We also stack the other elements to write the model

$$y_t = \alpha + \beta_t + \rho W y_t + \gamma ANSF_t + \delta W \cdot ANSF_t + \eta \times t + \epsilon_t \quad (5)$$

where y_t, α, β_t, $ANSF_t$ and ϵ_t are, respectively, the column-vector of outcomes, district fixed effects, regional command time trends, $ANSF_{d,t}$ treatment indicators and error term, for all regions and districts at a given point in time. Instead of pre-specifying W, we opt to recover it from the data. To do so, we apply the method in de Paula et al. (2019) which allows us to fully and flexibly recover the network matrix W from the panel data. The method provides a high-dimensional technique to deal with a large number of parameters. Furthermore, the authors show that W and the parameters ρ, γ and δ are globally identified. The purpose of this Section is to review and provide an adaptation of their methodology.

The method in de Paula et al. (2019) postulates that W, ρ, γ and δ are globally identified under the assumptions that districts have a different number network linkages to other districts. More specifically, it relies on the identification assumption that the main diagonal of W^2 is not proportional to a vector of ones. To give a concrete interpretation to this assumption, note that the elements of the diagonal of W^2 are

[1] We maintain in the sample all districts that is consistently defined in the survey. This slightly reduces the number of districts from 398 to 392.

given by

$$\text{diag}(W^2) = \begin{bmatrix} \sum_{j=1}^{N} w_{1j}w_{j1} \\ \cdots \\ \sum_{j=1}^{N} w_{Nj}w_{jN}. \end{bmatrix}$$

The first element of the expression above, $\sum_{j=1}^{N} w_{1j}w_{j1}$ captures the extent to which district 1 affects other districts, which in turn affects district 1 back. So elements of the diagonal of W^2 are interpreted as "self-spillovers". Thus $\text{diag}(W^2)$ not proportional to the vector of ones translates into heterogenous exposure to the "self-spillovers" across districts.

For the sake of clarity consider the canonical example of peer friendships, and further assume that W is unweighted (with $W_{ij} = 1$ if j affects i and zero otherwise). In this case, the (i, j)-th element of W^2 captures the number of times that j reaches i through intermediary friendships. Its diagonal is simply the number of reciprocated friendships among the group. The identification assumption means that students have different number of reciprocated friendships.

The identification assumption in de Paula et al. (2019) is sufficient to the peers-of-peers identification strategy which makes use of the variation in the composition of peers-of-peers to identify the endogenous effects. Such type of assumptions which originate from the network asymmetry have been shown to overcome the "reflection problem" as first postulated by Manski (1993). In line with de Paula et al. (2019), we additionally require the following standard regularization conditions: *(i)* no district affects itself, and so the main diagonal of W is equal to zero, $W_{ii} = 0$ for every $i = 1, \ldots, N$, ruling out a trivial solution to the model; *(ii)* the row-sums of W are smaller than one in absolute value, $\sum_{j=1}^{N} |W_{ij}| \leqslant 1$ for every $i = 1, \ldots, N$ and $|\rho| < 1$, ensuring that the system of equations is stationary in the spatial sense and the inverse of $(I - \rho W y_t)$ is well defined; *(iii)* there is one row i such that $\sum_{j=1}^{N} W_{ij} = 1$, which is a simple normalization; and, finally, *(iv)* the spatial effects do not cancel each other out, $\rho\gamma + \delta \neq 0$. We apply the method on the residualized y_t and x_t after projecting on the space generated by the fixed effects.

As de Paula et al. (2019) suggest, we make use of moment conditions given by the orthogonality between $ANSF_t$ and the error term to formulate moment conditions $g_{NT}(\theta)$ where the full set of structural parameters is given by $\theta = (\rho, \gamma, \delta, w_{12}, \ldots, w_{N,N-1})$. The first step in the Adaptive Elastic Net GMM is the solution to

$$\tilde{\theta}(p) \quad = \quad (1 + p_2/T) \cdot \underset{\theta \in \mathcal{R}^K}{\arg\min} \left\{ g_{NT}(\theta)' g_{NT}(\theta) + p_1 \sum_{i,j=1, i \neq j}^{N} |w_{i,j}| + p_2 \sum_{i,j=1, i \neq j}^{N} w_{i,j}^2 \right\}$$

where K is the number of parameters to be estimated, equal to $N(N-1)+3$, and p_1 and p_2 are the non-negative penalization terms. The term $g_{NT}(\theta)' g_{NT}(\theta)$ is the GMM objective criteria. The first penalization term linearly increases the objective function for every $w_{i,j}$ estimated as non-zero. As the penalization increases, more elements $w_{i,j}$ are estimated as zeros. The second term penalizes for the sum of the square of the links between units. This term has been shown to provide a more stable solution to the problem.

Finally, it has been shown that the solution to the first step alone would bias the estimates towards zero. To alleviate this problem, the estimates from the first step are refined in the adaptive stage,

$$\tilde{\theta}(p) \quad = \quad (1 + p_2/T) \cdot \underset{\theta \in \mathcal{R}^K}{\arg\min} \left\{ g_{NT}(\theta)' g_{NT}(\theta) + p_1^* \sum_{i,j=1, i \neq j}^{N} \frac{|w_{i,j}|}{|\tilde{w}_{i,j}|^{-k}} + p_2 \sum_{i,j=1, i \neq j}^{N} w_{i,j}^2 \right\}$$

where typically $k = 2.5$, and the full set of penalization parameters (p_1, p_1^*, p_2) is chosen by BIC. See de Paula et al. (2019) for implementation details.

B Distant Gridcell Pair Matching

In an attempt to relax the identification assumption that underlies our main district level difference-in-difference approach, we change the unit of analysis to 10×10 km gridcells. The choice of 10 x 10 km gridcells is appealing as this resolution is the basis of the geo-coordinate standard used by NATO militaries for locating points on the earth. This is only possible for the SIGACTs data, as the ANQAR survey data is reported at the district level. In the resulting high-resolution dataset, we construct pairs of matched gridcells. We rely on purely geographical characteristics of gridcells measured at baseline, such as: grid level population (as of 2008), elevation, terrain features, distance to nearest asphalt road, distance to nearest road, and distance to the nearest airport. In addition we use land cover data and construct the share of grid cells covered by different land cover type across sixteen land cover classes using the detailed 500m pixel resolution MODIS product (Channan et al., 2014). We proceed by constructing these matched pairs sequentially sampling without replacement: we first find matches for grid cells in the first transition waves by sampling from cells in later waves, only retaining matched pairs that are sufficiently similar with a propensity score difference of less than 0.01.[2] Our main estimating sample is chosen such that matched pairs are at least 200km apart (we call these distant matched pairs). This strategy allows us to rule out displacement effects, which could affect estimates relying on close matched pairs.

The estimating specification for the distant matched panel difference-in-differences is as follows:

$$y_{i,p,d,t} = \alpha_i + \beta_{p,t} + \gamma \times ANSF_{d,t} + \eta_d \times t + \epsilon_{i,d,t} \tag{6}$$

As before, the level of analysis is gridcell i, that is part of a matched pair p located in district d, and month t. We include matched-pair specific time fixed effects $\beta_{p,t}$. These are very demanding, as for every matched pair, we allow conflict to be on a different trajectory common only to the cells that form the matched pair. This zooms in to any time-varying changes that are specific to the matched-pair and accounts for any non-linear trends specific to the propensity score. As in earlier specifications, $ANSF_{d,t}$ switches on when ANSF takes over from ISAF. Since the distant matched pair panel is very granular (both in terms of time and geography), we use dummy variables as outcomes capturing the incidence of a conflict event within a given gridcell-month as a more meaningful measure of conflict activity. The crucial identifying assumption remains that there are common trends in conflict levels across observationally similar distant matched grid cells in the different transition phases. Table **??** shows that we achieve much better balance on conflict characteristics compared to the district level when resorting to the distant matched pair analysis, yet, some important baseline

[2]This approach could result in a decay in match quality for later transition rounds, as the set of available grid cells for matching becomes smaller. It turns out that the average estimated propensity score does not systematically differ between early versus late transition rounds.

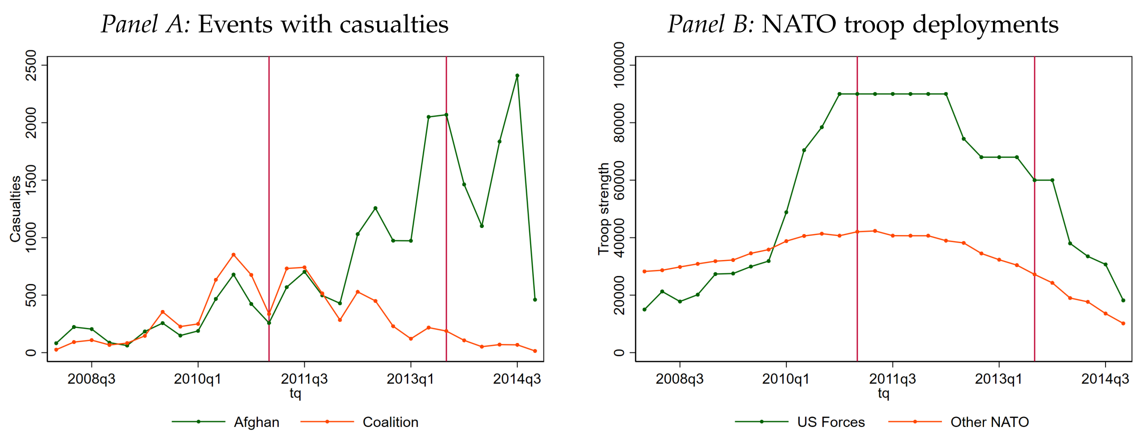
differences still exist. Importantly, as with the district-level difference-in-difference strategy, relying on event studies around the transition dates, we will provide strong evidence in support of the common trends assumption, necessary to enable us to interpret any estimated effects as causal.

Appendix Figures and Tables

Figure A1: Diagnostic statistics about cooperation and participation in the ANQAR survey waves 16 to 38

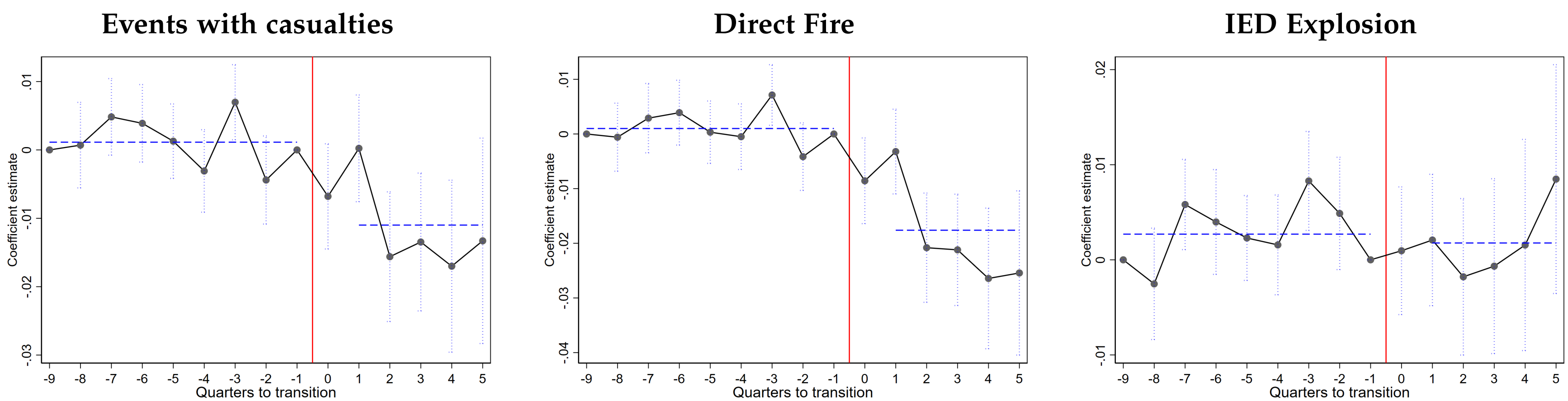
Notes: Figure present data on refusal, non-contact, and overall cooperation in the ANQAR survey waves 16-38 that were shared with the authors by NATO.

Figure A2: Events with casualties reported in SIGACTS over time and NATO troop strength.



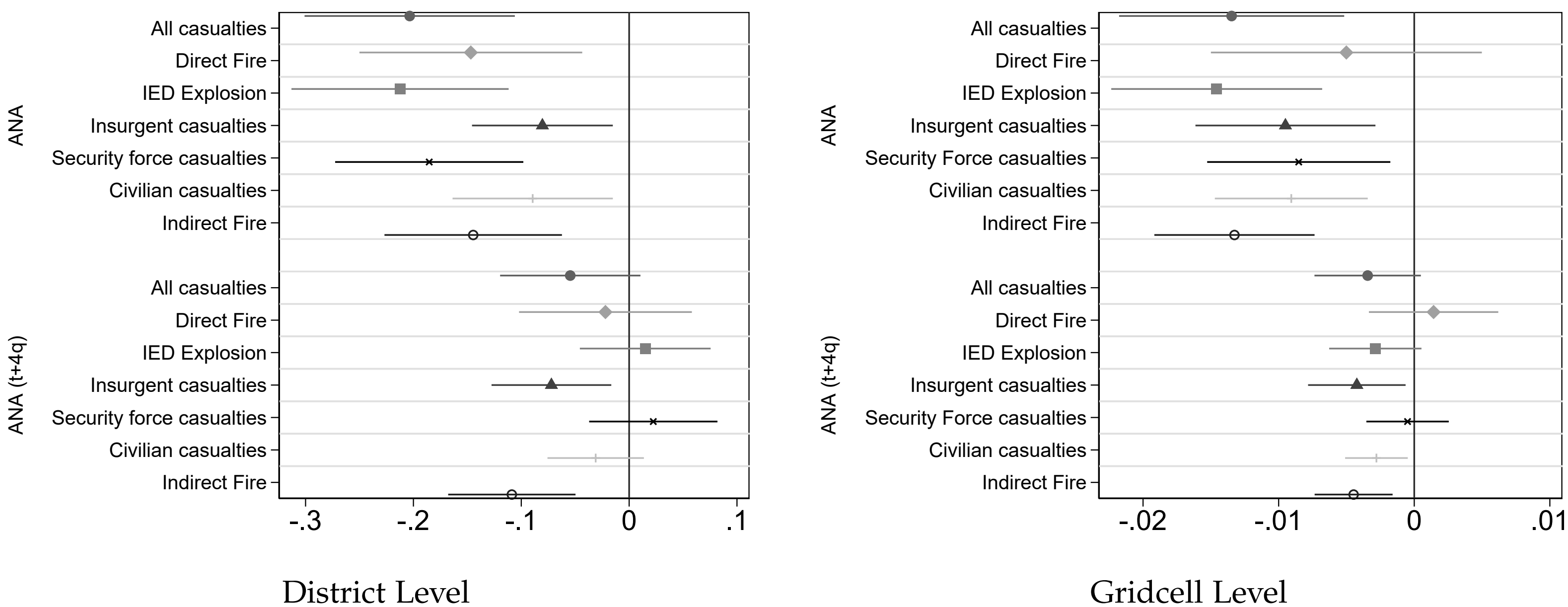
Notes: The left figure presents the overall number of SIGACTs events with casualties for Afghan- or Coalition forces. The right figure presents average monthly NATO and US troop deployments.

Figure A3: Event Studies around the Security Transfer to ANSF (SIGACTs) - Gridcell level



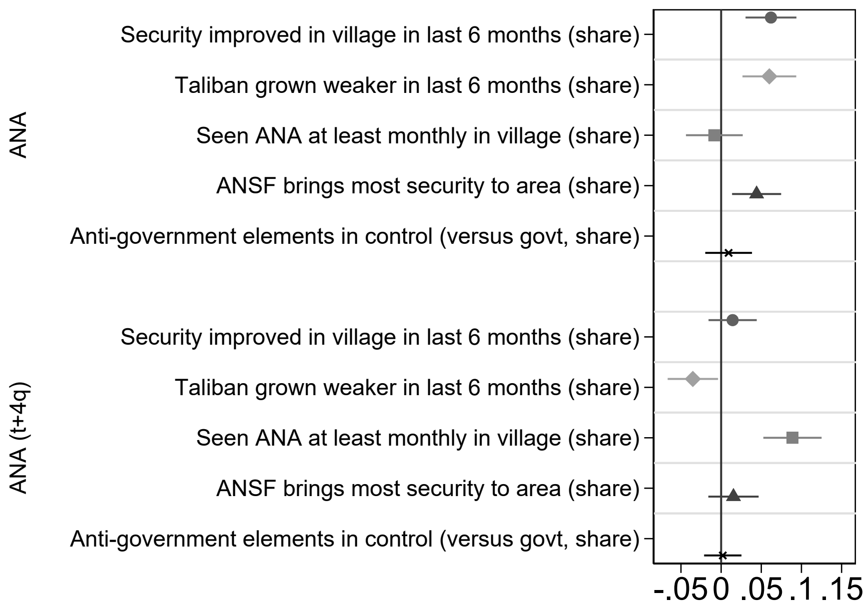
Notes: Event studies around the security transfers to ANSF. Coefficients on "time to ANSF" are shown with 90% confidence intervals. The models are analogous to column (1) in table 2. They include gridcell fixed effects and regional command × time fixed effects. The gridcell level results also include match pair × time fixed effects.

Figure A4: ISAF Base Closure and Conflict (SIGACTs) - Placebo timing



Notes: Coefficients and 90% confidence intervals on"ANSF" and "ANSF (t+4q)". We add the forwarded treatment indicator (by 4 quarters or 12 months) to a model that is analogous to column (1) in table 5 using the distance to the closest military airport interacted with a post 2011 dummy as the IV, and including location fixed effects, time fixed × regional command fixed effects, district-specific trends, and tranche × time fixed effects. In the grid cell level model, we also include match pair × time fixed effects. The dependent variable is measured as log plus one.

Figure A5: ISAF Base Closure and Conflict (ANQAR) - Placebo timing



District Level

Notes: Coefficients and 90% confidence intervals on“ANSF” and “ANSF (t+4q)”. We add the forwarded treatment indicator (by 4 quarters or 12 months) to a model that is analogous to column (1) in table 5 using the distance to the closest military airport interacted with a post 2011 dummy as an IV, and including location fixed effects, time fixed × regional command fixed effects, district-specific trends, and tranche × time fixed effects. In the grid cell level model, we also include match pair × time fixed effects. The dependent variable measures the share of respondents.

Table A1: Comparison of district level characteristics across different tranche phases

	T1	T2	T2-T1	T3	T3-T2		T4	T4-T3		T5	T5-T4
	(1)	(2)	(3)	(4)	(5)		(6)	(7)		(8)	(9)
Is security in your village better than 6 month ago?	0.288	0.291	0.002	0.216	-0.074	***	0.156	-0.060	***	0.138	-0.019
	(0.023)	(0.018)	(0.024)	(0.015)	(0.017)		(0.024)	(0.023)		(0.015)	(0.022)
All casualties per capita	-3.374	-3.410	-0.036	0.467	3.877	**	-2.229	-2.695	*	9.288	11.516
	(0.728)	(1.015)	(1.151)	(1.014)	(1.516)		(1.198)	(1.536)		(1.820)	(2.596)
Insurgent casualties per capita	-0.945	-1.001	-0.056	-0.356	0.645	*	-0.840	-0.484		2.711	3.551
	(0.189)	(0.293)	(0.295)	(0.279)	(0.369)		(0.357)	(0.391)		(0.615)	(0.863)
Security force casualties per capita	-1.646	-1.604	0.042	0.491	2.094	**	-0.950	-1.441	*	4.637	5.587
	(0.406)	(0.554)	(0.619)	(0.560)	(0.840)		(0.666)	(0.867)		(0.924)	(1.338)
Civilian casualties per capita	-0.784	-0.806	-0.022	0.332	1.137	***	-0.438	-0.770	**	1.940	2.378
	(0.187)	(0.215)	(0.257)	(0.240)	(0.355)		(0.237)	(0.349)		(0.381)	(0.515)
Direct Fire per capita	-6.710	-5.071	1.639	-1.448	3.623		-5.034	-3.587		26.711	31.746
	(3.654)	(4.543)	(6.347)	(2.865)	(5.944)		(3.150)	(3.547)		(6.446)	(8.331)
Indirect Fire per capita	-3.905	-3.339	0.566	-0.667	2.672	***	0.348	1.014		14.066	13.719
	(0.729)	(0.851)	(0.532)	(0.803)	(0.790)		(1.201)	(1.302)		(2.815)	(3.434)
IED Explosion per capita	-3.037	-2.670	0.367	1.549	4.219	***	-0.266	-1.815		6.717	6.983
	(0.647)	(0.899)	(0.981)	(1.007)	(1.471)		(1.555)	(2.019)		(1.542)	(2.515)
Nightlights per capita	892.036	637.193	-254.843	316.111	-321.082		-126.970	-443.081	***	-73.006	53.964
	(336.144)	(167.234)	(382.774)	(84.300)	(201.716)		(44.089)	(108.032)		(46.020)	(53.553)
Opium Yield [HA] per capita	0.124	0.169	0.045	0.293	0.123		0.372	0.080		0.498	0.126
	(0.071)	(0.088)	(0.100)	(0.086)	(0.107)		(0.132)	(0.148)		(0.145)	(0.189)

Notes: Table reports coeffients on tranche dummies and their differences from a district-level regression with quarter fixed effects, covering the period 2008-2014 (2008-2016 for the first row, which is based on ANQAR). Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A2: Security transfer to ANSF and conflict (SIGACTs) - District level additional outcomes

	Insurgent Casualty Events Events		Security Force Casualty Events		Civilian Casualty Events		Indirect Fire Attacks	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: District cell level – Security Transfer								
ANSF	-0.096***	-0.064*	-0.076**	-0.044*	-0.066**	-0.022	-0.133***	
	(0.031)	(0.035)	(0.029)	(0.026)	(0.028)	(0.023)	(0.032)	
Number of Districts	377	377	377	377	377	377	377	
Mean of DV pre ANA								
District time trend	No	Yes	No	Yes	No	Yes	No	Yes
Panel B: District level – ISAF Base Closure (IV)								
ISAF base closure	0.656**	0.581*	0.768**	0.242	0.688**	0.428*	0.033	
	(0.305)	(0.324)	(0.300)	(0.195)	(0.274)	(0.227)	(0.237)	
ANSF	-0.202***	-0.146**	-0.213***	-0.078**	-0.186***	-0.089*	-0.141***	
	(0.059)	(0.063)	(0.061)	(0.039)	(0.053)	(0.045)	(0.050)	
Weak IV statistic	48.8	48.8	48.8	48.8	48.8	48.8	48.8	
Number of Districts	377	377	377	377	377	377	377	
Mean of DV pre ANA								
Tranche × time FE	No	Yes	No	Yes	No	Yes	No	Yes

Notes: Regressions at the district-quarter level, covering the period 2008-2014. All regressions include district fixed effects, regional command × time fixed effects, and district-specific trends. The instrument used for ISAF base closure is the interaction of the travel distance to the nearest military airport and an indicator for the post-2011 period. The IV control set includes distance to any airport × time fixed effects, and distance to province borders × time fixed effects. Outcomes are measured as log plus 1. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A3: Security transfer to ANSF and conflict (SIGACTs) - Spillover estimates

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
All Fatal Events	ANSF transition effect (γ)	-0.095***	-0.119***	-0.109***	-0.153***	-0.102***	-0.101***	-0.099***	-0.098***	-0.088***	-0.102***
		(0.031)	(0.033)	(0.029)	(0.032)	(0.026)	(0.025)	(0.025)	(0.025)	(0.025)	(0.026)
	Exogenous effects (δ)		0.041	0.030	0.119**	0.015	0.383	-0.146	-0.447***	-0.554***	0.039
			(0.051)	(0.063)	(0.046)	(0.153)	(0.389)	(0.185)	(0.027)	(0.026)	(.060)
	Endogenous effects (ρ)										0.039
											(0.554)
Direct Fire Attacks	ANSF transition effect (γ)	-0.066*	-0.064**	-0.074***	-0.073**	-0.065**	-0.066**	-0.064**	-0.019	-0.012	-0.066**
		(0.035)	(0.027)	(0.026)	(0.034)	(0.027)	(0.027)	(0.027)	(0.027)	(0.026)	(0.028)
	Exogenous effects (δ)		-0.143	-0.031	0.016	-0.035	0.032	-0.143	-0.477***	-0.615***	0.004
			(0.197)	(0.056)	(0.049)	(0.163)	(0.415)	(0.197)	(0.030)	(0.028)	(0.042)
	Endogenous effects (ρ)										0.001
											(0.226)
IED Explosions	ANSF transition effect (γ)	-0.074**	-0.086***	-0.074***	-0.104***	-0.083***	-0.082***	-0.081***	-0.074***	-0.068***	-0.088***
		(0.029)	(0.029)	(0.026)	(0.029)	(0.023)	(0.022)	(0.023)	(0.022)	(0.022)	(.027)
	Exogenous effects (δ)		0.010	-0.031	0.052	0.056	-0.121	-0.036	-0.482***	-0.576***	0.002
			(0.046)	(0.056)	(0.041)	(0.136)	(0.346)	(0.164)	(0.027)	(0.026)	(.087)
	Endogenous effects (ρ)										-0.386
											(0.644)
Number of districts		392	392	392	392	392	392	392	392	392	392
District time trend		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Spillover specification		-	Neighbor dist.	Neighbor dist.^{2}	Neighbor prov.	Dist. < 250km	Dist. < 500km	Driving dist. < 500km	Flexible, zero beyond 500km	Flexible, zero beyond 1000km	Flexible, zero beyond 1000km
Edges that are supposed to be known		-	100%	100%	100%	100%	100%	100%	27.51%	17.35%	17.35%

Notes: Column (1): regressions at the district-quarter level, covering the period 2008-2014, including district and regional command x time fixed effects. Dependent variable is expressed as log plus one. Standard errors clustered at the district level and are presented in parentheses. Columns (2)-(7) are spatial panel regressions with spatial neighboring matrix assumed to be known and given, respectively, by neighboring districts, neighboring district squared, neighboring provices, geodesical distance smaller than 250km and 500km and driving distance smaller than 500km. Specifications reported in columns (7)-(10) have estimated and flexible spatial neighboring matrix, following de Paula et al. (2019), where weights between districts with driving distance beyond 500km and 1000k are assumed to be equal to zero, which corresponds to 27.51% and 17.35% of all weights. Stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A4: ISAF Base Closure and Conflict (SIGACTs) - Spillover estimates

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
All Fatal Events	Base closure (gamma)	.765**	1.452***	1.676***	0.847**	0.947***	0.496*	0.771***	0.501**	0.540**	0.533***
		(0.336)	(0.510)	(0.383)	(0.337)	(0.254)	(0.264)	(0.220)	(0.216)	(0.215)	(0.179)
	Exogenous effects (delta)		-0.981	-1.689***	-0.216	-1.657*	-4.090	-2.932**	4.262***	4.701***	2.713***
			(0.613)	(0.553)	(0.420)	(0.926)	(2.747)	(1.352)	(0.236)	(0.230)	(0.281)
	Endogenous effects (rho)										0.587***
											(0.071)
Direct Fire Attacks	ANSF transition effect (beta)	.787**	0.951**	1.816***	0.547	1.006***	0.725***	0.885***	0.387*	0.679***	0.628***
		(0.397)	(0.408)	(0.343)	(0.359)	(0.271)	(0.281)	(0.235)	(0.231)	(0.228)	(0.191)
	Exogenous effects (delta)		-0.264	-1.404***	0.417	-1.467	-1.432	-4.398***	5.006***	5.480***	2.900***
			(0.590)	(0.495)	(0.447)	(0.987)	(2.927)	(1.440)	(0.276)	(0.259)	(0.306)
	Endogenous effects (rho)										0.697***
											(0.063)
IED Explosions	ANSF transition effect (beta)	1.109***	1.776***	1.816***	1.420***	1.051***	0.789***	1.018***	0.529***	0.645***	0.377**
		(0.364)	(0.456)	(0.343)	(0.301)	(0.227)	(0.236)	(0.197)	(0.195)	(0.193)	(0.166)
	Exogenous effects (delta)		-1.008*	-1.404***	-0.658*	-0.235	-4.275*	0.011	3.966***	3.858***	1.474***
			(0.548)	(0.495)	(0.375)	(0.829)	(2.457)	(1.210)	(0.223)	(0.206)	(0.292)
	Endogenous effects (rho)										0.692***
											(0.070)
Number of districts		392	392	392	392	392	392	392	392	392	392
Tranche x time FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Spillover specification		-	Neighbor dist.	Neighbor dist.^{2}	Neighbor prov.	Dist. < 250km	Dist. < 500km	Driving dist. < 500km	Flexible, zero beyond 500km	Flexible, zero beyond 1000km	Flexible, zero beyond 1000km
Edges that are supposed to be known		-	100%	100%	100%	100%	100%	100%	27.51%	17.35%	17.35%

Notes: Column (1): regressions at the district-quarter level, covering the period 2008-2014, including district and regional command x time fixed effects. Dependent variable is expressed as log plus one. Standard errors clustered at the district level and are presented in parentheses. Columns (2)-(7) are spatial panel regressions with spatial neighboring matrix assumed to be known and given, respectively, by neighboring districts, neighboring district squared, neighboring provices, geodesical distance smaller than 250km and 500km and driving distance smaller than 500km. Specifications reported in columns (7)-(10) have estimated and flexible spatial neighboring matrix, following de Paula et al. (2019), where weights between districts with driving distance beyond 500km and 1000k are assumed to be equal to zero, which corresponds to 27.51% and 17.35% of all weights. Stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A5: Summary Statistics at the gridcell level

	Mean	Standard Deviation	N
	(1)	(2)	(3)
Gridcell-month level			
All casualties	0.122	0.895	450072
Direct Fire	0.233	2.325	450072
IED Explosion	0.073	0.578	450072
Insurgent casualties	0.032	0.313	450072
Security Force casualties	0.064	0.538	450072
Civilian casualties	0.026	0.239	450072
Indirect Fire	0.044	0.471	450072
ANSF	0.423	0.494	450072
ISAF base closure	0.275	0.447	450072

Notes: Observations at the gridcell-month level (2008-2014).

Table A6: Security transfer to ANSF and conflict (SIGACTs) - Gridcell Level

	All fatal Events		Direct Fire Attacks		IED Explosions	
	(1)	(2)	(3)	(4)	(5)	(6)
ANSF	-0.015***	-0.009*	-0.008	-0.001	-0.016***	-0.012***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)	(0.004)
Number of Grid Cells	1182	1182	1182	1182	1182	1182
District time trend	No	Yes	No	Yes	No	Yes

Notes: Regressions at the gridcell-month level, covering the period 2008-2014. All regressions include location (i.e. district/gridcell) fixed effects and regional command × time fixed effects. They also includes match pair × time fixed effects. The dependent variable is expressed as a binary indicator variable. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A7: Main results by tranche

	All Casualty Events	Direct Fire Attacks	IED Explosions
	(1)	(2)	(3)
District Level (IV)			
ISAF base closure	0.678**	0.544*	0.736***
	(0.292)	(0.302)	(0.277)
ANSF Tranche 1	-0.486**	-0.339	-0.550***
	(0.195)	(0.230)	(0.176)
ANSF Tranche 2	-0.129	-0.129	-0.203**
	(0.083)	(0.090)	(0.082)
ANSF Tranche 3	-0.096	-0.008	-0.096
	(0.064)	(0.073)	(0.062)
ANSF Tranche 4	-0.385***	-0.400***	-0.288***
	(0.083)	(0.101)	(0.092)
ANSF Tranche 5	-0.154	-0.033	-0.160
	(0.113)	(0.136)	(0.108)
Weak IV statistic	65	65	65
Number of Districts	377	377	377

Notes: Regressions at the district-quarter level covering the period 2008-2014. All regressions include district fixed effects and regional command × time fixed effects, and district-specific trends. Panel B also includes match pair × time fixed effects. The instrument used for ISAF base closure is the interaction of the travel distance to the nearest military airport and an indicator for the post-2011 period. The IV control set includes distance to any airport × time fixed effects, and distance to province borders × time fixed effects. Outcomes are measured as log plus 1 in Panel A, and as binary indicators in Panel B. Standard errors clustered at the district level and are presented in parentheses, stars indicate *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.