

Fratricidal Coercion in Modern War*

Jason Lyall

Dartmouth College

jason.lyall@dartmouth.edu

Yuri M. Zhukov

University of Michigan

zhukov@umich.edu

First draft: September 6, 2020

This draft: November 5, 2021

Abstract

Does the threat or use of violence against one's own soldiers make them more willing to perform their duties in battle? Existing theories largely dismiss this kind of fratricidal coercion as ineffective or obsolete, suggesting that positive inducements like ideology, material rewards, and primary group bonds drive soldiers' behavior. We argue instead that fratricidal coercion can improve soldier compliance, reducing wartime desertions, missing in action, premature surrender, and other forms of indiscipline. Yet it also places soldiers at greater risk of physical harm, and potentially impedes an army's ability to inflict costs on enemy forces. To test our claims, we use a three-pronged empirical strategy that draws on (1) a monthly panel dataset of 609 Soviet Rifle Divisions in 1941–45, built from 34 million personnel files; (2) a close-range paired comparison of two Rifle Divisions selected via matching; and (3) 526 land battles (1939–2011) to assess the cross-national generalizability of these micro-level findings. Fratricidal coercion improves soldier compliance across all of these samples, but at the cost of higher casualties. These findings highlight the need to bring coercion back into our theories of combat motivation and military effectiveness.

Keywords: combat motivation; military effectiveness; coercion; war; Soviet Union

*For helpful comments, we thank Avishay Ben Sasson-Gordis, Andrew Bertoli, Stephen Brooks, Stephen Chaudoin, Travis Curtice, Christian Davenport, Christina Davis, Mark Dincecco, Chris Fariss, Peter Feaver, Margaret Foster, Taylor Fravel, Jeffrey Friedman, Ryan Grauer, Mariya Grinberg, Andy Halterman, Dotan Haim, Iain Johnston, Jennifer Lind, Christoph Mikulaschek, Nicholas Miller, James Morrow, Emily Myers, Emerson Niou, Roger Petersen, Barry Posen, Katy Powers, Michael Poznansky, Daryl Press, Livia Schubiger, David Siegel, Megan Stewart, Roya Talibova, Ben Valentino and William Wohlforth. We also thank audiences where we presented earlier versions at the University of Michigan, Dartmouth College, Duke University, Harvard University, MIT, and the 2020 American Political Science Association annual meeting. Replication materials for this study will be made available on Harvard's Dataverse.

The soldier must be more afraid of his officers than of the dangers to which he is exposed.

Frederick the Great

Can armies bolster their battlefield performance by coercing their own soldiers to fight? Leading theories of combat motivation largely dismiss the possibility that fratricidal coercion — the threat or use of physical violence against one’s own soldiers — might actually improve an army’s discipline and ability to inflict costs against opponents in battle. The soldiers that animate our theories tend to be motivated by positive inducements, like ideology and nationalism¹ material incentives,² or strong primary group bonds.³ Coercion, by contrast, is seen as wasteful at best, ineffective at worst, a hallmark of an earlier era of warfare but one now antiquated and surpassed in an era of post-French Revolution nation-states and citizen armies. Scholars have described coercion as “an arid means for authority to achieve its ends,”⁴ as an “ineffective and unreliable instrument for motivation,”⁵ and as “not very good at the intended aim. . . it may not deter desertion but provoke it.”⁶ The belief that “fear alone cannot keep soldiers fighting”⁷ is a pervasive one in theories of combat motivation, unit cohesion, and military effectiveness more broadly.⁸

While recent scholarship downplays (or ignores) this phenomenon, fratricidal coercion continues to unfold in contemporary wars. Armies as diverse as the Syrian Arab Army, the Islamic State, and Libya’s Government of National Accord (GNA) have all unleashed violence against their own soldiers. The historical record is also littered with cases — from

¹Lynn (1984); Posen (1993); Levi (1997); Lynn (2003); Reiter (2007); Castillo (2014).

²Lichbach (1998); Berkovich (2017); Weinstein (2007).

³Marshall (1947); Shils and Janowitz (1948); Stouffer et al. (1949); Moskos (1975); Henderson (1985); Stewart (1991).

⁴Keegan (1997).

⁵Hamner (2011, 3).

⁶McLauchlin (2020, 34).

⁷Castillo (2014, 24).

⁸We define *combat motivation* as an individual’s willingness to endure hardships and risk personal safety to perform their duty in battle (Luttwak and Koehl, 1991, p. 405). Combat motivation is central to, but distinct from, *unit cohesion* (a military unit’s ability to withstand pressures to collapse, and maintain mutual commitment to the mission, Castillo 2014, p. 2, Luttwak and Koehl 1991, p. 126), and the more general concept of *military effectiveness* (process by which armed forces convert resources into fighting power, Millett, Murray and Watman 1986, p. 37).

the US Civil War to conflicts during China’s warlord era (1916–28) to the Eastern Front of World War II — where armies used public executions, collective punishment, and even specialized units to enforce discipline. A lack of evidence compounds this theoretical neglect: we typically lack both the cross-national data to chart the use of fratricidal coercion and the micro-level data necessary to assess its effects on battlefield performance.

We take up the challenging of examining why and how fratricidal coercion affects battlefield performance in conventional war. We consider several dimensions of battlefield performance — defined, broadly, as the ability to generate and maintain coercive violence against armed opponents.⁹ These include standard measures of attrition, like relative numbers of troops killed or wounded in action, but also broader categories of battlefield losses, like how many soldiers surrendered, deserted, committed treason or went missing. Such losses are not always the result of insubordination or noncompliance, but they all represent negative outcomes that make it harder to continue fighting as a cohesive force.

We begin by providing descriptive evidence from 252 wars fought since 1800 on the use of a particularly graphic form of fratricidal violence, namely, specialized “blocking” detachments that threaten and punish an army’s own soldiers. We then adopt a three-pronged empirical strategy to examine whether fratricidal coercion can raise sufficient costs to elicit soldier compliance with orders and improve unit cohesion. First, we draw on 34 million declassified personnel records of Red Army soldiers to create a monthly panel dataset of 609 Soviet Rifle Divisions fighting on the Eastern Front of World War II (1941–45). These data provide a window into specific aspects of unit-level battlefield performance, including casualties suffered, soldiers lost as prisoners of war (POWs), missing in action (MIA), deserters and defectors. Next, we highlight the mechanisms that underpin fratricidal coercion’s direct and indirect effects using a matched comparison of two similar Rifle Divisions fighting at the Battle of Leningrad (1941). Finally, we analyze 526 land battles (1939–2011) to test whether our results generalize beyond the Eastern Front.

We find that fratricidal coercion has been relatively commonplace over the past two centuries; nearly one-third of all belligerents have deployed blocking detachments on the bat-

⁹Lyll (2020, p. 9)

tlefield since 1800. On the Eastern Front, the increased presence of secret police (NKVD) officers and their formations within Rifle Divisions was associated with marked reductions in missing soldiers, premature surrender, desertion, and POWs captured by German forces. Increased compliance came at a price, however. As the size of embedded NKVD forces increased, so too did the casualties suffered by Soviet soldiers, especially early in the war. These micro-level findings generalize to the broader universe of post-1939 battles. We also find that the presence of blocking detachments is associated with not only increased casualties, but worse loss-exchange ratios, indicating that harsh discipline did not improve — and likely impeded — the average army’s ability to inflict costs on enemy forces.

We contribute to multiple theoretical and empirical debates in at least four ways. First, our mixed-method study documents the need to reintegrate coercion into theories of combat motivation, unit cohesion, and military effectiveness. Second, we illustrate the importance of a multi-faceted conceptualization of battlefield performance and the possibilities afforded by new sources of disaggregated (unit- and battle-level) historical data. Third, we raise a set of theoretical puzzles about how the effects of fratricidal coercion “scale-up” to shape more macro-level outcomes like battlefield victories and war outcomes. Finally, our findings suggest a need to revise how we conduct net assessment of adversary capabilities and how the vulnerabilities induced by reliance on fratricidal coercion might be exploited in wartime.

What is Fratricidal Coercion?

We define *fratricidal coercion* as the threatened or actual use of physical violence by military authorities and their representatives against their own soldiers to persuade them to continue fighting. Fratricidal coercion has several defining features. First, it exists outside the framework of regular military disciplinary systems (i.e. military criminal code, police, courts, correctional facilities), bypassing these institutional, peacetime channels in favor of an expedited, ad hoc process optimized for battlefield use. Second, it is an official set of procedures and practices authorized by senior political and military leaders; it excludes one-off actions by local commanders or “horizontal” disciplinary actions between soldiers

(e.g., hazing). Third, the task of administering coercion often falls on specialized, semi-autonomous units that are deployed close to the front lines; they deliver sanctions in near real-time, and are authorized to enforce discipline through on-the-spot punishment. Finally, fratricidal coercion is public in nature. It is designed not only to punish transgressors but also deter future subversive acts by other soldiers.

Fratricidal coercion has taken many forms historically, including forcible return to the battlefield, forced labor and physical punishment for disobedience, deliberate maiming and execution of soldiers, and even forced participation in atrocities. These practices can apply to an entire army or only to select parts. While much of the actual violence is directed against soldiers accused of indiscipline, threats of violence can also extend to soldiers who fail to prevent or report disciplinary breaches. In some cases, fratricidal coercion has been extended to commanders and even to families and communities of targeted soldiers far from the battlefield. The scale of this violence varies within and across armies but can reach extreme levels. Saddam Hussein, to take one example, allegedly ordered tens of thousands of his own soldiers executed for desertion during the 1980-88 Iran-Iraq War.¹⁰

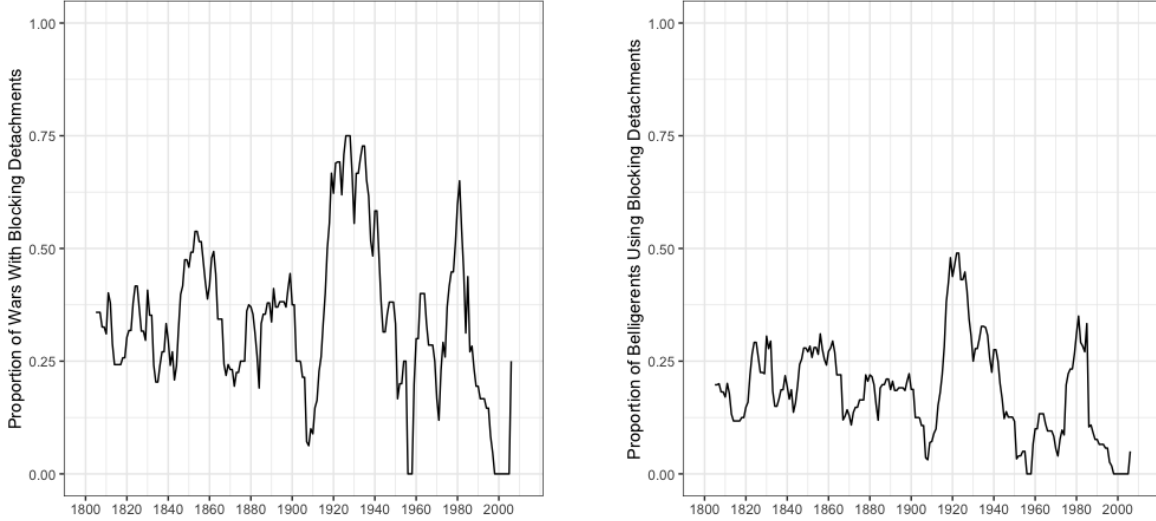
Scholars have yet to collect systematic data on the myriad forms that fratricidal coercion can take. Yet we can take partial stock of this phenomenon by looking at the historical use of *blocking detachments*, a uniquely visible and brutal example of fratricidal coercion. Blocking detachments are specialized armed formations that are authorized to monitor, coerce, and lethally sanction an army's own officers and soldiers to ensure wartime discipline. For data on these detachments, we draw on Project Mars, which chronicles the battlefield performance of 229 belligerents fighting in 252 conventional wars from 1800 to 2011.¹¹

As Figure 1 reveals, blocking detachments have been a widespread feature of modern war. Since 1800, belligerents deployed blocking detachments at least 146 times, representing nearly 18% of all combatant observations (146/825).¹² Armies were equally likely to

¹⁰Murray and Woods (2014, 232,297,301).

¹¹Project Mars (Lyall, 2020) encompasses all conventional wars involving two or more states that resulted in ≥ 500 battle deaths. Belligerents are included if they possess a political capital, the ability to control their population, can muster a conventional army, and had $\geq 1\%$ of the total fielded forces or casualties in a war. Civil wars that were fought conventionally — with firearm-equipped uniformed soldiers engaging in direct combat using combined arms — are also included.

¹²These are conservative estimates and likely undercount the number of combatants deploying blocking



(a) Proportion of Wars With Blocking Detachments (10-Year Moving Average) (b) Proportion of Belligerents Using Blocking Detachments (10-Year Moving Average)

Figure 1: Blocking Detachments in Historical Perspective

resort to blocking detachments across the “early modern” (1800-1917) and post-World War I “modern” (1918-) eras of warfare, suggesting that these units are not simply a response to the increased lethality of warfare.¹³ Nor are these units confined to the same subset of belligerents. While some countries have relied heavily on such practices (notably, Russia and China), 70 belligerents out of 229 used blocking detachments in at least one war.

What types of belligerents are more likely to use these formations? Autocracies are slightly more prone than democracies to adopt blocking detachments, but not significantly so.¹⁴ Blocking detachments are not used exclusively (or disproportionately) by the at-

units, given gaps in the historical record, difficulties in establishing credible evidence that violence was used against soldiers, and the tendency of some belligerents to purge these accounts from official histories.

¹³Armies deployed these specialized units in 85 of 483 pre-World War I observations (18%) and in 61 of 342 post-World War I observations (18%).

¹⁴Drawing on the familiar 21-point Polity2 index of regime type (where +10 is a full democracy and -10 is a full authoritarian regime) (Jagers and Gurr, 2004), we find that belligerents using blocking units are slightly less democratic than their non-using counterparts (-3.92 versus -2.64 for the 1800-2011 period), though the difference is not statistically significant.

tacking or defending side: initiators (18%), joiners (17%), and targets (20%) have nearly identical rates of deployment. So, too, do weak and powerful states. Vast empires (the Ottoman Empire, Rabah Empire, and Kokand) have used them, as have Great Powers (including China during the Korean War and Tsarist Russia during WWI), and tiny belligerents (Entre Ríos Province, during the 1851-52 Platine War with the Argentine Confederation). Among the best predictors of usage is the degree of inequality within the ranks. As the level of ethnic and racial inequalities increase within an army, commanders increasingly turn to blocking detachments to enforce discipline.¹⁵ Taken together, these patterns suggest that fratricidal coercion may stem from a prior inability to create strong within-unit bonds or deeper attachment to the regime and its collective vision.

Fratricidal Coercion and Battlefield Performance

How might we expect fratricidal coercion to impact the choices soldiers make in battle? Consistent with earlier research on combat motivation, we assume that soldiers make rational decisions about the benefits and costs of fighting versus fleeing the battlefield. Soldiers' combat motivation is a function of considerations both intrinsic (e.g. one's sense of duty, honor, ideological conviction) and extrinsic (e.g. expectations of how others will perform, and how authorities will react). Intrinsic motivations to fight will vary across soldiers, depending on their past interactions with the state, and group identities (e.g., race, ethnicity, class).¹⁶ Individuals identifying with groups that had been marginalized or repressed by political authorities may be less willing to sacrifice for the regime.¹⁷ These considerations may be offset or amplified by extrinsic factors, like the punishment one expects to receive

¹⁵Using the Military Inequality Coefficient — scaled from 0 (all ethnic groups within a military enjoy full membership in the political community) to a theoretical limit of 1 (all groups face state-directed discrimination and repression) — we find that blocking units emerged in half of all belligerents with extreme inequality (>0.61), in a third of belligerents with high inequality (0.41-0.60), a quarter with medium inequality (0.21-0.40), and a tenth of those with low inequality (0-0.20). See Lyall (2020, 168).

¹⁶Lyall (2020, 41-62); Rozenas, Talibova and Zhukov (2020); Henn and Huff (2021).

¹⁷Our discussion opens the possibility that there are multiple groups within an army, each with their own relative status and dynamics of information flow. How soldiers make decisions based on the behavior of multiple groups is a fascinating question we leave to future research.

for insubordination, and one’s expectation of how hard others will fight.¹⁸

Seen in this light, fratricidal coercion emerges as a potential solution to a basic collective action problem inherent within any army: fighting is individually costly, but success (indeed, survival) is elusive unless a critical mass joins the effort.¹⁹ Here, fratricidal coercion holds the promise of solving two interrelated challenges: compelling reluctant soldiers to take to the battlefield, and compelling them to stay on the battlefield once the fighting starts. The first challenge is particularly salient when there is pressure to build combat power quickly, including among social groups whose motivation and political loyalty is uncertain.²⁰ In such contexts, preexisting organizational structures may appear insufficient to keep pace with the demands of mobilization. Fratricidal coercion thus becomes a potential “shortcut” to creating new cohesive units without lengthy training and education, while foreclosing opportunities for conscripts to protest or resist their impressment.

Once soldiers reach the battlefield, a second challenge emerges: how to ensure that soldiers follow orders rather than shirk their duties. Fratricidal coercion can affect soldier compliance through direct and indirect channels. Most obviously, it has a direct effect on targeted soldiers through threatened (or applied) sanctions. Punishment may take one or more forms, including arrest, court-martial, public abuse and shaming, coerced return to units after unsuccessful desertion, and even public execution. Such threats raise the anticipated costs of insubordination, thereby closing down avenues for harmful collective action such as mass desertion or surrender. While soldiers may resent these practices, fratricidal coercion can bolster resolve by removing exit options, leading soldiers to fight harder and longer than they might have if left to their own devices.

Soldiers do not make battlefield decisions in isolation. The knowledge that other soldiers also face sanction if they falter or retreat can shape expectations about the overall resolve of deployed units. Over time, fratricidal coercion can lead soldiers to update their beliefs

¹⁸Lehmann and Zhukov (2019, 137-138).

¹⁹On collective action problems, see Olson (1965).

²⁰Nearly all existing work on military effectiveness assumes that armies have already solved this mobilizational challenge and therefore can be treated as cohesive organizations with little or no internal differentiation. See, for example, Millett and Murray (1988); Biddle (2004); Talmadge (2015); Dupuy (1984); McNerney et al. (2018). For an exception, see Lyall (2020).

about the consequences of failing to fight (“shirkers will be punished”), about others’ likely conduct (“there will be fewer shirkers”), and about the choices they personally face (“I am better off not shirking”). In this sense, fratricidal coercion becomes part of a self-reinforcing system of deterrence. It shapes individual and collective behavior by raising the perceived costs of subversive acts and altering expectations of how others will behave.

Fratricidal coercion can also affect soldier compliance through a more subtle, indirect, channel. Blocking detachments, to take one example, need not be omnipresent to generate a credible threat of punishment and deter would-be deserters or defectors. Even if such units are not immediately visible, their suspected presence may be enough to shift soldiers’ calculations about the likelihood of successful escape. Similarly, public punishment of disloyal soldiers, ring-leaders, and troublemakers — through extrajudicial punishment like running the gauntlet, show trials, or outright execution — can create a demonstration effect, stiffening other soldiers’ resolve to continue fighting.

These direct and indirect coercive effects can increase levels of soldier compliance, but compliance comes at a high human cost. First, and most immediately, reliance on these practices will increase self-inflicted casualties. Wavering soldiers may be shot, imprisoned, or driven to such extreme measures (e.g., self-mutilation) that they are effectively removed from the ranks of available manpower. Second, fratricidal coercion can foster a casualness toward casualties, leading to ill-advised operations that needlessly waste soldiers’ lives. Commanders, who also fear sanction for battlefield failure, may commit soldiers to simple, easier-to-control operations that leave little room for lower-level initiative (e.g. frontal attacks in close formation). Such tactics and operations are rational from the commander’s point of view: they offer fewer opportunities for flight, require less planning, and are easier to coordinate than operations requiring independent local initiative. Better to push forward and “only” lose men than risk personal sanction for being overly cautious.

These self-imposed straitjackets on tactics and operations create other battlefield vulnerabilities that enemies can exploit to drive up casualties. Savvy opponents can specifically target disgruntled soldiers with propaganda designed to sow further anger at their government, forcing additional resources to be allocated to monitoring and sanctioning these units. Belligerents relying on blocking detachments may be forced to shift their most

committed soldiers into monitoring roles to prevent mass indiscipline. The knock-on effects of this redeployment may be severe; such a belligerent may find its ability to impose costs on enemy forces diminished even as its own casualties are increasing. Opposing forces may also target these blocking detachments, weakening their sanctioning capacity, while creating opportunities for would-be defectors to cross the front line (i.e. through safe corridors). In short, belligerents using fratricidal violence may find themselves inflicting higher casualties on their own forces just to stay in the fight, while simultaneously sapping their capacity for inflicting harm on enemy forces.²¹

We can draw several testable propositions from this theoretical discussion. In general, the greater the level of fratricidal coercion within an army (or unit), the greater the expected degree of soldier compliance. Instances of harmful collective action — desertion, defection, premature surrender (POWs), and disappeared soldiers (MIA) — should all decrease as more fratricidal coercion is applied. We should also observe a corresponding increase in casualties, defined as individuals killed or wounded in action. Because belligerents using fratricidal coercion may struggle to inflict higher casualties on opponents, loss-exchange ratios (LER) between enemy and friendly units should also decline.²²

While the utilitarian logic of fratricidal coercion is plausible, our claims about soldier compliance are also falsifiable. It is possible that such measures have no effect on either individual soldier compliance or unit discipline, for several reasons. Coercion may be applied haphazardly or too sparingly to generate a credible deterrent threat. Timing might also be an issue; coercion may be applied too late in the war to reverse deteriorating collective action dilemmas within the army. It is also possible that fratricidal coercion accelerates an army’s disintegration by encouraging soldiers to seek escape from indiscriminate punishment.²³ Indeed, the fielding of blocking detachments, to take one example, might spark a cascade of desertion and defection as soldiers organize to flee before these units can pose an immediate, credible threat. Whether fratricidal coercion increases, decreases, or has no

²¹Lyall (2017).

²²The loss-exchange ratio (LER), measured as enemy casualties divided by friendly casualties, is a standard measure of relative attrition in conventional war (Dupuy, 1979). A lower LER may result from an inability to inflict casualties on the opponent, an inability to prevent high friendly losses, or both.

²³Wesbrook (1980).

average effect on soldier compliance is ultimately an empirical question.

Empirical Strategy

We adopt a three-part empirical strategy. First, we assess variation in fratricidal coercion and battlefield outcomes across combat units using micro-level data from within the same army. To that end, we construct and analyze a monthly panel dataset of 609 Soviet Rifle Divisions in the Second World War (June 1941-May 1945), combining data from 34 million declassified Red Army personnel records and 25,079 secret police (NKVD) officer records. Second, we examine unit-level effects at close range through illustrative case studies, using statistical matching to identify similar Rifle Divisions with different levels of NKVD presence. Third, we probe the cross-national generalizability of our micro-level findings with a statistical analysis of how blocking detachments affected battlefield performance in 526 land battles in 75 wars fought between 1939 and 2011.

Each approach has strengths and weaknesses. Given the difficulty of isolating fratricidal coercion’s effects during wartime, along with the likely presence of selection effects in its assignment, we caution against a causal interpretation of our findings. Instead, our multi-faceted approach takes seriously the complex hierarchical structure of military organizations, considers potential bias from multiple directions, reduces covariate imbalance through matching and associated robustness tests, and uses matched pairs as counterfactuals to screen out alternative explanations. Each step in our research design increases confidence in both the internal and external validity of our findings.

Part 1: Evidence from the Eastern Front of World War II

The Soviet experience in World War II, or the Great Patriotic War, is a canonical case in the study of combat motivation and military effectiveness.²⁴ Given the sheer scale of the conflict, it represents a clear outlier in the study of both fratricidal coercion and battlefield

²⁴See, for example, [Reese \(2011\)](#); [Merridale \(2005\)](#); [Bartov \(2001\)](#); [Millett and Murray \(1988\)](#).

losses. This outlier status makes the case appealing for a plausibility probe: if we do not find a relationship between coercion and battlefield behavior here, we are unlikely to find it elsewhere. This within-country, within-army design also helps hold constant a belligerent’s initial decision to resort to fratricidal coercion, as well as structural properties like regime type, civil-military relations, ideology, indoctrination, and positive inducements.

Between Germany’s invasion of the Soviet Union on 22 June 1941 and the eventual Soviet victory on 9 May 1945, the Workers’ and Peasants’ Red Army (RKKA) suffered an estimated 8.7–11.5 million fatalities — more than any belligerent in any war.²⁵ An estimated five million additional soldiers surrendered, disappeared, deserted, defected, or otherwise fled the battlefield. To prevent indiscipline, the military counterintelligence arm of Stalin’s secret police — the People’s Commissariat of Internal Affairs (NKVD) Directorate of Special Sections (OO) and its successor, “Death to Spies” (SMERSH) — took a series of prophylactic steps.²⁶

Due to staggering levels of attrition among front-line Rifle Divisions, along with reliance on short-term conscripts, the NKVD resorted to manufacturing soldier compliance through coercion. Spinning an elaborate web of surveillance and censorship measures, the NKVD also deployed blocking units to apprehend deserters and stragglers, engaged in summary battlefield executions, monitored individual commanders, and physically pursued soldiers suspected of treason and “counterrevolutionary” activities.

Whether these measures proved effective in bolstering combat motivation and Soviet military effectiveness remains contested. Most scholarly treatments of the Eastern Front tend to marginalize the effects of these units, pausing only to highlight their shocking nature before returning to blow-by-blow accounts of various battles.²⁷ Nationalist Russian historians have even questioned the very existence of some of these units, suggesting that

²⁵Krivosheev (2001); Zemskov (2012).

²⁶OO/SMERSH supplemented the wider system of monitoring and sanctioning within the Red Army, which included military prosecutors, penal and labor battalions, political officers/commissars, and overlapping counter-intelligence agencies. The NKVD oversaw much of this system. OO/SMERSH was responsible for identifying, detaining and (extra-judicially) punishing soldiers suspected of indiscipline.

²⁷For example, one classic work, Omar Bartov’s *The Eastern Front, 1941-45, German Troops and the Barbarization of Warfare* — omits any mention of Red Army or NKVD blocking detachments (Bartov, 2001). See Daines (2008) for a review.

their role has been exaggerated by Western historians seeking to denigrate Soviet contributions to Germany’s defeat (*degeroizatsiya*, or “deheroization”).²⁸ Other historians have argued that NKVD executions were too infrequent and haphazard to create a credible deterrent. “Soldiers may have been afraid,” Roger Reese has argued, but “that does not explain the compliance of the majority of the army.”²⁹

Others assign a more prominent role to these units. “All soldiers shared some measure of fear,” Catherine Merridale writes, and “the NKVD soldier with his pistol, shooting stragglers in the back, is an abiding image of this war.”³⁰ Alexander Statiev reaches a similar finding, noting the “nearly unanimous opinion of Soviet veterans [is that] the threat to be sent to a penal unit strengthen[ed] discipline.”³¹ David Glantz makes perhaps the strongest claim in his monumental study of Soviet military performance: “The iron discipline... administered by Stalin... served as the essential ‘glue’ that bound the Red Army together as a coherent fighting force and permitted it to survive and, ultimately, prevail despite the appalling combat conditions its soldiers had to endure.”³² A consortium of Russian military historians has echoed this view, concluding that Stalin’s Order No.227 (“Not a Step Back!”) from July 1942, which mandated the creation of blocking detachments in every front, played “a major role in increasing the resilience and military activity of Soviet forces [and] in creating a turning point in the course of military operations.”³³

Data

We enter these debates by creating a new micro-level dataset on fratricidal coercion within the RKKa during the Great Patriotic War. Our dataset tracks 609 Soviet army divisions over 48 months (June 1941–May 1945). This sample includes all active duty formations that directly participated in combat, and excludes training and reserve divisions. A majority

²⁸See, for example, Starikov (2014, 120-24).

²⁹Reese (2011, 173).

³⁰Merridale (2006, 317).

³¹Statiev (2010, 745).

³²Glantz (2005, 582).

³³Zolotarev (1996, 330).

of these units (79.6%) were Rifle Divisions (i.e. infantry).³⁴

Each Division (8,000-12,000 troops, on average) reported to an Army — a combined arms unit comprising three to five Divisions, as well as air defense, artillery, reconnaissance and other supporting units. In wartime, these Armies reported to a Front, comprising three to five Armies each. These nestings constantly shifted during the war, with Armies being reassigned from one Front to another, and Divisions transferring between Armies. Complicating matters further, unit designations were not unique, as the Soviet high command regularly disbanded, reorganized, renamed, and renumbered its Divisions. For this reason, we treat each Division-Army nesting ($N = 5,254$) as a separate, unique unit. Since these units saw combat at different stages of the war — and virtually no unit remained active for all 48 months — our full dataset is an unbalanced panel of 43,938 unique Division-months. We have information on combat operations for 37,134 (84.5%) of these Division-months.³⁵

Measuring Battlefield Performance

We measure the battlefield performance of Soviet Rifle Divisions using declassified personnel records for 34 million RKKA soldiers. The primary source for the military records is the Russian Ministry of Defense’s *People’s Memory* archive,³⁶ assembled and pre-processed by Rozenas, Talibova and Zhukov (2020). In total, this collection holds over 110 million individual records for all 34 million RKKA soldiers who served in WWII. These records include information about promotions, decorations and, central for our purposes, the fate of each soldier, including discharges, transfers, and deaths. We have complete personnel records for 5,025,491 soldiers, including unit names, dates, and reasons for discharge, allowing us to match records to specific Divisions and months.³⁷

³⁴We compiled this list using monthly orders-of-battle from Fes’kov, Kalashnikov and Golikov (2003). Our data also include 651 independent regiments, brigades and other formations that reported directly to the Army level. While we restrict our main analysis to units at the division echelon, our results hold (indeed, strengthen) when we use this fuller sample of units.

³⁵This includes Rifle Divisions that participated in multiple battles per month. In Appendix A2, we report results for statistical models that use both the full and reduced battle-linked sample.

³⁶pamyat-naroda.ru, accessed November 5, 2021.

³⁷Much of this missingness is due to incomplete or imprecise information, including missing unit details, illegible handwriting in the original records, or the partial completion of data entry for certain fields

To generate measures of battlefield performance, we matched soldiers to their assigned units and calculated the proportion of each Division’s monthly losses attributable to eight causes: death, injury, missing in action, capture, desertion, defection, treason, and honorable discharge or reassignment (“OK”). The “missing in action” category deserves special note here. Soviet commanders typically used this category euphemistically to designate prisoners of war. In August 1941, Stalin issued Order No.270 (“Fight to the Last”), which equated captivity with treason and stipulated that families of captured soldiers were also subject to imprisonment. As a senior Ministry of Defense official acknowledged in 2011:

By official reports, out of our five million-plus missing in action just 100,000 were reported as prisoners of war. In reality, there were 4.5 million. So the majority of those missing in action [90%] were prisoners of war. Everyone knew this. I’m certain that even Stalin knew.³⁸

While this reporting practice was not universal, “missing in action” (MIA) became the second-most common loss designation (17.3% of an average division’s monthly casualties), behind only killed in action (KIA, 68.5%) and ahead of prisoner of war (POW, 3.2%), wounded (WIA, 0.4%), desertion (0.3%), defection (0.05%) and treason (<0.001%).³⁹

Soldiers who were honorably discharged or reassigned (i.e. finished their tours without death, injury, or misconduct) represent about a tenth of monthly discharge records (9.4%).

Measuring Division-Level NKVD Presence

To assess the impact of fratricidal coercion on each category of losses, we collected data on personnel who served in NKVD Special Sections (OO) – and their successors, SMERSH counterintelligence units – which were embedded within the regular army and had the authority to bypass military tribunals, detain and summarily execute suspected deserters

(e.g. listing year of discharge but not month). Any inferences we draw rest on the assumption that this missingness is distributed randomly across soldiers and units, yielding a representative sample.

³⁸<https://www.newsru.com/russia/04feb2011/stalin.html>

³⁹These numbers are average monthly losses per division, not cumulative RKKA losses over the full war. The WIA statistic, in particular, is an under-count, since it includes only soldiers who received injuries sufficiently severe to warrant discharge, and excludes soldiers who recovered and returned to the front.

and stragglers. While Special Sections were active from the first days of the war, their duties intensified after September 1941, when Stalin demanded that one blocking company be organized in each rifle regiment. These companies were typically staffed by regular soldiers under the command of NKVD OO officers, with a mission to patrol rear areas and “liquidate the instigators of panic and flight.”⁴⁰

Although most primary sources on the actions of blocking units remain classified,⁴¹ we are able to measure the numerical presence of NKVD OO officers within each division. Our assumption here is that units with a larger counterintelligence presence represented a higher priority for the NKVD, and therefore saw higher levels of monitoring and coercive activity against troops. Using declassified records on NKVD counterintelligence personnel, we extracted the service histories of the 25,079 officers who served in OO and SMERSH units during the war, along with information on the army units to which they were assigned and when.⁴² The number of NKVD OO/SMERSH personnel per Division-month ranged from 0 to 243 (303rd Rifle Division, 7th Guards Army, 2nd Ukrainian Front, November 1943), with a mean of 10 officers per Division-month. This number excludes rank-and-file troops who served in blocking companies under these officers’ command (roughly 100 soldiers each). On average, there was one OO/SMERSH officer for every 1,376 troops.

The data reveal significant variation in NKVD presence across the Soviet Army, which does not always correspond to operational tempo on the front line. For example, almost three times as many NKVD officers rotated through the 1st Ukrainian Front as had served in the 3rd Ukrainian Front (a difference of 2.34 standard deviations), although these units participated in a similar number of battles (416 and 339, less than a third of a standard deviation apart) over the same period of time (see Appendix A1).

What explains this variation in OO/SMERSH presence? For a closer look, Table 1 compares characteristics of division-months with above- versus below-average numbers

⁴⁰Statiev (2012, 487-488).

⁴¹Statiev (2012); Daines (2008).

⁴²Our source for NKVD personnel records is Memorial’s *Kadrovyy sostav organov gosudarstvennoy bezopasnosti SSSR. 1935-1939. [Cadres of state security organs of USSR, 1935-1939]* (2017), which includes prewar and wartime service history for 41,383 NKVD officers, including the dates and names of military units to which they were assigned. We filtered these records to include only NKVD officers assigned to counterintelligence duties behind the front lines, as part of Special Sections (OO) or SMERSH.

of embedded NKVD personnel. Taken together, these patterns suggest that the NKVD assigned more personnel to units where they may have expected higher rates of flight. There is substantial variation by unit type: 97% of units with an above-average NKVD presence were Rifle Divisions (infantry), compared to just 2% for artillery and air defense units, where opportunities for direct contact with the enemy and crossing of front lines were far fewer. Units to which more NKVD officers were assigned were also demographically different on several dimensions. There was a larger NKVD presence in units with a slightly lower percentage of ethnic Russians, and whose troops were more geographically diverse, older, less urban and from lower-population density areas.⁴³

The magnitude of these differences was in most cases numerically small. For example, units with above-average NKVD presence had about 1% fewer ethnic Russians. Yet the direction of these differences is consistent with the idea that the NKVD devoted greater resources to monitoring soldiers from more “politically suspect” backgrounds – ethnic minorities, peasants, and older soldiers with potentially longer exposure to pre-revolutionary institutions. These patterns are also consistent with the view that armies rely on harsher discipline where primary group bonds are more difficult to foster⁴⁴ — in this case, because soldiers were conscripted into the same unit from geographically distant areas, and may have had fewer shared experiences in civilian life. Finally, a higher NKVD presence was more likely in later stages of the war, reflecting a steady build-up after Stalin’s Orders No. 270 (“Fight to the Last”) in August 1941 and No. 227 (“Not a Step Back!”) in July 1942.

⁴³We measure geographic diversity as the average distance (in kilometers) between the birth locations of two soldiers serving in the same unit at the same time.

⁴⁴Luttwak and Koehl (1991, 126-127).

Table 1: **Were NKVD Personnel Assigned to Different Types of Units?**

Unit Attributes	Below Avg. NKVD	Above Avg. NKVD	KS Test
Month of War	1943-04	1944-01	0.21***
Infantry/Rifle Unit	0.63	0.97	0.49***
Armor/Mechanized Unit	0.05	0	0.12***
Artillery/AAD Unit	0.14	0.02	0.26***
Engineer Unit	0.01	0	0.02***
Percent Russian	86.31	85.27	0.33***
Geographic Diversity	966.85	1006.68	0.21***
Avg. Soldier’s Age in 1941	26.61	27.06	0.2***
Urbanization	26.91	26.07	0.18***
Population Density	80.37	71.25	0.18***

NOTE: The table compares key characteristics of division-months with above- vs. below-average numbers of embedded NKVD personnel. A higher NKVD presence was more likely later in the war, within infantry and rifle divisions, in units that had a slightly lower percentage of ethnic Russian personnel, and whose troops were more geographically diverse, slightly older, less urban and from lower-population density areas. Geographic diversity is the average distance (km) between two soldiers’ birth locations. Significance levels for Kolmogorov-Smirnov (KS) test statistics: $^{\dagger}p < 0.1$; $*p < 0.05$; $**p < 0.01$; $***p < 0.001$.

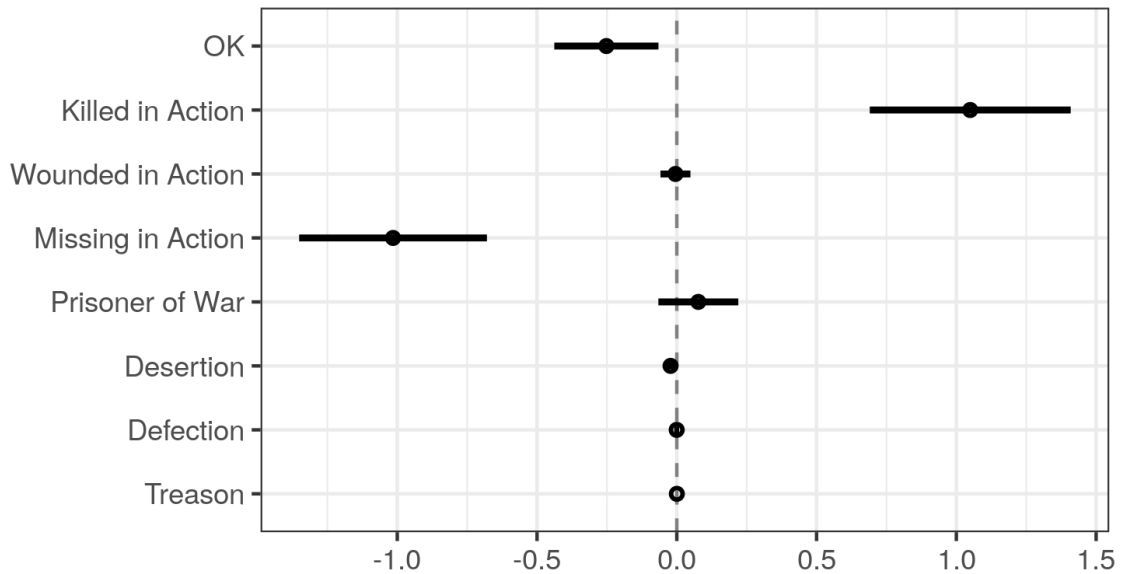
Statistical Analysis of NKVD Presence and Soviet Performance

Did fratricidal coercion matter for Soviet battlefield performance? Figure 2 reports estimates of the effect of NKVD presence on eight types of battlefield outcomes. Each line reports a coefficient estimate and 95% confidence interval from a separate three-way mixed effects model (see Appendix A2 for details), regressing the percentage of a Division’s monthly losses (broken down by KIA, WIA, MIA, POW, Desertion, Defection, Treason and OK) on the number of OO/SMERSH personnel assigned to the Division at that time.⁴⁵ All models account for the average demographics of soldiers assigned to each division-month (age, ethnicity, population density and urbanization in soldiers’ home towns), and allows each unit, battle and month to have a different baseline level of losses. Point estimates represent the impact of doubling NKVD presence on the average percentage point change

⁴⁵We use absolute numbers of NKVD personnel, rather than per capita, on the assumption that the military units in our dataset are all of similar division-level strength (8,000-12,000 troops). In Appendix A3, we present a sensitivity analysis that considers how variation in unit strength might affect our estimates.

in a division's monthly losses in each of the eight categories. Estimates whose confidence intervals do not intersect the dashed line at zero are significant at the 95% level.

Figure 2: **How did NKVD Presence Impact Soviet Battlefield Performance?**



NOTE: Horizontal axis represents estimated percentage point change in outcome (as share of a division's monthly losses), associated with doubling NKVD presence in unit. See Table A3.3 for full set of estimates.

Figure 2 highlights several key findings. First, there is a significant negative relationship between fratricidal coercion and several key categories of flight. Doubling NKVD OO/SMERSH presence within a division is associated with a 1 percentage point decline in the percent of troops reported as missing in action in a given month, and a .03 percentage point decline in desertions. The magnitude of these shifts is substantively meaningful, given that MIAs represented 17.3% of an average division's monthly casualties and desertions represented just 0.27%. In other words, desertions — an already rare event — fell by over a tenth when the NKVD contingent was doubled.

Second, there is evidence that fratricidal coercion came at the cost of higher fatalities. Doubling NKVD OO/SMERSH presence within a unit increased the percent of troops killed in action by 1.1 percentage points. This pattern suggests that soldiers who might otherwise have deserted or gone missing became marginally more likely to die in battle

when higher numbers of counterintelligence personnel were present.

Third, in Divisions with a larger NKVD presence, soldiers who rotated out or finished their tours without incident (OK) represented a significantly smaller percentage of monthly discharge records (change of $-.25$ percentage points). This suggests that a larger share of discharge records were KIAs not only due to the deaths of soldiers who might otherwise have fled or gone missing, but potentially also due to excess deaths among troops who would have finished their rotations with unblemished service records.

At the same time, NKVD presence had a mostly negligible impact on several other categories, including POW rates, WIA rates, and treason. In each case, estimates are statistically indistinguishable from zero. In the cases of defection and treason — extremely rare events comprising less than a tenth of one percent of average monthly casualties — some of this uncertainty may be due to insufficient variation in the outcome.

The null result with respect to POWs is more striking. Considering that Soviet commanders routinely reported captured troops as MIA, the negative relationship between NKVD presence and MIAs could indicate either a substitution effect or a genuine decline in troops being captured. In the former scenario, commanders facing greater scrutiny from counterintelligence officers stop reporting POW's as MIAs, and begin to report them as POWs. In the latter scenario, commanders continue to report POWs as MIAs, but the number nonetheless declines due to the NKVD's deterrence of surrendering troops. The null result for POWs makes the substitution scenario appear less likely, since the decline in reported MIAs is not accompanied by a significant increase in reported POWs. Taken together, these results suggest that NKVD presence actually decreased POWs (recorded as MIAs); it is not an artifact of a shift in reporting by commanders.

To explore whether the effect of fratricidal coercion faded over time, we ran an extension of our multilevel models, allowing the NKVD coefficient to vary by month.⁴⁶ Figure 3 reports time-varying random coefficients and 95% confidence intervals for the three statistically significant outcomes of KIA, MIA and desertion. In each case, we see a gradual diminution in the magnitude of NKVD OO/SMERSH effect estimates over time, suggest-

⁴⁶These specifications are similar to those used above, apart from the inclusion of time-variant coefficients in a model with both random intercepts and random slopes.

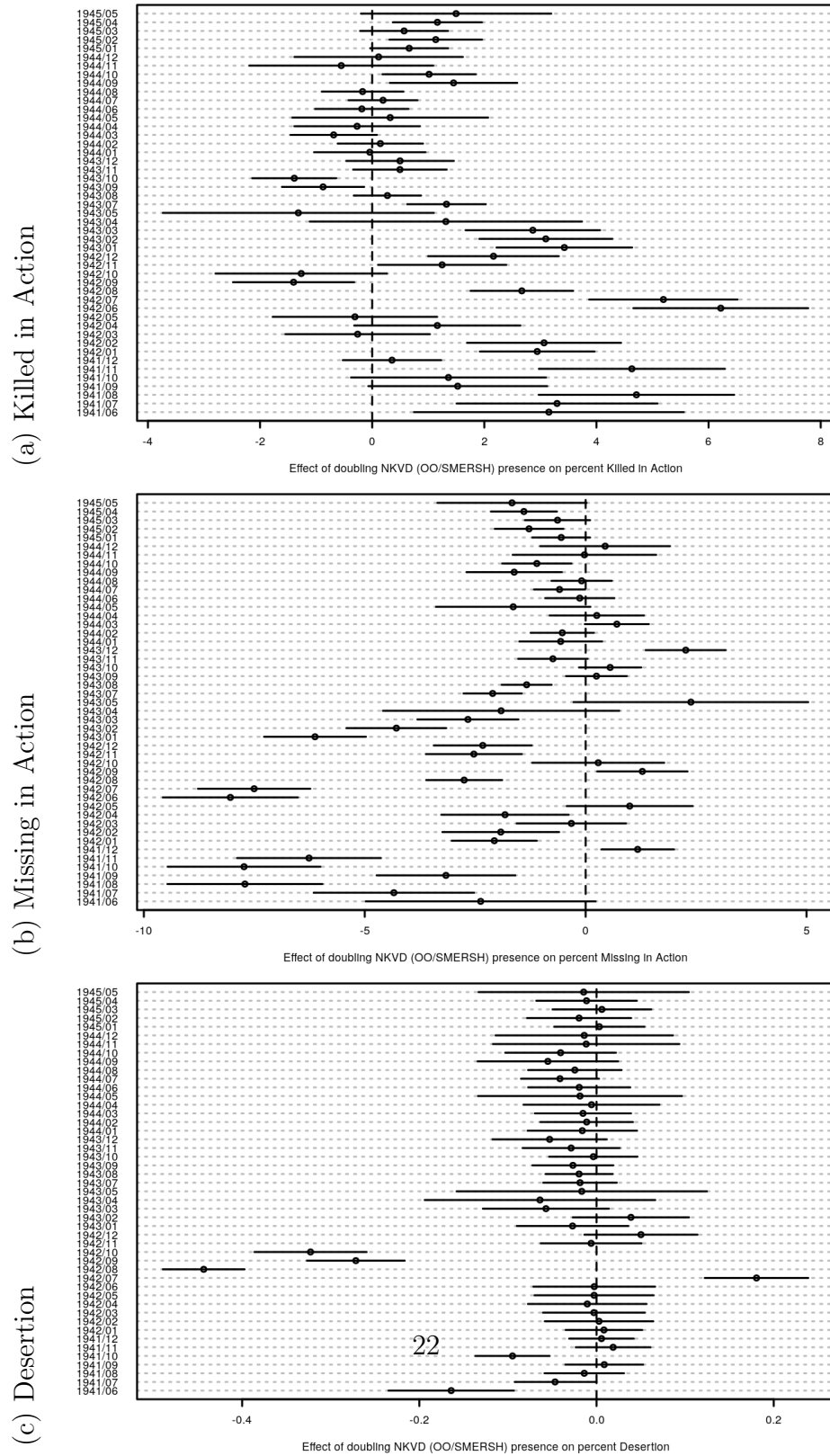
ing that the impact was strongest in the war’s opening phase. In an average month during the first half of the war (prior to June 1943), doubling the OO/SMERSH contingent was associated with a 2.1% increase in KIA rates. This number declined to 0.3% in the second half of the war. For MIAs, the average estimated effect was -2.9% in the first half of the war, and -0.5% in the second half. The general directions of these relationships, however, were consistent with those in Figure 2.⁴⁷

The dynamics of the relationship between NKVD OO/SMERSH presence and desertions in Figure 3c are especially revealing. The previous negative effect estimate in Figure 2 appears to be driven almost entirely by six months in 1941 and 1942. The largest negative estimates (August–October 1942) immediately follow Stalin’s issuance of Order No. 227 on July 28, 1942. The month leading up to this order, July 1942, is the only one when NKVD presence had a positive association with desertion, suggesting either that the Special Sections were ineffective (indeed, counterproductive) at preventing desertion, or that their presence led to greater reporting of desertion — perhaps in expectation of Stalin’s order, or in an effort to make the case for harsher measures. The effect of NKVD on desertions falls to zero after the fall of 1942.⁴⁸

⁴⁷The relationship between NKVD and percent KIA (MIA) was positive and significant in 40% (6%) of all months, negative and significant in 6% (49%) of months, and insignificant in the remaining 53% (45%).

⁴⁸Blocking detachments and associated penal battalions were officially disbanded on 29 October 1944 (Order No. 0349), although SMERSH units remained active until 1946.

Figure 3: Did the Impact of NKVD Presence Vary Over Time?



Stage 2: Evidence from Matched Soviet Rifle Divisions

While statistical patterns in the Red Army data align with our theoretical expectations, they reveal less about the proposed mechanisms linking fratricidal coercion and battlefield performance. We therefore undertake a close-range examination of a pair of similar units, the 168th and 90th Rifle Divisions, that were engaged in the same frantic defensive operations during the Battle of Leningrad’s opening phase (9 July–26 September 1941).⁴⁹ This paired comparison was drawn from a sample of 1,251 pairs of Rifle Divisions that we identified by statistical matching; we detail our case selection procedure in Appendix A4.

Table 2 summarizes this comparison. Though initially separated in the war’s early days — the 168th was stationed near the Finnish border, the 90th near Riga — these Rifle Divisions found themselves converging toward Leningrad as they fought desperate rearguard actions to escape encirclement in July and August 1941. By September, these Divisions had each retreated nearly 250 kilometers and had come to rest side-by-side near Kolpino on Leningrad’s southern outskirts, only 15 kilometers from the city center. Our matched approach to case selection controls for many factors that might explain possible differences in units’ battlefield performance. These Divisions were both members of the 55th Army, fought on the same Leningrad Front, participated in some of the same battles, and had near identical organization, number of personnel, and weapons.⁵⁰ Both Divisions had prior experience fighting Finnish forces during the Winter War of 1939-40. Both Divisions were also annihilated in the first days of the combined German-Finnish invasion in June 1941. After that, they were both hastily thrown together again as understrength second formations to slow invading forces.

The crucial difference between the 168th and 90th Rifle Divisions lay in the size of their NKVD Special Sections. The 168th had 51 NKVD officers attached to it; the 90th, only a lone officer. While NKVD officers were able to draw personnel from regular infantry regi-

⁴⁹We use official Soviet dates for military operations. Key work on the Battle of Leningrad include Bidlack and Lomagin (2013); Lur’e (2012); Glantz (2002).

⁵⁰Each Rifle Division included three regiments and two artillery units, along with various support formations. The 168th comprised the 260th, 402nd, and 462nd regiments, while the 90th included the 19th, 173rd, and 286th regiments.

ments to staff their Special Section, the 90th had a far lower exposure to NKVD-directed fratricidal coercion than its counterpart. To trace the effects of this sharp difference, we use a rich set of materials to construct Divisional histories for July-September 1941. These include declassified Army, Division, and Regimental war-logs that record the location and battles of each unit;⁵¹ collections of soldier letters and postwar interviews;⁵² contemporary newspaper accounts; maps; and the RKKA personnel records used in our prior analysis. Each source has limitations; survivor bias, wartime censorship, and the still-classified nature of records surrounding these Special Sections all pose inferential obstacles. Through careful triangulation across sources, however, we are able to capture how varying levels of fratricidal coercion shaped multiple aspects of divisional battlefield performance.

⁵¹For Leningrad Front (*LenF*) records, see the Central Archive of the USSR Ministry of Defense (hereafter, TsAMO) archive maintained by “Pamiat’ Naroda” (<https://pamyat-naroda.ru/>). We cite these documents using TsAMO’s Fond/Opis’/Delo/List classification system. To build our divisional narratives, we draw in part on the 55th Army’s war-logs, especially “Khronika sobytii na LenF (s 11.7 po 29.8.41 goda),” TsAMO Fond: 217, Opis’: 1221; Delo: 204 and “Zhurnal boevykh deistvii voisk 55A,” TsAMO Fond: 411, Opis’: 10189; Delo: 38.

⁵²Petrikeev (1994); Panteleev (2006).

Table 2: **Paired Comparison: Battle of Leningrad (9 July–26 Sept.1914)**

	<i>168th RD</i>	<i>90th RD</i>	Difference
NKVD OO/SMERSH	51	1	50
<u>Exact Matching</u>			
Front	Leningrad	Leningrad	
Army	55th	55th	
Unit Type	Rifle Division	Rifle Division	
<u>Additional Unit Traits</u>			
Formation Date	1939	1936	
Formation	Second	Second	
Soldiers (<i>Approx.</i>)	13,654–10,000	10,258–10,000	
Artillery/Howitzers	38	42	4
Anti-Aircraft Guns	8	4	4
Anti-Tank Guns	54	48	6
Vehicles	771	690	81
Initial Front (Linear km)	65–60	52–50	13–10
Force to Space Ratio (Linear km)	210–167	200–198	21–10
Force to Force Ratio (USR:GER)	1:3–1:2.5	1:3–1:2.5	0
Soldiers Per Vehicle	18–13	15–14.5	3.5–1.5
Support %	37%	31%	6%
<u>Battlefield Performance</u>			
KIA	32.32%	14.33%	17.99%
WIA	0	0.14%	-0.14%
MIA	59.21%	76.99%	-17.78%
POW	6.80%	6.66%	0.14%
Punish	0.52%	0.72%	-0.20%
Div. Commanders KIA	0	3	3

NOTE: Estimates of divisional strength are derived from official tables of organization and measured on the eve of the Battle of Leningrad (see [Askey 2016](#), 526,548). Artillery/howitzer estimates include 152mm, 122mm, and 83mm guns. Anti-aircraft weapons include 76mm and 37mm guns. Anti-tank weapons include 47mm, 45mm, and 20mm guns. Vehicles include trucks, light transports, BA 20 armored cars, and horse teams. Support % is the estimated percentage of personnel assigned to support roles, including signal, transport, medical, and supply units. Battlefield performance estimates derived from declassified personnel records from the 168th (N=956) and 90th (N=691) Rifle Divisions. Given high casualties, both Divisions received a second complement of nearly 10,000 soldiers during the battle. Both units were also second formations; their original incarnations were destroyed during the initial German advance in June 1941.

We uncover considerable evidence that the robust NKVD presence in the 168th helped it retain greater organizational coherence and resilience than the 90th Rifle Division. With sufficient capacity to generate fear among commanders and soldiers alike, the 168th's NKVD Special Section acted as a parallel command structure that bolstered discipline during complicated rearguard actions and counteroffensives. It also enabled the 168th's senior commanders to embrace risky tactics with higher expected casualties, since soldiers had fewer battlefield opportunities to escape thanks to NKVD monitoring. By contrast, the 90th Rifle Division largely collapsed into disorganized units fighting separate battles, where soldiers were especially prone to go missing. These differences are borne out in divisional casualty records: the 168th reported a much larger share of soldiers killed in action (32%) than the 90th (14%). The trend reverses for missing action in action: among soldiers whose fate was recorded, 77% of the 90th's soldiers were reported as missing in action, compared with 59% from the 168th.⁵³ Indeed, the 90th's degraded combat effectiveness was bolstered only once it was reunited with NKVD Special Sections in mid-September to help restore control over its disjointed regiments.

The 168th Rifle Division (the “Bondarevskaya”)

On 22 June, the 168th found itself stationed near the Soviet-Finnish border, some 20 kilometers outside the Soviet-controlled town of Sortavala.⁵⁴ Confronting Finland's much larger II Corps, the 168th was quickly overrun. By early July, the Division had already been classified as “destroyed in detail” by Soviet High Command (Stavka). On 4 July, a motley collection of stragglers from several Divisions, cadet formations from neighboring towns, and 10,000 reinforcements were assembled as the 168th's second formation. Led by Colonel A.L. Bondarev — the Division would take his name (“Bondarevskaya”) — the Division was tasked with slowing the Finnish advance. Through a series of desperate rearguard actions, the Division managed to delay Finnish forces and, on occasion, even reclaim lost ground through timely counteroffensives. Yet the crushing weight of Finnish

⁵³We find no significant differences in soldiers reported as POWs or as subject to official punishment.

⁵⁴The Division was originally attached to the 7th Army. It was transferred to the 55th Army (along with the 90th Rifle Division) on 4 September.

numbers, along with the collapse of neighboring Rifle Divisions, forced the 168th to retreat steadily toward Sortavala, near the northwestern shore of Lake Ladoga some 260 kilometers north of Leningrad. By 7 August, the Division was encircled and cut off from Stavka. With its pocket collapsing, the Division undertook a daring nighttime evacuation across Lake Ladoga to the island of Valaam on 20 August. While casualties were heavy, thousands of soldiers were evacuated, along with much of their heavy weapons.⁵⁵

From Valaam, the Division was next sent to Leningrad's southern defenses near Pushkin and Kolpino. By 28 August, the Division was already launching counterattacks across a 30 kilometer front in at least five separate villages. From 29 August to 7 September, the Division fought hard to drive German forces back, even managing to recapture several villages (at Krasny Bor and Novo-Lisino) before slowly falling back. By mid-September, the Division, now accompanied by the 90th Division on its flank, had established a strong line of defense running from Pushkin and Kolpino to Moskovskaya Slavyanka and Shushary on the outskirts of Leningrad. Having conducted a nearly 300 kilometer fighting retreat, the Division would remain dug into these defensive positions until the German offensive lost steam on 26 September. The siege of Leningrad had begun.

High resolve and a high tolerance for casualties were the hallmarks of the 168th's combat operations. Unlike many of its counterparts, the Division engaged in persistent counterattacks in which villages changed hands repeatedly. While the Division did cede ground to both Finnish and German forces, it managed to slow their advances to a near crawl: II Corps, for example, averaged a meagre 1-2 kilometer daily rate of advance against the 168th despite its 3:1 numerical preponderance. Indeed, a postwar Soviet instructional text singled out the Division's operations in July and August as textbook examples of rearguard operations.⁵⁶ Stavka was also quick to acknowledge the Division's efforts: 97 awards and commendations were disbursed to its soldiers by 9 August alone.⁵⁷ Marshall Georgy Zhukov heralded the unit's resilience in his autobiography.⁵⁸ "Each of the soldiers in

⁵⁵This account is based on 168th operational logs, especially "Khronika sobytii na LenF (s 11.7 po 29.8.41 goda)," TsAMO Fond: 217, Opis': 1221, Delo: 204 and Petrikeevev (1994, 13-40).

⁵⁶Sycheva and Malakhova (1954, 443-46).

⁵⁷Petrikeevev (1994, 19).

⁵⁸Zhukov (2013, 86).

Bondarev's division fought literally as ten men," *Krasnaya Zvezda* reported, "and they held out without letting the enemy pass." German and Finnish commanders noted the dogged determination of the "wild" Bondarevskaya. One German prisoner of war recounted, "We were scattered and put to flight [at Tosno] by this frightful division that wasn't afraid of artillery or mortar fire. . . The Russians fought like lions for every meter of ground."⁵⁹

This organizational resilience helped the Division purchase temporary battlefield gains. But the cost was high. The Division's large NKVD Special Section enabled it to conduct ill-considered offensives with little regard for casualties. On numerous occasions, Colonel Bondarev disregarded standing Soviet doctrine to launch local counterattacks without preparatory artillery bombardment, even when such suppressing fire was available and considered necessary by his junior officers.⁶⁰ On July 29, for example, he ordered his Division to attack larger German forces near Sortavala without artillery support and without waiting for tanks from the 198th Motorized Rifle Division that he himself requested. The assault quickly stalled. Soldiers, despite reporting being beyond their "breaking point," were still thrown into these counteroffensives. Even seriously wounded soldiers were forced to advance.⁶¹ In some instances, this grim resolve created new vulnerabilities: the 168th's command post was repeatedly endangered as it held fast while other Divisions retreated around it, leaving it exposed to encirclement, like at Sortavala on 14-16 August.⁶²

Were the Division's commanders and soldiers aware of the Special Section's presence? Yes. NKVD officers worked assiduously to maintain a high profile through several channels. As one political officer (*politruk*) noted, reluctant soldiers could be motivated to fight through personal examples of heroism by the NKVD or, failing that, through direct coercion. "There was nowhere to hide from death, nowhere to escape it," he told divisional soldiers, so "we must fight! Fight to the death! Don't look back! Drive forward with

⁵⁹Quoted in Petriakev 1994, 37.

⁶⁰Sycheva and Malakhova (1954).

⁶¹See especially the letter by I.A. Ivanutin, "Metkie zalpy artilleristov-bondarevtsev," in Petriakev (1994, 193-95). For a graphic (and official) report of soldier living conditions in early September, see "Vashe razporyazhenie mne sovershenno neponyatno," TsAMO Fond: 411; Opis': 10189; Delo: 14, List: 2.

⁶²Petriakev (1994, 17). This risk-acceptance continued into late September, when a forward command post (only 100 meters from German forces) was hastily abandoned before being overrun. See N.S. Zhitenev, "Komandiry – Svetlaya pamyat'," in Petriakev (1994, 179).

all your might!”⁶³ In at least one instance, Colonel Bondarev used his Special Section to punish his own officers for failure. “Colonel Bondarev,” one eyewitness recounted, “tore the rectangles from the captain’s buttonholes, took away his personal weapons and ordered [the Special Section] to escort him back to the company as a private.”⁶⁴ Commanders and soldiers alike recall frequent encounters with armed Special Section detachments that were sealing potential escape routes, typically during the Division’s counterattacks.

From available records, it is apparent that soldiers were not only aware of these Special Sections, but despised them. In one case, Lt. Colonel L.I. Malikin stumbled across an NKVD detachment as he was trying to regroup his soldiers under attack near Sortavala in late July 1941. “I was stopped by a group of infantrymen wearing NKVD uniforms,” he recalled. “Their faces were scared and pitiful... Their commander looked so pitiful that it was difficult to distinguish him from his soldiers.” Their sole purpose, he noted dismissively, was to prevent panic among Divisional soldiers, when they themselves were afraid of combat against enemy forces and were sometimes poorly organized.⁶⁵

We should be careful not to exaggerate the coercive power of these Special Sections. Some indiscipline remained; soldiers continued to disappear in the chaos of battle. Three soldiers, for example, gave themselves superficial gunshot wounds to escape service; they were subsequently ordered to be executed.⁶⁶ But it is also apparent that these Special Sections could serve as a powerful deterrent to indiscipline, particularly in the later stages of a battle. As Lt. Colonel Malikin explained:

At this difficult moment [around 21 September], we received an order from the Supreme Commander — those who abandoned their positions without authorization would be shot... They [the NKVD] carried out the order immediately and began a merciless struggle against alarmists and deserters. Placing checkpoints near the roads was especially useful. Groups of deserters retreating in

⁶³V.A. Aleksandrov, “Na legendarnom ‘pyatachke,’” in Petrikeevev (1994, 113).

⁶⁴Letter by Y.B. Maslov, redacted from Petrikeevev (1994) and reproduced at http://centralsector.narod.ru/arch/168_3.htm.

⁶⁵Letter by L.I. Malikin, redacted from Petrikeevev (1994) and reproduced at http://centralsector.narod.ru/arch/168_2.htm.

⁶⁶Letter by Innokentii Krasnopeev, quoted in Lur’e (2012, 80-81).

disarray along the road to Leningrad were stopped by blocking detachments and divisional headquarters staff and then sent back to the front. Order and discipline were restored completely.⁶⁷

While direct coercion was clearly important, NKVD Special Sections also sought to create a climate of fear and surveillance through indirect means. Given its relative size, the 168th's NKVD could invest significant resources in so-called "political work" among the Division's soldiers. This included regular meetings to stress the importance of "No Step Back" frontal assaults as well as the associated costs for failure. Ideological indoctrination became integrated into discussions of tactics to help bolster the Division's resolve. As one *politruk* wrote, "The ongoing political work had a huge impact on strengthening the morale of the personnel [and] contributed to the strengthening of discipline, combat capability, and perseverance of units and subunits in battles with the enemy."⁶⁸ Journalists were embedded within the Division to burnish its reputation for resolve.⁶⁹ *Battle Blow*, the Division's newspaper, was published daily, including while in combat, and contained stories showcasing heroic acts while reiterating the Division's expectations about proper soldier conduct.⁷⁰ A poem was even commissioned for external consumption.⁷¹ In this fashion, the Division's exploits, though gained at terrible (self-inflicted) cost, were cited as examples to be emulated by other Divisions, indirectly raising expectations about battlefield performance across the entire front.⁷² *Leningradskaya Pravda* wrote that "the whole country knew of the miracle of the Bondarevskaya," suggesting that the indirect effects of fratricidal coercion might ripple well beyond the immediate victims of its application.⁷³

⁶⁷Letter by Lt. Colonel L.I. Malikin redacted from Petrikeevev (1994) and reproduced at http://centralsector.narod.ru/arch/168_2.htm.

⁶⁸Petrikeevev (1994, 23).

⁶⁹See, for example, "Podrazdeleniya polkovnika Bondareva gromyat fashistskie voiska," *Leningradskaya pravda*, 4 sentyabrya 1941 g. and "Preziraya smert', khrabro b'iut braga bondarevtsy," *Leningradskaya pravda*, 18 sentyabrya 1941 g.

⁷⁰Sycheva and Malakhova 1954, 454. On the role of divisional newspapers, see Schechter (2019, 189-95).

⁷¹"Pesnya o bondarevtsakh," originally from *Na strazhe Rodiny*, reproduced in Petrikeevev (1994, 34-35).

⁷²Letter by Lt. Colonel L.I. Malikin redacted from Petrikeevev (1994) and reproduced at http://centralsector.narod.ru/arch/168_2.htm.

⁷³Quoted in Petrikeevev (1994, 36).

The 90th Rifle Division

The original 90th Rifle Division, stationed near the Latvian capital of Riga, measured its life expectancy in days. Destroyed nearly wholesale by advancing German forces in June 1941, it was struck from the Soviet order of battle even as its remaining soldiers fought to escape encirclement. By 4 July, stragglers, along with 10,000 Soviet reinforcements, were thrown together near the Russian city of Pskov to create a new 90th Rifle Division. On 8 July, the 90th was already back in combat, seeking to drive back, or at least slow, advancing German armored units. The 90th saw little success; its regiments were quickly scattered, forced to fight a series of rearguard actions largely in isolation from one another. Its steady drumbeat of battlefield setbacks halted periodically during sustained battles at Luga (8 August) and Bolshoy Sabsk (12–15 August). Regiments and smaller groups, sometimes with as few as 5–10 soldiers, steadily retreated northeast to Leningrad under constant aerial bombardment and threat of encirclement. Seeking to reach a newly-formed Soviet defensive line at Pushkin and Kolpino, the remainder of the Division was crushed on 15–17 September near Gatchina. Trying to thread a narrow kill-box at night, and ringed by Germans on three sides, the Division's remnants encountered heavy German artillery and aircraft fire. Panic ensued; many soldiers fled, while remaining officers were cut down as they led their men. Having retreated about 275 kilometers, the hollow Division took up its final position alongside the 168th around Pushkin and Kolpino on 20 September, now about 20 kilometers south of Leningrad.⁷⁴

We know from personnel records that the 90th had a much smaller NKVD presence than the 168th. Moreover, the 90th had only been reconstituted as a Division for about four days before it was set back to the front line. Not only was its NKVD Special Section largely left behind, but many of its ideological tools, including divisional newspapers and political sessions, were not organized before combat began.⁷⁵ Opportunities for desertion and surrender quickly emerged, given both the chaotic nature of these battles and weak NKVD oversight. In a telling omission, there is almost no mention of any NKVD presence

⁷⁴This account is based on [Panteleev \(2006, 9-34\)](#) and operational war-logs, including “Vypiska iz zhurnal boevykh deistvii 173 sp 90 sd,” TsAMO Fond: 1253; Opis’: 1; Delo: 65.

⁷⁵Letter by I.V. Grigorii, reproduced in [Panteleev 2006](#), 263-65.

in either soldier letters or postwar testimonies. While commanders and soldiers both recall the propagation of Stalin's "No Step Back" order, members of the 90th, in contrast to the 168th, recall little by way of ideological training sessions or overt propaganda.⁷⁶ We found only a single recorded instance where soldiers fleeing toward rear staging areas came across a Special Section, an encounter they described as random and haphazard.⁷⁷ Standing orders to avoid roads ("Everyone who retreated along the highway died"⁷⁸) and to move through forests compounded the NKVD's coordination problem. In short, the NKVD was too few in number, and the Division too scattered, to generate a credible deterrent.

Left without its NKVD backstop, the 90th struggled to maintain its organizational coherence even during the early days of the Battle of Leningrad. Overwhelmed by larger numbers of German forces, and reeling from the one-two punch of tanks and close-air support, the 90th's headquarters quickly lost touch with its regiments. Units began retreating without official permission as early as 9 July.⁷⁹ War logs and soldier testimonies equally reflect the chaos and confusion of the long retreat to Leningrad. As one commander recalled, "the regiments of the 90th Rifle Division were disunited and confused again. In this chaos, it is impossible to establish communication with one another or with command. Only the direction of retreat unites everyone."⁸⁰ Soldier testimonies are littered with references to communication difficulties: "For us," wrote one soldier, "the difficulty was also in the fact that many of our units were retreating in subunits and even in separate groups." Confusion was persistent: "Where are the regiments, where's the rear, where's the divisional staff?" one soldier lamented.⁸¹ Command posts were often abandoned as quickly as they were created; in one notable instance, retreating soldiers had to set fire to their own command post to prevent sensitive documents from falling into German hands.⁸²

⁷⁶Letter by A.N. Klimov, reproduced in Panteleev 2006, 98-99.

⁷⁷Letter by N.A. Panteleev, reproduced in Panteleev 2006, 301-04.

⁷⁸Letter by V.I. Volkov, reproduced in Panteleev 2006, 231-32.

⁷⁹"Vypiska iz zhurnal boevykh deistvii 173 sp 90 sd," TsAMO Fond: 1253; Opis': 1; Delo: 65, s2.

⁸⁰"Nekotorye boevye epizody iz boevoi deyatel'nosti 173 sp 90 ksd v period otkhoda iz pribaltiki na podstupy k leningradu (iiun-sentyabr' 1941 goda)," at <http://centralsector.narod.ru/arch/90sd/32.htm>.

⁸¹Panteleev 2006, 159.

⁸²Letter by L.A. Kleptsov in Panteleev 2006, 185.

Disorder gave rise to indiscipline. Faced with almost no prospect of resupply or reinforcement, cut off from Stavka and from each other, and under near-constant attack, these embattled soldiers began to disappear or seek safety in surrender. “We have had no contact with the rear, with other regiments, or with Divisional staff,” one soldier recounted.⁸³ Surrender was openly broached; “Our situation is without hope,” wrote one soldier.⁸⁴ Rumors of suicide became rife among the men. Other soldiers doffed their Red Army uniforms, seeking to escape German patrols in civilian clothes.⁸⁵ Desertion, too, became more common.⁸⁶ Above all, however, many soldiers seized the opportunity of a chaotic battlefield to disappear. Testimonies and official battlefield reports note that groups of men were susceptible to mass panic and subsequent disappearance during German armored assaults and airstrikes.⁸⁷ This wavering of morale stands in contrast to the 168th’s more steadfast stance, despite the similar number of anti-tank and -aircraft weapons held by each Division.

Indiscipline, in turn, sparked a new cascade of problems. Once cohesion crumbled, the Division’s officer corps was forced to lead from the front in a bid to restore some semblance of order. Three Divisional commanders — an exceptionally high number — were killed in a 45-day span; a fourth would be killed shortly after the Battle of Leningrad concluded.⁸⁸ Divisional and regimental officers also paid a heavy price; some battalions reported that only one-third of their officers were still alive by mid-August.⁸⁹ Adrift, small groups of soldiers fought desperate holding actions to win momentary respite before being driven back again. “It was very difficult,” one soldier remembered, because “there was no leadership, no one knew the situation and, most importantly, there was no connection between the officers and their men.” In a moment of dark humor, a rifleman recalled a common joke that soldiers should simply arrest their own officers so they would be able to

⁸³Quoted in [Panteleev 2006](#), 105.

⁸⁴Letter by P.K. Mishura in [Panteleev 2006](#), 198.

⁸⁵*Ibid.*, p.199.

⁸⁶Letter by I.F. Andrianov in [Panteleev 2006](#), 52.

⁸⁷See, for example, the letter by P.K. Mishura in [Panteleev 2006](#), 193-200 and by M.A. Svetil’nikov in [Panteleev 2006](#), 178-84.

⁸⁸These commanders were Colonel I.I. Plyonkin (7 July-10 August); Colonel I.F. Abramov (25 August-9 September); Colonel A.A. Dar’in (10-11 September); and Colonel A.I. Korolev (12 September-8 November).

⁸⁹Letter by N.D. Sovin in [Panteleev 2006](#), 191,107.

find them, a shocking inversion of the logic of fratricidal coercion.⁹⁰

Unlike the much-decorated 168th, the 90th received no divisional awards or commendations. As one soldier noted, “retreat and encirclement are not actions to be rewarded. Those who distinguish themselves under such circumstances are not usually honored. And the commanders are not eligible for decorations, either.”⁹¹ A single Order of the Red Star for courage was awarded during the 45-day battle; a subsequent investigation uncovered that the Order had been awarded erroneously.⁹² Far from earning a national reputation, like the 168th, the 90th struggled just to remain a coherent organization.

Most tellingly, the 90th Rifle Division experienced a modest reversal of fortune in mid-September. The Red Army had established roadside blocking detachments along Leningrad’s southern approaches, including near Kolpino, Pushkin, Moskovskaya Slovyanka and neighboring villages to reassemble scattered units and reunite wayward soldiers with their Divisions. On 14 September, the remnants of the 90th tried to break out of German encirclement in a desperate gambit to reach Soviet forces near Kolpino. Down to their last rounds, and forced to kill horses for food, these isolated bands were reduced to sending runners to the Division’s mobile command post.⁹³ For two days, remaining officers tried to organize a last push to slip past closing German forces; dozens died, while hundreds of soldiers went missing in the confusion.⁹⁴ During the night of 17 September, the Division’s lead elements met blocking detachments at Shushary state farm near Kolpino. Over the next two days, these NKVD forces helped reconstitute the 90th, assigning replacement officers and adding some 10,000 reinforcements to the Division’s decimated roster.⁹⁵ Substantial effort was made to strengthen the NKVD’s grip over the Division. As one soldier noted, “the Division became whole again.”⁹⁶ In a fitting coda, the Division’s war log records the

⁹⁰Letter by N.A. Kurganovich in *Panteleev 2006*, 213-16.

⁹¹“‘Posmertno’ — eto oshibka. Rufina Batureva,” in *Panteleev 2006*, 329.

⁹²*Ibid.*

⁹³Letter by M.A. Svetil’nikov in *Panteleev 2006*, 178-84.

⁹⁴*Ibid.*, pp.182-83.

⁹⁵‘Nekotorye boevye epizody iz boevoi deyatelnosti 173 sp 90 ksd v period otkhoda iz pribaltiki na podstupy k leningradu (iiun-sentyabr’ 1941 goda),’ at <http://centralsector.narod.ru/arch/90sd/32.htm> and Letter by V.S. Yakovlevich, reproduced at <http://www.polk.ru/forum/index.php?showtopic=2194>.

⁹⁶Quoted in *Panteleev 2006*, 107.

reinforcements, but makes no mention of the NKVD's role.⁹⁷

Part 3: Evidence from Cross-National Battle Data

How generalizable are these patterns? There are at least two challenges to external validity. First, the Red Army's brutality and bureaucratization render it an extreme outlier among armies. Similarly, the Great Patriotic War was itself an outlier, representing the deadliest conflict in recorded history. We might worry, then, that our findings will not translate to other armies and wars. Second, our analysis is one-sided; the absence of similarly-detailed divisional records among the Wehrmacht means we cannot capture the interaction of German and Soviet forces. We might therefore miss how fratricidal coercion could shift relative patterns of casualties and battlefield performance among the belligerents. Fratricidal coercion might, for example, increase friendly casualties but, by forcing soldiers to fight, inflict even higher casualties on enemy forces, improving military effectiveness.

To test the generalizability of the Soviet experience, we merged Project Mars data on the presence of blocking detachments with cross-national battle-level data assembled by [Lehmann and Zhukov \(2019\)](#). The latter dataset includes 597 battles from seventy-five conflicts, involving 185 belligerents and covering 83 percent of interstate conflicts chronicled in Correlates of War (COW) between 1939 and 2011.⁹⁸ For consistency, we restricted this sample to land battles only ($N = 526$).

Each battle-level observation contains information on belligerents' relative losses, including KIA, WIA, MIA and POW statistics, as well as commanders killed or captured. These measures mirror the ones we used in the RKKA analyses and so facilitate a direct comparison to our micro-level findings. In addition, these data contain several measures that the Soviet data do not, including the proportion of forces lost (total irrecoverable losses divided by troop strength at beginning of campaign) and loss exchange ratios, which

⁹⁷ "Vypiska iz zhurnal boevykh deistvii 173 sp 90 sd," TsAMO Fond: 1253; Opis': 1; Delo: 65, s31-32.

⁹⁸ Interstate wars in COW that are missing from the [Lehmann and Zhukov \(2019\)](#) dataset include the Franco-Thai War of 1940–1941, Offshore Islands War of 1954, Ifni War of 1957–1959, Taiwan Straits War of 1958, War of Attrition of 1969–1970, Sino-Vietnamese Border War of 1987, and Kargil War of 1999.

permit a dyadic assessment of relative casualties.

To assess the impact of fratricidal coercion in this cross-national sample, we fit a generalized linear model that regresses belligerents' casualties on an indicator variable for the presence of blocking detachments and a battery of structural and battle-level covariates.⁹⁹

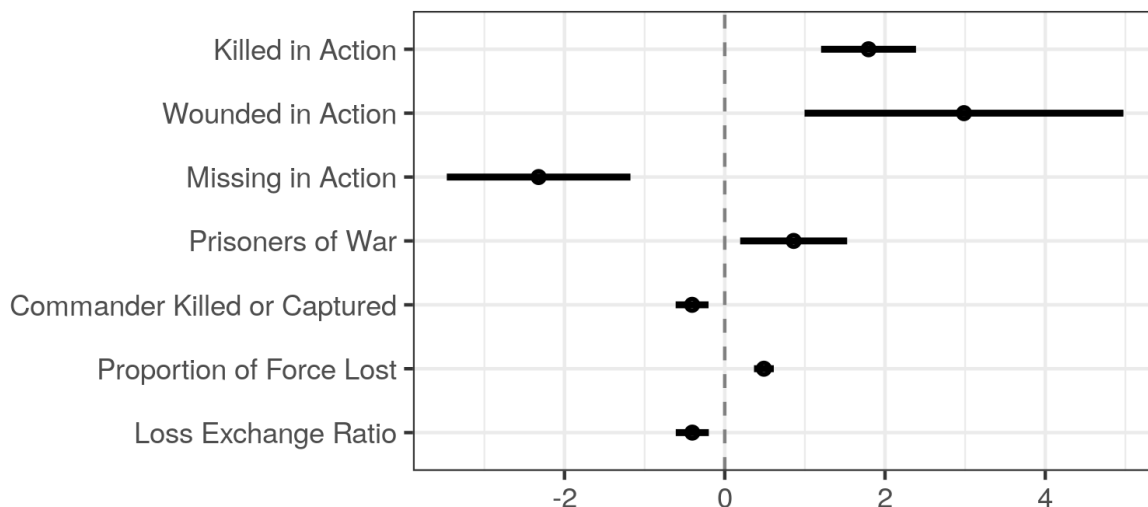
Figure 4 reports average marginal effects estimates, capturing the impact of blocking detachments on multiple measures of battlefield performance. Consistent with our RKKA findings (higher casualties, reduced flight), fratricidal coercion is associated with increased KIAs, WIAs and higher overall casualties as a proportion of initial troop strength. As expected, armies with blocking detachments also experience fewer MIAs. We also note that, consistent with our case study evidence, blocking detachments appear to reduce the likelihood that commanders will be killed or captured on the battlefield. This is an intriguing result: it suggests that blocking detachments might insulate commanders from some battlefield risks. For example, instead of leading from the front — placing themselves in greater physical danger to improve morale — commanders might simply let the blocking units enforce compliance at gunpoint.¹⁰⁰

The only result inconsistent with our Soviet findings is the estimate for POWs, which appears positive and statistically significant here. This discrepancy is likely due to three factors. First, it may reflect heterogeneity across different measures of fratricidal coercion: our battle-level analyses capture the specific impact of blocking detachments, while the Soviet analyses capture the more general impact of NKVD officers, who had a variety of coercive tools at their disposal. Second, it may reflect differences in reporting: Soviet commanders, as we have noted, routinely recorded POWs as MIAs for political reasons, a dynamic not necessarily present in these other armies. Third, the meaning and valence of POW status varies across belligerents: most armies do not view falling into enemy cap-

⁹⁹Standard errors are clustered on belligerent and conflict. Covariates include: relative force ratio, deployment distance, initiator dummy, recruitment type (i.e. conscription or volunteer), relative state power (i.e. Composite Index of National Capability), relative regime type (whether a belligerent is more democratic than its opponent), whether each side has signed the Geneva Convention, an indicator for whether armies totaled 100,000 soldiers or more, a dummy for WWII, battle start year, and seasonal dummies (winter, spring, summer). See Appendix A5 for estimation details.

¹⁰⁰Our results are robust to dropping WWII and Eastern Front observations as well as country random effects. See Appendix A5 for details and robustness checks.

Figure 4: **Impact of Fratricidal Coercion across 526 Modern Battles, 1939-2011.**



NOTE: Horizontal axis represents estimated percentage point change in outcome (as share of belligerent's battle losses), associated with the presence of blocking units. See Appendix A5 for estimation details.

tivity as a disreputable act, provided that soldiers fought until no other options remained. Indeed, multiple countries have awarded decorations for soldiers held captive, such as the Prisoner of War Medal in the US. By contrast, the Stalinist system viewed POW status as treasonous, regardless of prior conduct. Our data support this latter possibility: the POW result loses significance when we include country-specific effects.¹⁰¹

Blocking Units and Loss Exchange Ratios

Our Soviet and cross-national evidence converge on the same finding: fratricidal coercion increases an army's own casualties. But what about enemy casualties? It is possible that these heightened costs of battle are offset by even greater enemy losses due to the improved "staying power" that these practices generate among coerced soldiers.

To evaluate this possibility, we ran additional cross-national analyses with loss-exchange ratios (irrecoverable enemy losses divided by irrecoverable friendly losses) as our dependent variable. A higher LER indicates greater military effectiveness, in the narrow sense of

¹⁰¹See Appendix A5 for sensitivity analyses.

inflicting relatively higher losses on enemy forces than one's own force suffers.

As the bottom row of Figure 4 shows, armies with blocking units tend to experience significantly *lower* loss-exchange ratios; that is, they suffer more casualties themselves than they are able to inflict on their enemies. While fratricidal coercion might improve soldier discipline, it does not appear to yield broader tactical advantages. If anything, it tends to make battles deadlier for friendly troops than for their opponents. These armies are, in effect, purchasing improved discipline at the cost of combat power, able to neither shield their own soldiers nor impose greater relative casualties on enemy soldiers.

Conclusion

Fratricidal coercion is far more common, and consequential, than previous theories and evidence suggest. Our findings demonstrate that the simple but brutal logic of fratricidal coercion can improve soldier compliance across a wide range of belligerents and battlefields. States like the Soviet Union, which fielded specialized units to threaten and coerce their own troops, reduced the prevalence of missing and captured soldiers while also suppressing the incidence of desertion, defection, and battlefield death of commanders. Compliance, however, exacted a steep price: fatalities and injuries suffered by the belligerent increased and their relative loss-exchange ratios worsened. While micro-level evidence from the Eastern Front provides a unique window into these dynamics, we find similar results when examining 526 land battles since 1939. For many belligerents, fratricidal coercion offers a clear, if bloody, path to generating combat power and improving military effectiveness in the absence of strong primary group bonds or attachment to the regime.

Our findings carry broad implications for theories of combat motivation and military effectiveness. Given the ubiquity and apparent utility of fratricidal coercion, we need to better understand its interaction with other material and ideological inducements that motivate soldiers in battle. Belligerents typically employ a mixture of strategies to convince and compel their soldiers to fight. Yet we know comparatively little about how coercion might combine with selective incentives (e.g. combat pay) or nationalist appeals to boost,

or possibly undercut, combat motivation. We must also open the black box of soldier identity to consider how ethnic and other inequalities within armies might condition both the belligerent's use of coercion and its effectiveness within the ranks. The credibility of coercion, its form and severity, and its effectiveness likely hinges on how particular social groups within the military perceive the government and their relative standing in the political community. Similarly, the effectiveness of coercion might vary by recruitment method: conscripts, volunteers, mercenaries, and coerced soldiers may have different reactions to the battlefield presence of blocking detachments.

These findings also raise questions about the relationship between fratricidal coercion and military effectiveness. Worsened LERs notwithstanding, it remains unclear whether these brutal methods increase the odds of operational-level victories. Nor is it apparent whether coercion offers a pathway to victory in the war itself. Future research should build upon these results to explore how coercion affects other wartime dynamics, including the timing of desertion and defection as well as war duration. How fratricidal coercion might complicate the politics of building and maintaining battlefield coalitions also remains an open question. Additional measures of battlefield performance, including rates of territorial advance and the amount of ground seized (or lost) could also be helpful in capturing additional effects of coercion. Our use of multiple measures of battlefield performance underscores the need to move away from a singular reliance on deaths as the leading measure of military effectiveness. Our analysis suggests that many belligerents perceive soldier compliance as a more fundamental problem than casualties; they have proven willing to accept higher losses as the price of reducing the incidence of surrender and desertion.

Our results also suggest new avenues for empirical research. We can deepen our understanding of blocking detachments by collecting new data to explain variation in their lethality, size, composition, and battlefield use. We also lack cross-national data on a variety of other forms that fratricidal coercion can take, including the use of forced labor and penal battalions, corporal punishment, mock trials, and off-battlefield threats against families and other social groups. There may be important variation in these types of coercion both across armies and over time. Similarly, the logic of fratricidal coercion could be extended to another empirical domain: insurgent organizations. Here, too, existing theories

tend to emphasize prewar networks, material incentives, ideological indoctrination, or socialization when explaining combat motivation among insurgents. Yet we know that many insurgent organizations forcibly recruit their fighters, that they face chronic problems of desertion and defection, and that at least some groups have fielded blocking detachments to maintain discipline. An emphasis on fratricidal coercion provides a potential bridge to connect the study of armies and rebels under the same theoretical framework.

Finally, these findings suggest several policy implications. Perhaps most importantly, prevailing notions of net assessment should be updated to include the possibility that adversaries might rationally choose to direct their weapons against their own soldiers. We should resist the temptation to view such coercion as a sign of organizational dysfunction or a leading indicator of military disintegration. Instead, armies that use fratricidal coercion might prove more resilient than commonly supposed, especially if blocking detachments and other forms of fratricidal coercion are allowed free rein on the battlefield. Reliance on these methods also creates vulnerabilities. Armies facing such opponents could deliberately target their adversary's coercive apparatus while also opening avenues and opportunities for enemy soldiers to flee the battlefield. They could also do nothing, and watch the enemy lose blood and treasure trying to hold its own personnel in line. Far from a relic of a bygone era of warfare, fratricidal coercion remains a persistent feature of modern battle and is likely to remain so for future wars.

References

- Askey, Nigel. 2016. *Operation Barbarossa: The Complete Organizational and Statistical Analysis, and Military Simulation*. Vol. IIIA. The Soviet Armed Forces, Mobilization, and War Economy from June to December 1941 Morrisville, NC: Lulu Publishing.
- Bartov, Omer. 2001. *The Eastern Front, 1941-45, German Troops and the Barbarisation of Warfare*. Second ed. New York: Palgrave Macmillan.
- Berkovich, Ilya. 2017. *Motivation in War: The Experience of Common Soldiers in Old-Regime Europe*. Cambridge: Cambridge University Press.

- Biddle, Stephen. 2004. *Military Power: Explaining Victory and Defeat in Modern Battle*. Princeton: Princeton University Press.
- Bidlack, Richard and Nikita Lomagin. 2013. *The Leningrad Blockade, 1941-1944: A New Documentary History from the Soviet Archives*. New Haven, CT: Yale University Press.
- Castillo, Jasen. 2014. *Endurance and War: The National Sources of Military Cohesion*. Palo Alto, CA: Stanford University Press.
- Daines, Vladimir. 2008. *Shtrafbaty i zagradostryady Krasnoi Armii*. Moskva: Yauza.
- Dupuy, Trevor. 1979. *Numbers, Predictions, and War: Using History to Evaluate Combat Factors and Predict the Outcomes of Battles*. New York: The Bobbs-Merrill Company, Inc.
- Dupuy, Trevor. 1984. Analysis of factors that have influenced outcomes of battles and wars. Vol. 1. Technical report CAA SR-84-6. Dunn Loring, VA: Historical Evaluation and Research Organization.
- Fes'kov, V.I., K.A. Kalashnikov and I.F. Golikov. 2003. *Krasnaya Armiya v pobedakh i porazheniyakh 1941-1945 gg.* [Red Army in victory and defeat 1941-1945]. Tomsk: Tomsk University Press.
- Glantz, David. 2002. *The Battle for Leningrad, 1941-1944*. Lawrence, KS: University Press of Kansas.
- Glantz, David. 2005. *Slaughterhouse: The Handbook of the Eastern Front*. Bedford, PA: Aberjona Press.
- Hamner, Christopher. 2011. *Enduring Battle: American Soldiers in Three Wars, 1776-1945*. Lawrence: Kansas University Press.
- Henderson, William. 1985. *Cohesion: The Human Element in Combat*. Washington, D.C.: National Defense University Press.
- Henn, Soeren and Connor Huff. 2021. "The Legacies of Atrocities and Who Fights."
- Jaggers, Keith and Ted Robert Gurr. 2004. *Polity IV: Regime Change and Political Authority, 1800-2004*. Ann Arbor, MI: Inter-University Consortium for Political and Social Research.
- Kadrovyy sostav organov gosudarstvennoy bezopasnosti SSSR. 1935-1939.* [Cadres of state security organs of USSR, 1935-1939]. 2017. <https://nkvd.memo.ru/>.

- Keegan, John. 1997. Towards a Theory of Combat Motivation. In *Time to Kill: The Soldier's Experience of War in the West, 1939-1945*, ed. Paul Addison and Angus Calder. London: Pimlico pp. 3–11.
- Krivosheev, Grigoriy F., ed. 2001. *Rossiia i SSSR v voinah XX veka. Poteri vooruzhennykh sil. Statisticheskoe issledovanie. [Russia and the USSR in 20th century wars. Losses of the armed forces. Statistical study.]*. Moscow: Olma Press.
- Lehmann, Todd and Yuri Zhukov. 2019. “Until the Bitter End? The Diffusion of Surrender Across Battles.” *International Organization* 73(1):133–169.
- Levi, Margaret. 1997. *Consent, Dissent, and Patriotism*. Cambridge: Cambridge University Press.
- Lichbach, Mark. 1998. *The Rebel's Dilemma*. Ann Arbor: University of Michigan Press.
- Lur'e, Lev Ya. 2012. *Leningradskii front*. Sankt Peterburg: BXV-Peterburg.
- Luttwak, Edward and Stuart L. Koehl. 1991. *The Dictionary of Modern War*. New York: Harper Collins Publishers.
- Lyall, Jason. 2017. Forced to Fight: Coercion, Blocking Detachments, and Trade-offs in Military Effectiveness. In *The Sword's Other Edge: Trade-offs in the Pursuit of Military Effectiveness*, ed. Dan Reiter. Cambridge: Cambridge University Press pp. 88–125.
- Lyall, Jason. 2020. *Divided Armies: Inequality and Battlefield Performance in Modern War*. Princeton, NJ: Princeton University Press.
- Lynn, John. 1984. *The Bayonets of the Republic: Motivation and Tactics in the Army of Revolutionary France*. Urbana and Chicago: University of Illinois Press.
- Lynn, John. 2003. *Battle: A History of Combat and Culture*. Boulder, CO: Westview Press.
- Marshall, S.L.A. 1947. *Men Against Fire: The Problem of Battle Command in Future War*. New York: William Morrow.
- McLauchlin, Theodore. 2020. *Desertion: Trust and Mistrust in Civil Wars*. Ithaca, NY: Cornell University Press.
- McNerney, Michael, Ben Connable, S. Rebecca Zimmerman, Natasha Landar, Marek Posard, Jasen Castillo, Dan Madden, Ilana Blum, Aaron Frank, Benjamin Fernandes, In Hyo Seol, Christopher Paul and Andrew Parasiliti. 2018. *National Will to Fight: Why Some States Keep Fighting and Others Don't*. Santa Monica, CA: RAND.

- Merridale, Catherine. 2005. *Ivan's War: Life and Death in the Red Army, 1939-1945*. London: Picador.
- Merridale, Catherine. 2006. "Culture, Ideology, and Combat in the Red Army, 1939-45." *Journal of Contemporary History* 41(2):305–324.
- Millett, Allan R, Williamson Murray and Kenneth H Watman. 1986. "The effectiveness of military organizations." *International Security* 11(1):37–71.
- Millett, Allan and Williamson Murray. 1988. *Military Effectiveness*. Vol. Three Volumes Boston: Allen and Unwin.
- Moskos, Charles. 1975. "The American Combat Soldier in Vietnam." *Journal of Social Issues* 31(4):25–37.
- Murray, Williamson and Kevin Woods. 2014. *The Iran-Iraq War: A Military and Strategic History*. Cambridge: Cambridge University Press.
- Olson, Mancur. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.
- Panteleev, N.A. 2006. *Devianostaya, Ropshinskaya*. Sankt Peterburg: Vesti.
- Petrikeyev, D.I. 1994. *Nash Ratnyi Trud: Vspominaiut veterany 168-i Rizhskoi strelkovoi divizii*. Sankt Peterburg: Tertsia.
- Posen, Barry. 1993. "Nationalism, the Mass Army, and Military Power." *International Security* 18:80–124.
- Reese, Roger. 2011. *Why Stalin's Soldiers Fought: The Red Army's Military Effectiveness in World War II*. Lawrence, KS: University Press of Kansas.
- Reiter, Dan. 2007. Nationalism and Military Effectiveness: Post-Meiji Japan. In *Creating Military Power: The Sources of Military Effectiveness*, ed. Risa Brooks and Elizabeth Stanley. Stanford: Stanford University Press pp. 27–54.
- Rozenas, Arturas, Roya Talibova and Yuri M. Zhukov. 2020. "Fighting for Tyranny: How State Repression Shapes Military Performance." Working Paper.
- Schechter, Brandon. 2019. *The Stuff of Soldiers: A History of the Red Army in World War II Through Objects*. Ithaca, NY: Cornell University Press.

- Shils, Edward and Morris Janowitz. 1948. "Cohesion and Disintegration in the Wehrmacht in World War II." *Public Opinion Quarterly* 12:280–315.
- Starikov, Nikolai. 2014. *Voiska NKVD na fronte i v tylu*. Moskva: Algoritm.
- Statiev, Alex. 2010. "Penal Units in the Red Army." *Europe-Asia Studies* 62(5):721–747.
- Statiev, Alex. 2012. "'La Garde meurt mais ne se rend pas!' Once Again on the 28 Panfilov Heroes." *Kritika: Explorations in Russian and Eurasian History* 13(4):769–798.
- Stewart, Nora Kinzer. 1991. *Mates and Muchachos: Unit Cohesion in the Falklands/Malvinas War*. Washington, D.C.: Brassey's, Inc.
- Stouffer, Samuel A., Arthur A. Lumsdaine, Marion Harper Lumsdaine, Jr. Williams, Robin M., M. Brewster Smith, Irving L. Janis, Shirley A. Star and Jr. Cottrell, Leonard S. 1949. *The American Soldier: Combat and Its Aftermath*. Princeton: Princeton University Press.
- Sycheva, K.V. and M.M. Malakhova. 1954. *Boevye deistviya strelkovoï divizii: Sbornik takticheskikh primerov iz Velikoi Otechestvennoi voiny*. Moskva: Voenizdat.
- Talmadge, Caitlin. 2015. *The Dictator's Army: Battlefield Effectiveness in Authoritarian Regimes*. Ithaca: Cornell University Press.
- Weinstein, Jeremy. 2007. *Inside Rebellion: The Politics of Insurgent Violence*. Cambridge: Cambridge University Press.
- Wesbrook, Stephen. 1980. The Potential for Military Distintegration. In *Combat Effectiveness: Cohesion, Stress, and the Voluntary Military*, ed. Stephen Wesbrook. Beverly Hills, CA: SAGE Publications pp. 244–278.
- Zemskov, Viktor. 2012. "O masshtabakh lyudskikh poter' SSSR v Velikoy Otechestvennoy Voiny [About the scale of human losses of the USSR in the Great Patriotic War]." *Military Historical Archive* (9):59–71.
- Zhukov, Georgy. 2013. *Marshal of Victory: The Autobiography of General Georgy Zhukov*. Vol. I and II South Yorkshire, UK: Pen and Sword.
- Zolotarev, V.A., ed. 1996. *Glavnye politicheskie organy vooruzhennykh sil SSSR v Velikoi Otechestvennoi voine 1941-1945*. Vol. 17.6 of *Russkii Arkhiv: Velikaya Otechestvennaya* Moskva: TERRA.

Appendices: “Fratricidal Coercion in Modern War”

Contents

A1	RKKA Division Data	A0
A2	Estimation Strategy: Red Army Rifle Divisions	A2
A2.1	Extension: Time-Variant Coefficients	A4
A2.2	Additional Estimates: Two-Way Mixed Models	A5
A3	Sensitivity Analyses and Placebo Tests	A5
A3.1	Accounting for Variation in Division Strength	A5
A3.2	Randomization Inference	A8
A4	Matched Case Selection	A11
A4.1	First Stage	A11
A4.2	Second Stage	A14
A4.3	Third Stage	A14
A4.4	Additional Case Study Evidence: Offensive Operations	A15
A5	Cross-National Battle-Level Data and Analyses, 1939-2011	A15
A5.1	Estimation Strategy and Robustness Tests: Cross-National Battle-Level	A16

A1. RKKA Division Data

Table [A1.1](#) reports the cumulative number of NKVD counterintelligence personnel assigned to each of 30 Fronts within the Red Army (1941-45), along with dates of active operations and number of battles involving each Front’s subordinate division-level units. Because most NKVD officers rotated through multiple military units between 1941 and 1945 (and some rotated back to the same unit more than once), it is possible for the same NKVD personnel to appear in this cumulative total more than once. For example, if one officer served in units A, B and then A again, that officer would contribute +1 to unit B’s cumulative total, and +2 to A’s cumulative total. For this reason, and to account for changing battlefield conditions, we disaggregate observations by division and month.

Table [A1.2](#) reports additional descriptive statistics on differences in battlefield outcomes between units with below- and above-average presence of OO/SMERSH officers (average is 10 officers per division-month), along with nonparametric Kolmogorov-Smirnov tests of differences between the two distributions. Compared to units with below-average NKVD presence, those with above-average presence saw significantly higher rates of KIA (78% vs. 65%), and lower rates of MIA (11% vs. 20%) and POW (2.4% vs. 3.6%). However, the raw difference in means is in the opposite of the expected direction for desertion (0.31% vs. 0.25%); as we show below, this relationship reverses in sign when we conduct more rigorous statistical analyses.

Table A1.1: Distribution of NKVD Personnel by Front

Front	NKVD Personnel	Start	End	N. Battles
Reserve	92	1941.07.29	1943.03.23	56
Northern	107	1941.06.24	1942.10.09	119
Crimean	131	1942.01.28	1942.05.19	18
Transcaucasian	137	1941.07.05	1943.03.30	235
Southeastern	348	1942.08.01	1942.09.30	28
Steppe	1,070	1943.07.09	1943.10.20	122
Stalingrad	1,079	1942.07.12	1943.01.01	208
Don	1,724	1942.09.30	1943.02.15	114
3rd Baltic	4,326	1944.04.21	1944.10.16	92
Belorussian	4,459	1943.10.20	1945.08.15	181
Voronezh	4,696	1942.07.07	1944.02.27	355
North Caucasian	4,886	1942.05.01	1943.11.30	121
Karelian	5,158	1941.09.01	1944.11.15	143
Northwestern	5,983	1941.06.22	1944.08.06	326
Southwestern	6,066	1941.06.22	1944.03.27	600
Bryansk	6,086	1941.08.16	1943.10.10	249
Kalinin	8,007	1941.09.01	1943.10.20	297
4th Ukrainian	8,587	1943.10.17	1945.08.24	139
3rd Ukrainian	10,013	1943.10.20	1945.06.15	339
Volkhov	11,155	1941.12.17	1944.02.15	124
2nd Baltic	11,453	1943.10.20	1945.05.09	98
3rd Belorussian	11,593	1944.04.24	1945.08.15	241
1st Baltic	12,403	1943.10.20	1945.02.24	227
2nd Belorussian	13,951	1944.02.24	1945.06.28	147
2nd Ukrainian	15,463	1942.10.13	1945.06.04	286
Leningrad	19,497	1941.07.03	1945.07.23	507
1st Belorussian	20,715	1944.02.24	1945.06.10	84
Western	22,435	1941.06.22	1944.04.24	1280
1st Ukrainian	27,339	1943.10.20	1945.06.10	416

NOTE: The table lists the cumulative number of NKVD personnel assigned to each Front of the Red Army over the course of the war. Start and end dates correspond to first and last days of active operations. Numbers of battles represent cumulative engagements involving division-level units subordinate to each Front.

Table A1.2: Did Units with High NKVD Presence See Different Types of Losses?

Unit Outcomes	Below Avg. NKVD	Above Avg. NKVD	KS Test
Killed in Action (%)	64.64	78.24	0.16***
Wounded in Action (%)	0.4	0.4	0.04***
Missing in Action (%)	19.89	10.91	0.18***
Prisoner of War (%)	3.59	2.41	0.15***
Desertion (%)	0.25	0.31	0.02**
Defection (%)	0.05	0.05	0.01
Treason (%)	0	0	0

NOTE: The table compares loss types across division-months with above- vs. below-average numbers of embedded NKVD personnel. Division-months with higher NKVD presence experienced a higher percentage of losses due to soldiers killed in action, lower percentages or wounded in action, missing in action and prisoners of war. However, these units also saw slightly higher percentages of losses due to desertion. Significance levels for Kolmogorov-Smirnov (KS) test statistics: $^{\dagger}p < 0.1$; $*p < 0.05$; $**p < 0.01$; $***p < 0.001$.

A2. Estimation Strategy: Red Army Rifle Divisions

The impact of fratricidal coercion on battlefield performance is difficult to empirically assess, because fratricidal coercion may itself have been a response to poor battlefield performance, or expectations thereof. Table A1.1 clearly shows that the distribution of counterintelligence personnel varied systematically across units and over time. It is possible that units with more embedded NKVD personnel may have simply had a higher baseline of MIA/POW rates, irrespective of the NKVD's efforts. A similar pattern may hold across battles and over time – the NKVD may have devoted more resources to coercion at critical points in the war, when maintaining unit cohesion was especially challenging.

To account for these disparate sources of variation, we adopt a multilevel modeling design with three-way crossed effects at the level of unit, battle and month. We specify multilevel models of the form

$$y_{ijt}^{(k)} = \log(\text{NKVD}_{it})\beta + \mathbf{X}_{it}\gamma + u_{ijt} \quad (1)$$

$$u_{ijt} = \text{unit}_i + \text{battle}_j + \text{month}_t + \epsilon_{ijt} \quad (2)$$

where i indexes the division, j indexes the battle, and t indexes the month. y_{ijt} is the percentage of a division's monthly losses that fall into category $k \in \{\text{OK, KIA, WIA, MIA, POW, Desertion, Defection, Treason}\}$. NKVD_{it} is the number of NKVD OO/SMERSH personnel assigned to unit i at time t , log-transformed to reduce the right skew in this variable. \mathbf{X}_{it} is a matrix of covariates representing the average demographics of soldiers

assigned to unit i at time t , including soldiers' average age in 1941, the proportion of these soldiers who were ethnically Russian, the average population density at soldiers' location of birth, and hectares of cropland within 5km of the average soldier's birthplace. We weigh observations by the number of personnel reports available per division-month, because casualty percentages are likely to be more accurately reported when more records are available. The error components of u_{ijt} include unit-specific, battle-specific and month-specific errors, along with idiosyncratic errors ϵ_{ijt} .

We fit two versions of this model. The first, which assumes no omitted variable bias ($E[u_{ijt}|\text{NKVD}_{it}, X_{it}] = 0$), is a mixed effects estimator with random intercepts unit $_i$, battle $_j$, month $_t$. The second, which relaxes the no-OVB assumption ($E[u_{ijt}|\text{NKVD}_{it}, X_{it}] \neq 0$), is a fixed effects estimator with group-specific intercepts unit $_i$, battle $_j$, month $_t$. While the former model weighs within-group and between-group variation, the second purges the regression of all group-level errors, and uses only within-group variation. To choose between fixed effect estimates and random effects, we ran a series of Hausman tests of the null hypothesis that errors are uncorrelated with regressors ($E[u_{ijt}|\text{NKVD}_{it}, X_{it}] \neq 0$). We were unable to reject this hypothesis at the $p < .05$ level in any of the specifications, indicating that random effects are more appropriate.

Tables [A2.3-A2.4](#) report coefficient estimates and 95% confidence intervals for our mixed effects models, regressing the percent of an RKKA unit's monthly casualties that were of category $Y \in \{\text{KIA, WIA, MIA, POW, Desert, Defect, Treason}\}$ on the number of OO or SMERSH officers assigned to the unit at the time. Table [A2.3](#) corresponds to the estimates in Figure 2 (main text), where a one percentage point increase in NKVD_{it} is associated with an average change in y_{it} of $\frac{\beta}{100}$ percentage points.

In Table [A2.3](#), observations are weighted by number of available discharge records; Table [A2.4](#) reports unweighted estimates. Numerical differences between the two sets of estimates are small. The main changes are to the intraclass correlation coefficients (ICC). When observations are unweighted, clustering at the unit and battle level account for a larger proportion of the total variance in outcomes. ICCs are closer to zero for the weighted estimates, indicating that—after weighting by number of records—observations within units, months and battles are no more similar than observations from different clusters. Hausman test statistics do not reach statistical significance at the 5% level in any model, indicating that there is no correlation between unobserved effects and explanatory variables. By implication, FE and RE estimates are both consistent, but FE is inefficient.

Table A2.3: **Coefficient Estimates for Three-Way Random Effects Models.** Observations weighted by number of discharge records per unit-month. ICC: intraclass correlation coefficient. Null hypothesis for Hausman test: random effects model is consistent. All models include covariates for average soldier age, percent ethnic Russian, average population density and hectares of cropland within 5 km of soldiers' birth locations (not reported).

Outcome	OK	KIA	WIA	MIA	POW	Desert	Defect	Treason
Estimate	-0.252	1.05	-0.005	-1.015	0.077	-0.022	-4e-04	1e-04
95% CI	(-0.4,-0.1)	(0.7,1.4)	(-0.1,0.05)	(-1.4,-0.7)	(-0.1,0.2)	(-0.05,0.003)	(-0.01,0.01)	(-7e-05,3e-04)
REML	129811.1	153218.4	88213	151121.1	118645.9	70922.2	23880.8	-96520.2
ICC (unit)	0.01	0.009	0.011	0.009	0.007	0.002	0.016	0.001
ICC (battle)	0.001	0.002	4e-04	0.001	0.001	5e-04	0.001	0
ICC (month)	0.01	0.029	2e-04	0.011	0.604	4e-04	3e-04	3e-05
ICC (residual)	0.979	0.96	0.988	0.978	0.388	0.998	0.983	0.999
Hausman p	0.895	0.339	0.961	0.303	0.875	0.97	2e-04	0.702
N	17513	17513	17513	17513	17513	17513	17513	17513

Table A2.4: **Unweighted Estimates for Three-Way Random Effects Models.**

Outcome	OK	KIA	WIA	MIA	POW	Desert	Defect	Treason
Estimate	-0.631	3.045	-0.003	-2.677	0.069	-0.017	0.003	1e-04
95% CI	(-0.9,-0.3)	(2.6,3.5)	(-0.1,0.05)	(-3.1,-2.3)	(-0.1,0.3)	(-0.1,0.02)	(-0.01,0.01)	(-4e-05,3e-04)
REML	133973.2	152079.7	75317.4	149003	117534.7	69244.8	25540.5	-110757.1
ICC (unit)	0.437	0.255	0.598	0.38	0.469	0.266	0.54	0.117
ICC (battle)	0.017	0.022	0.014	0.017	0.046	0.003	0	1e-10
ICC (month)	0.246	0.476	0.009	0.249	0.24	0.007	0.013	0.003
ICC (residual)	0.3	0.247	0.378	0.353	0.245	0.725	0.447	0.88
Hausman p	0.801	0.021	0.066	0.001	0.503	0.971	1	0.926
N	17513	17513	17513	17513	17513	17513	17513	17513

A2.1. Extension: Time-Variant Coefficients

The estimates reported in Figure 3 (main text) are based on a mixed effect model specification similar to the above, apart from the inclusion of time-variant coefficients β_t :

$$y_{ijt}^{(k)} = \log(\text{NKVD}_{it})\beta_t + \mathbf{X}_{it}\gamma + u_{ijt} \quad (3)$$

$$\beta_t = \beta_0 + \text{month}_{1t}, \quad u_{ijt} = \text{unit}_i + \text{battle}_j + \text{month}_{2t} + \epsilon_{ijt} \quad (4)$$

where β_0 is the coefficient for the average time period, and month_{1t} is a month-specific random effect, Normally distributed with mean zero and unknown variance.

A2.2. Additional Estimates: Two-Way Mixed Models

In addition to the three-way mixed effects models above, we also considered a simpler, two-way specification, with only divisional and monthly effects:

$$y_{it}^{(k)} = \log(\text{NKVD}_{it})\beta + \mathbf{X}_{it}\gamma + u_{it} \quad (5)$$

$$u_{it} = \text{unit}_i + \text{month}_t + \epsilon_{it} \quad (6)$$

This model is nearly identical to our main specification, with the exclusion of a battle-level error component. Because not all division-months could be matched to a specific battle, these tests allow us to explore a more comprehensive sample of Red Army units: $N = 43,938$ division-months, compared to the 37,134 division-months for which battle participation information was available. The results, in Table A2.5, are substantively consistent with those in the three-way model. As before, Hausman tests generally favor random effects over fixed effects, with one exception: desertion. Coefficient estimates from the fixed effects model of desertion were of the same sign and larger in magnitude than those in Table A2.5: -0.07 ($-0.14, -0.01$).

Table A2.5: **Coefficient Estimates for Two-Way Random Effects Models.** Observations weighted by number of discharge records per unit-month. ICC: intraclass correlation coefficient. Null hypothesis for Hausman test: random effects model is consistent. All models include covariates for average soldier age, percent ethnic Russian, average population density and hectares of cropland within 5 km of soldiers' birth locations (not reported).

Outcome	OK	KIA	WIA	MIA	POW	Desert	Defect	Treason
Estimate	-0.055	1.021	0.013	-1.194	-0.012	-0.016	0.003	1e-04
95% CI	(-0.3,0.2)	(0.7,1.4)	(-0.03,0.1)	(-1.5,-0.9)	(-0.1,0.1)	(-0.03,0.002)	(-0.003,0.01)	(-2e-05,1e-04)
REML	162738.7	185950.8	104010.2	181249.6	145724.4	81145.5	39915.7	-123478.8
ICC (unit)	0.009	0.007	0.005	0.007	0.055	0.001	3e-04	3e-04
ICC (month)	0.484	0.02	1e-04	0.007	0.67	1e-04	2e-04	0
ICC (residual)	0.507	0.973	0.994	0.986	0.275	0.999	1	1
Hausman p	0.877	0.298	0.672	0.665	0.998	0.005	1e-06	0.865
N	20023	20023	20023	20023	20023	20023	20023	20023

A3. Sensitivity Analyses and Placebo Tests

A3.1. Accounting for Variation in Division Strength

Our measure of NKVD presence employs absolute, rather than proportional, numbers of OO/SMERSH officers assigned to each division-month. This approach assumes that RSKA divisions were all of similar size (8,000-12,000 personnel). On paper, Soviet rifle

divisions had an overall strength of 14,483.¹ In practice, army units rarely approached this number and varied greatly in size due to the dynamics of attrition, rest and refitting. This variation in strength could potentially have affected the NKVD's ability to monitor and enforce troop discipline. If the costs of coercion increase with the number of troops under an OO/SMERSH officer's supervision, then each additional NKVD officer may have had a larger effect on battlefield behavior in under-strength units and a smaller effect in full-strength units. Unless the NKVD systematically assigned fewer officers to under-strength divisions – a possibility we can neither verify nor exclude with available data – then our use of absolute NKVD numbers may obscure this underlying heterogeneity.

While we do not observe the true strength of each division over the course of the war, we can test the empirical implications of this scenario through three approaches: re-weighting, time-varying coefficients and simulation. In our main analyses, we weighted observations by the number of discharge records available for each division-month. The logic here is that our proportional dependent variables (e.g. percent killed, missing) are more precisely measured when more records are available. Although the number of discharge records is a different quantity of interest from unit strength, the two may be positively correlated, in which case our analyses give disproportionate influence to units with more soldiers. If our intuition is correct about higher costs of coercion in larger units, then this approach should yield more conservative coefficient estimates than an estimation strategy that gives all units equal weight. Figure A3.1 compares weighted and unweighted estimates, and confirms that unweighted estimates are in most cases numerically larger, although the choice of weights does not affect the direction of results.

Another possibility is that average divisional strength varied systematically over time, with units gradually losing strength over the course of the war, or during certain pivotal moments. If this is true, then the random slopes models we reported in the main text should capture much of the resulting effect heterogeneity. As those results suggest, the NKVD effect diminishes over time, which is the opposite of what we would expect if the influence of individual OO/SMERSH officers increased in later periods of the war due to gradual attrition. Of course, time heterogeneity captures many things besides variation in unit strength, most notably the switch from defensive to offensive operations, and changes in operational tempo across the entire front.

As an additional check, we replicated our analyses on subsamples of the data corresponding to the first month of each division's deployment, on the assumption that units are more likely to be at full strength at the beginning of their tours. The first subsam-

¹The wartime table of organization and equipment (OShS) 04/400-416 from April 5, 1941 gave each Soviet rifle division 14,483 soldiers (TsAMO, Fond 357(11A), Opis' 5973, Delo 1).

Figure A3.1: **Comparison of Weighted and Unweighted Estimates.**

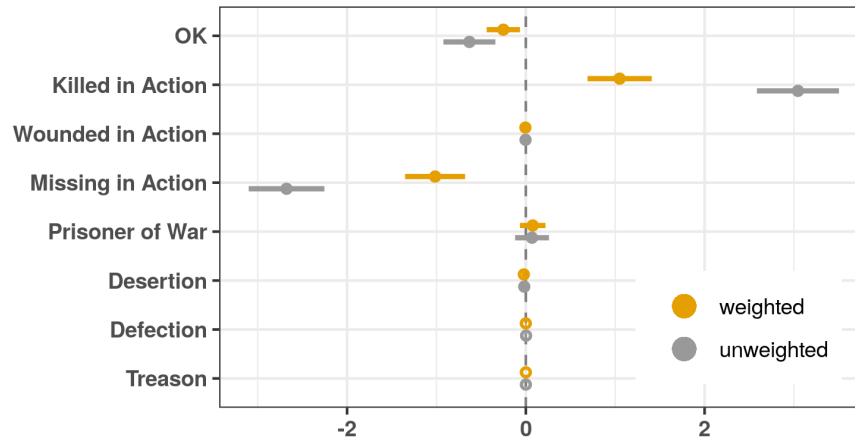
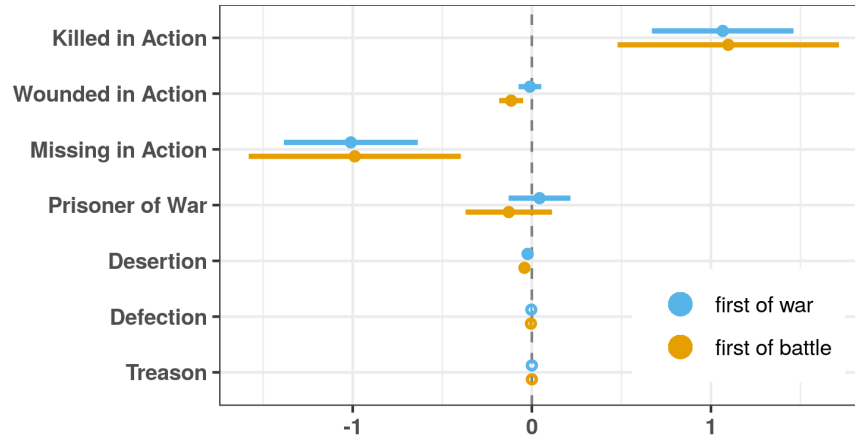


Figure A3.2: **Subsample Analyses: First Months of Deployment.**



ple includes units' first documented appearance in the war ($N = 3,304$), and the second includes units' first appearance in each battle ($N = 12,093$).² These estimates, in Figure A3.2, are consistent with our earlier results: for both subsets of the data, doubling NKVD presence is associated with a 1.1% increase in KIA rates and a 1% decrease in MIA rates.

Finally, we can assess how sensitive our results are to *random* variation in unit strength, due to the disbanding or reassignment of regiments, outbreaks of disease, supply disruptions, or heavy losses in previous battles. To do so, we ran a series of simulations, in which each division receives a monthly random shock to its force strength, which can reduce the number of available personnel to as low as 6,000 (~40% strength) or bring it up to slightly over full strength at 15,000, with an average at 10,500 troops. Formally, we

²Because the first sample includes one unique observation per military unit, we exclude unit-specific error components from those models.

represent this shock with a scaling factor ζ_{it} ,

$$\zeta_{it} = \frac{s_{\max}}{s_{it}}, \quad s_{it} \sim U(6000, 15000)$$

where s_{\max} represents the theoretical maximum force strength of 15,000, and s_{it} represents the simulated force strength for division i on month t .³ This scaling rests on the assumption that the NKVD's monitoring and enforcement costs were lower in under-strength Soviet units, such that one NKVD officer in a half-strength unit can have the same impact on discipline as two officers in a full-strength unit. Mathematically, this is equivalent to increasing the absolute size of the OO/SMERSH contingent in a random subset of units, which should attenuate the estimated average effect of NKVD presence. We multiply this scaling factor by our treatment variable to obtain an adjusted number of NKVD officers in each division-month, $\text{NKVD}_{it}^* = \zeta_{it} \cdot \text{NKVD}_{it}$, and replicate our full set of mixed effects models with this new measure. We ran this simulation 10,000 times.

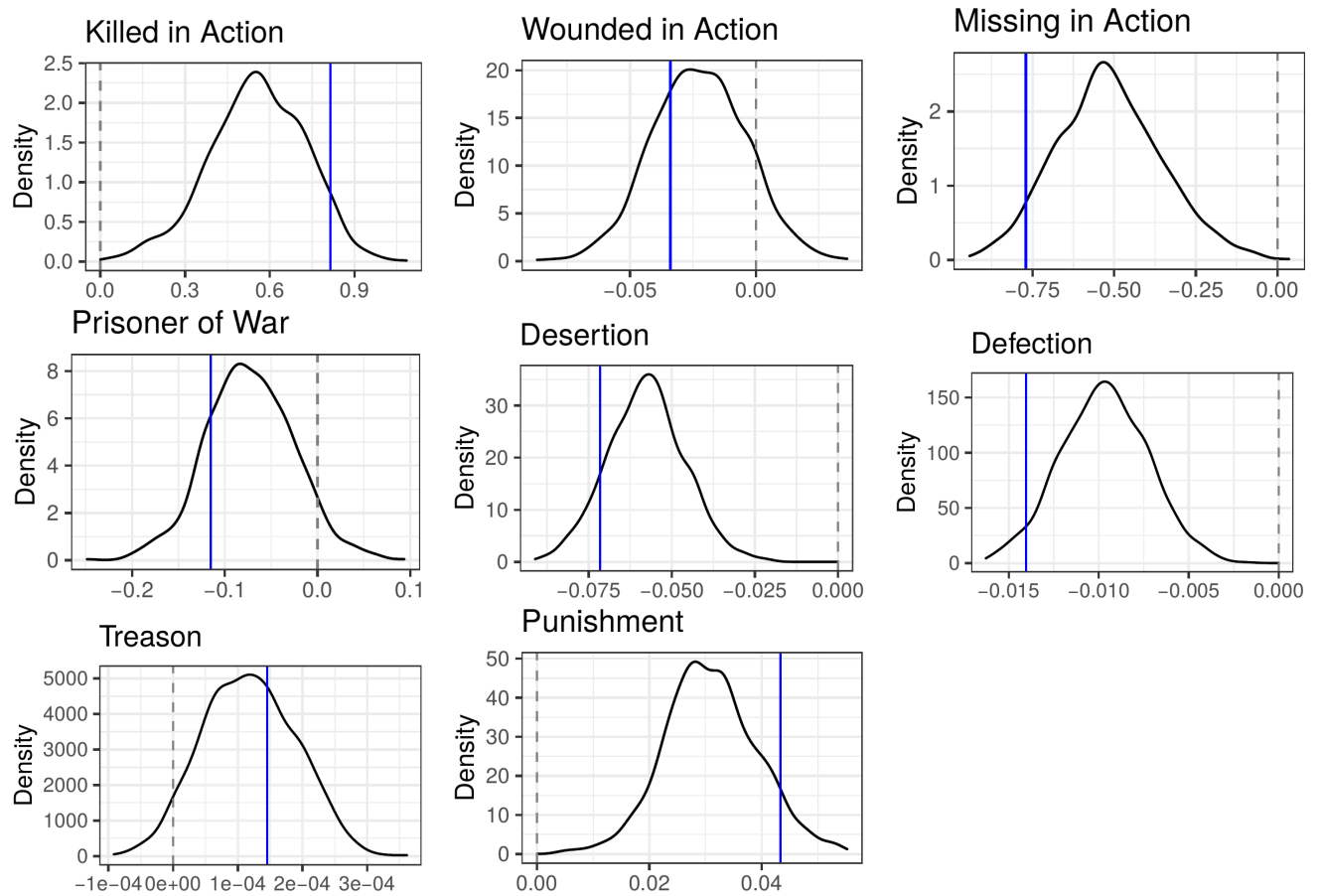
Figure A3.3 reports the distribution of coefficient estimates across these 10,000 simulations, along with the original coefficient estimate (blue vertical line) for each of 8 dependent variables. These results suggest that our estimates are stable to non-trivial variations to division strength. The coefficient estimates for NKVD presence on KIA rates remain positive for all 10,000 runs. Estimates for MIA, desertion and defection remain negative in all runs, while those for POW are negative in 93% of simulations.

A3.2. Randomization Inference

To assess whether estimates of the same magnitude as those in Table A2.3 could be obtained by chance, we re-estimated our models with alternative assignments of NKVD officers across units. For each of 10,000 simulations, we randomly reallocated the number of NKVD officers across division-months and re-ran our main model specifications. Figure A3.4 reports the resulting distribution of coefficient estimates, along with our original estimates (blue lines). The original estimates fall entirely outside the distribution of simulated coefficients for outcomes KIA, WIA, Defection, and Punishment. For POW and Desertion, over 99% of estimated placebo effects were smaller in absolute value than those in our main models. The only outcomes for which a non-trivial portion of simulated coefficients were larger than our baseline were WIA (5% larger) and Treason (12%).

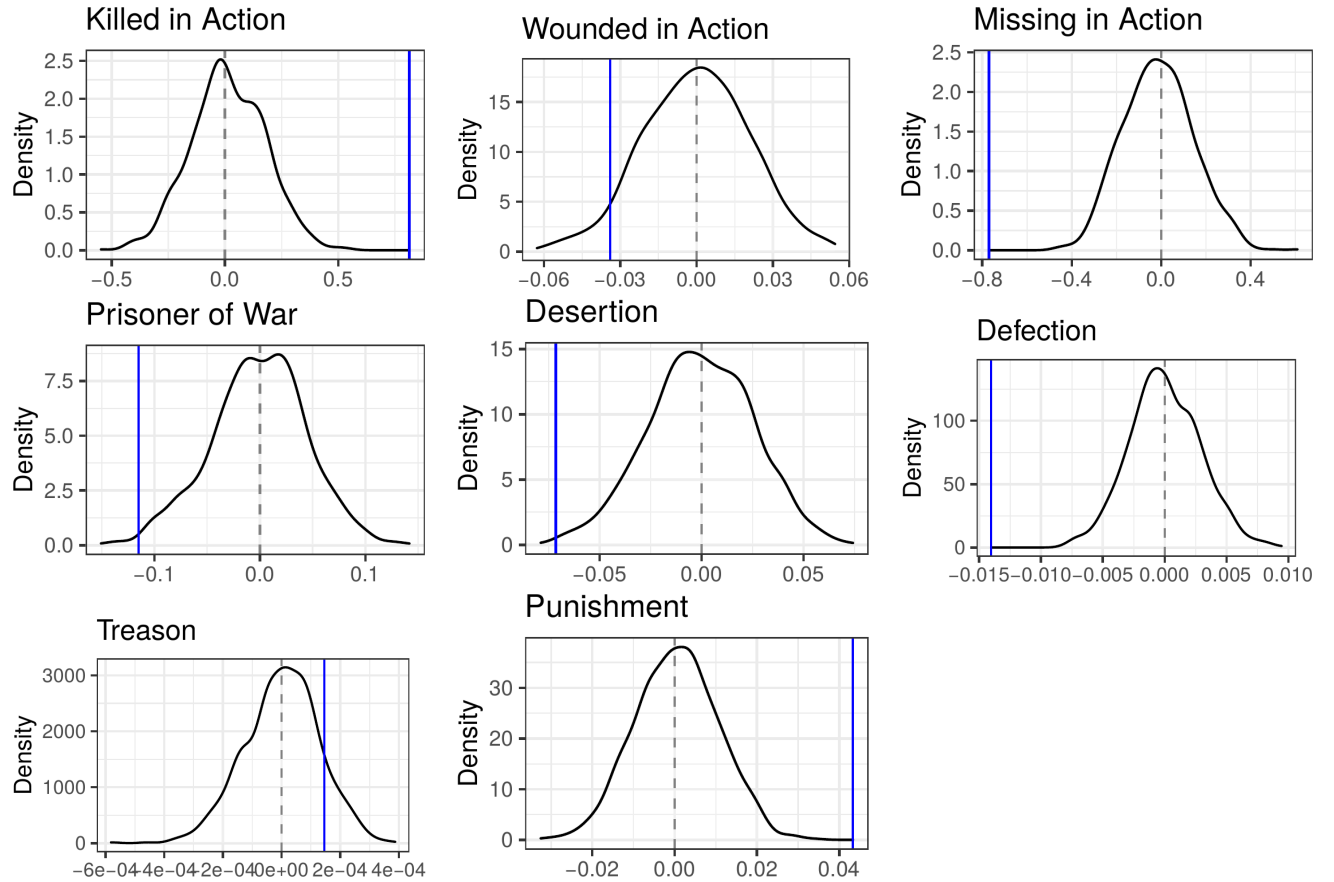
³The simulation assumes that shocks are independently distributed across units and over time.

Figure A3.3: Sensitivity Analysis of Variable Division Strength.



NOTE: Plots show distribution of coefficient estimates from three-way random effects models, re-estimated with strength-adjusted $NKVD_{it}^*$ measures, over 10,000 simulations. Vertical blue lines represent estimates reported in main text. Vertical dashed line is zero.

Figure A3.4: Distribution of Placebo Effects across 10,000 Simulations.



NOTE: Plots show distribution of coefficient estimates from three-way random effects models, re-estimated with randomly re-allocated $NKVD_{it}$, over 10,000 simulations. Vertical blue lines represent estimates reported in main text. Vertical dashed line is zero.

A4. Matched Case Selection

We employed a three-stage case selection procedure. First, we use an exact matching algorithm to find pairs of divisions that participated in the same battle, were of the same type, subordinate to the same army, and for which a similar number of records were available. One member of each pair must have a larger-than-average number of NKVD officers at the time of battle, and the other must have a lower-than average NKVD presence. In the second stage, we selected ten matched pairs, which had the largest absolute differences in numbers of NKVD OO/SMERSH personnel. In the third stage, we manually selected a pair of divisions from this top-10 list for qualitative case study analysis.

A4.1. First Stage

The unit of analysis for our case studies is the unit-battle. Where a unit participated in the same battle over multiple months, we collapsed on the time dimension and calculated aggregate casualty percentages and NKVD officer assignments. We did so to circumvent some of the more problematic assumptions in matching time series cross sectional data (?), and to avoid the need to single out individual months when discussing unit participation in battles of variable length. Further, matching on month is not necessary to improve balance on the time dimension, since matching by battle already ensures that matches are from the same period of the war.

We matched observations exactly by battle, army, unit type (infantry, armor, artillery, etc.), guards designation, and quantile of number of discharge records per unit-battle. The last of these is technically “post-treatment” (it is a cumulative total observed at the end of the battle), but including it in the matching model is necessary to ensure that we are not comparing divisions with thousands of discharge records per battle to those with fewer than ten. Our dependent variables are proportions (% of casualties that were KIA, etc.), which are more precisely estimated when the number of records is higher. We did not match on any of the other covariates derived from discharge records. We matched without replacement and with randomly-broken ties.

This procedure yielded 1,251 matched pairs of division-battle observations, including 1,251 with an above-average monthly NKVD contingent (i.e. more than 10) and 1,251 with a below-average NKVD contingent. Table [A4.6](#) reports covariate balance statistics before and after matching. Matching improved covariate balance across all covariates, including several that we did not explicitly match on, including proportion Russian, average soldier’s age, the geographic proximity of soldiers’ birth locations, population density (people per square kilometer), hectares of cropland and percent urban population within 5km

of the average soldier's birth location. Standardized differences in means are below .25 standard deviations for all covariates in the matched sample, and Kolmogorov-Smirnov test statistics are insignificant at the 5% level.

Table A4.6: **Covariate Balance Statistics, Pre- and Post-Matching.**

Covariate	Status	Mean T	Mean C	Std. Diff.	KS Statistic
Army ID	pre	48.355	47.487	0.037	0.069**
	post	49.546	50.156	-0.026	0.016
Unit type	pre	3.892	3.108	1.451	0.337**
	post	3.695	3.707	-0.013	0.004
Battle ID	pre	136.147	116.022	0.384	0.219**
	post	143.046	143.454	-0.007	0.007
Guards	pre	0.106	0.106	-2e-04	0
	post	0.082	0.081	0.004	0.001
Number of Casualties	pre	247.976	168.598	0.336	0.364**
	post	258.226	252.858	0.018	0.032
Proportion Russian	pre	0.846	0.86	-0.153	0.229**
	post	0.849	0.852	-0.025	0.033
Soldiers' age	pre	26.224	26.961	-0.278	0.213**
	post	26.832	26.662	0.054	0.051'
Geographic proximity	pre	1015.713	994.875	0.072	0.23**
	post	1028.586	1018.611	0.023	0.044
Population density	pre	71.288	75.583	-0.114	0.159**
	post	76.64	69.325	0.115	0.052'
Cropland	pre	1926.782	1952.889	-0.041	0.142**
	post	1885.792	1871.09	0.017	0.039
Urbanization	pre	25.997	26.353	-0.046	0.151**
	post	26.753	26.542	0.019	0.026

Standardized difference (Std. Diff.) defined as $\frac{\text{mean}(T) - \text{mean}(C)}{\text{sd}(T)}$. Significance levels (two-tailed):

[†] $p < 0.1$; * $p < 0.05$; ** $p < 0.01$.

Tables A4.7-A4.8 report coefficient estimates for our random and fixed effects models, re-estimated on units within the matched sample. While the direction and significance of these estimates are consistent with those in the full sample, p values for Hausman tests suggest that the RE estimator is no longer consistent. For this reason, we also report the results of the fixed effects models (Table A4.8), which are substantively consistent and numerically close to the random effects. Figure A4.5 summarizes these results graphically. These results are consistent with those based on the full sample. In the random (fixed) effects analysis, doubling OO/SMERSH presence is associated with a 1.2% (1%) increase in KIA rates, a 1.1% (0.8%) decrease in MIA rates and a 0.3% (0.3%) decrease in POW rates.

Table A4.7: Coefficient Estimates for Random Effects Models (Matched Sample).

Outcome	KIA	WIA	MIA	POW	Desert	Defect
Estimate	1.234	-0.08	-1.074	-0.298	-0.023	-0.005
95% CI	(0.6,1.9)	(-0.1,-0.01)	(-1.7,-0.5)	(-0.4,-0.2)	(-0.1,0.01)	(-0.02,0.01)
Hausman p	1e-21	1e-08	3e-14	2e-19	2e-04	0.047
N	2416	2416	2416	2416	2416	2416

Table A4.8: Coefficient Estimates for Fixed Effects Models (Matched Sample).

Outcome	KIA	WIA	MIA	POW	Desert	Defect
Estimate	0.977	-0.045	-0.835	-0.252	-0.015	3e-04
95% CI	(0.3,1.6)	(-0.1,0.02)	(-1.4,-0.2)	(-0.4,-0.1)	(-0.05,0.02)	(-0.01,0.01)
Hausman p	1e-21	1e-08	3e-14	2e-19	2e-04	0.047
N	2416	2416	2416	2416	2416	2416

Figure A4.5: Impact of NKVD Presence on Battlefield Outcomes, Matched Sample.



A4.2. Second Stage

Of the 1,251 matched pairs, we extracted ten pairs with the largest absolute differences in numbers of NKVD OO/SMERSH personnel. We did this separately for units participating in defensive battles (Tables A4.9) and offensive battles (Tables A4.10).

Table A4.9: **Unit Pairs with Largest Differences in NKVD Presence** (Defensive Battles).

	Battle	Unit (T)	Unit (C)	NKVD (T)	NKVD (C)
1	Stalingrad Defensive Operations	133 TB 64 A	13 TB 64 A	240	9
2	Defensive Operations around Lyuban	310 RD 4 A	44 RD 4 A	118	2
3	Stalingrad Defensive Operations	92 RB 62 A	149 RB 62 A	80	2
4	Defensive Operations around Lyuban	177 RD 54 A	80 RD 54 A	65	5
5	Defensive Operations around Kharkov	6 EB 69 A	305 RD 69 A	57	3
6	Nalckik-Ordzhonikidze Defensive Operation	338 RD 49 A	194 RD 49 A	60	9
7	Defensive Operations around Lyuban	177 RD 54 A	115 RD 54 A	63	13
8	Defensive Operations South/Southwest of Leningrad	168 RD 55 A	90 RD 55 A	51	1
9	Stalingrad Defensive Operations	120 RD 66 A	116 RD 66 A	58	11
10	Defense of Velikiye Luki and Toropets	153 RD 20 A	144 RD 20 A	46	2

Table A4.10: **Unit Pairs with Largest Differences in NKVD Presence** (Offensive Battles).

	Battle	Unit (T)	Unit (C)	NKVD (T)	NKVD (C)
1	Osovet's Offensive Operation	81 RC 50 A	69 RC 50 A	213.00	3.00
2	Berlin Offensive Operation	11 TC 5 SA	65 TB 5 SA	134.00	7.00
3	Offensive Operations around Lyuban	310 RD 4 A	44 RD 4 A	118.00	2.00
4	Stalingrad Counteroffensive	120 RD 66 A	299 RD 66 A	113.00	4.00
5	Krasnodar-Novorossiysk Offensive Operation	337 RD 58 A	77 RD 58 A	112.00	10.00
6	November Stalingrad Offensive Operation	120 RD 66 A	116 RD 66 A	113.00	11.00
7	Offensive Operations around Nalchik-Stavropol	337 RD 58 A	77 RD 58 A	112.00	12.00
8	Pskov-Ostrov Offensive Operation	291 RD 67 A	364 RD 67 A	95.00	8.00
9	Sinyavino offensive	265 RD 8 A	286 RD 8 A	82.00	1.00
10	November Stalingrad Offensive Operation	92 RB 62 A	149 RB 62 A	80.00	2.00

A4.3. Third Stage

From the top-10 list in Table A4.9, we manually selected a pair of matched rifle divisions for qualitative analysis. Here, we opted to err on the side of selecting well-documented cases, for which the archival record is relatively comprehensive and with which Western readers are more likely to be familiar. To these ends, we selected pair number 8: the 168th (treated) and 90th (control) Rifle Divisions, 55th Army, Battle of Leningrad, July-September 1941. This is the matched comparison that appears in the main text.

A4.4. *Additional Case Study Evidence: Offensive Operations*

Because the case studies in the main text focus on fratricidal coercion in the context of defensive operations, we replicated stage 3 with Rifle Divisions participating in offensive battles. To this end, we selected pair number 4 from Table A4.10: 120th (treated) and 299th (control) Rifle Divisions, 66th Army, Battle of Stalingrad, November-December 1942.

Stalingrad, November-December 1942 On 11 November 1942, the Soviet 66th Army was ordered to conduct offensive assaults on fortified German positions held by the encircled 6th Army on Stalingrad's northern flank. The six-week campaign was shocking for its brutality, marked by close-range combat in which tiny gains came at high cost.

Our two Rifle Divisions, the 120th and 299th, were both assigned to the 66th Army, as part of a larger effort along the Don front.⁴ Once again, these Divisions had similar features. They faced enemy troops from the same German units. They fought on the same terrain, had similar troop strength, weapons complement, and a shared military command. They differed, however, in the size of their NKVD contingents. The 120th had a large NKVD presence (113 officers) while the 299th had only four officers embedded. Note that the magnitude of this difference (109 officers) is roughly twice that of our first comparison (168th and 90th in Leningrad). We should therefore expect to see a more severe tradeoff between discipline and casualties.

This is indeed what we observe. There were sharp differences in the battlefield performance of these two units. As recorded by declassified personnel logs, the 120th suffered a far greater proportion of reported fatalities (90.7% to 42% KIA) than its counterpart. It also recorded far fewer soldiers as missing in action (6.8% vs. almost 24%) and POWs (0% to 0.78%) than the 299th. And, consistent with our expectations, personnel logs from the 120th record a greater share of punishment meted out by the NKVD (2.54%, compared to only 0.39%). Taken together, this paired comparison helps establish the presence of the discipline-casualty tradeoff for units engaged in offensive operations.

A5. Cross-National Battle-Level Data and Analyses, 1939-2011

Table A5.11 reports summary statistics for the [Lehmann and Zhukov \(2019\)](#) cross-national battle data, to which we added a variable from Project Mars indicating the presence of blocking detachments. Note that these statistics reflect the reduced sample used in the main text, which includes only ground battles, and excludes air and sea battles.

⁴The 120th comprised the 289th, 538th, and 543rd regiments, along with the 1033rd artillery unit. The 299th comprised the 956th (II), the 958th (II), and the 960th (II), along with the 843rd artillery unit.

Variable	Min	Max	Median	Mean	SD	N
Killed in Action	0	458080	387	7144.69	30984.86	662
Wounded in Action	0	1855603	201.5	13220.08	92512.4	524
Missing in Action	0	60000	0	424.59	3148.99	591
Prisoners of War	0	1199997	0	16025.31	85354.36	712
Commander Killed or Captured	0	1	0	0.03	0.18	1,517
Proportion of Force Lost	0	1	0.2	0.33	0.33	731
Loss-Exchange Ratio	0	851.61	1.21	12.89	56.35	658
Blocking Units	0	1	0	0.06	0.24	1,519
Initiator	0	1	1	0.55	0.5	1,517
Conscript Army	0	1	0	0.17	0.37	1,074
CINC Ratio	2e-04	481.28	0.72	4.83	22.7	815
Force Ratio	2e-04	59.52	0.8	1.82	4.06	861
Deployment Distance	0	28056.09	1914.3	5771.32	7385.49	1,200
More Democratic	0	1	0	0.48	0.5	1,519
Geneva	0	1	1	0.69	0.46	1,519
Opponent Geneva	0	1	1	0.63	0.46	1,517
Major Battle	0	1	0	0.21	0.41	1,213
WWII	0	1	0	0.34	0.47	1,519
Start Year	1939	2011	1966	1966.96	23.69	1,519
End Year	1939	2015	1966	1967.15	23.57	1,512
Winter	0	1	0	0.23	0.42	1,519
Spring	0	1	0	0.28	0.45	1,519
Summer	0	1	0	0.26	0.44	1,519
Fall	0	1	0	0.23	0.42	1,519

Table A5.11: Summary Statistics for Cross-National Battle-Level Data

A5.1. Estimation Strategy and Robustness Tests: Cross-National Battle-Level

We estimate Generalized Linear Models of the form

$$y_{ib}^{(k)} = \text{Block}_{ib}\beta + \mathbf{X}_{ib}\gamma + u_{ib} \quad (7)$$

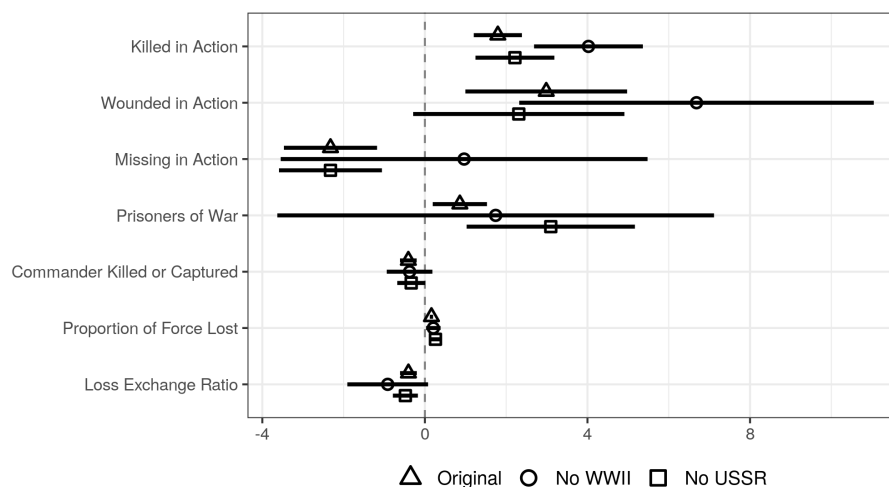
where i indexes belligerents, b indexes battles. $y_{ib}^{(k)}$ represents battlefield outcomes of type $k \in \{\text{killed in action, wounded in action, missing in action, prisoners of war, commander killed or captured, proportion of force lost, loss exchange ratio}\}$ for belligerent i in battle b .⁵ Block_{ib} indicates whether blocking detachments existed in i 's army at the time of b . u_{ib} are standard errors, clustered on the belligerent and conflict. \mathbf{X}_{ib} is a matrix of

⁵We used a logarithmic transformation for dependent variables that were heavily skewed (i.e. KIA, WIA, MIA, POW, LER), and rescaled the others (commander killed or captured, proportion of force lost) to have mean of zero and standard deviation of 1. We measure proportion of force lost as i 's total irrecoverable losses divided by i 's troop strength at beginning of campaign, and loss-exchange ratio as opponent's irrecoverable losses divided by i 's irrecoverable losses.

covariates, including: relative force ratio between i and its opponent in battle b , relative aggregate power balance (i.e. Composite Index of National Capabilities) between i and its opponent, i 's deployment distance, the start year for battle b , and indicator variables capturing whether i initiated the battle, whether i relied on conscription, whether i was more democratic (i.e. higher pre-war Polity2 score) than its opponent in battle b , whether i and i 's opponent had signed on to the Geneva Convention prior to b , whether b was a "major battle" (i.e. participating forces totaled at least 100,000 soldiers), whether b was part of World War II, and dummies for season of the year (winter, spring, summer, fall).

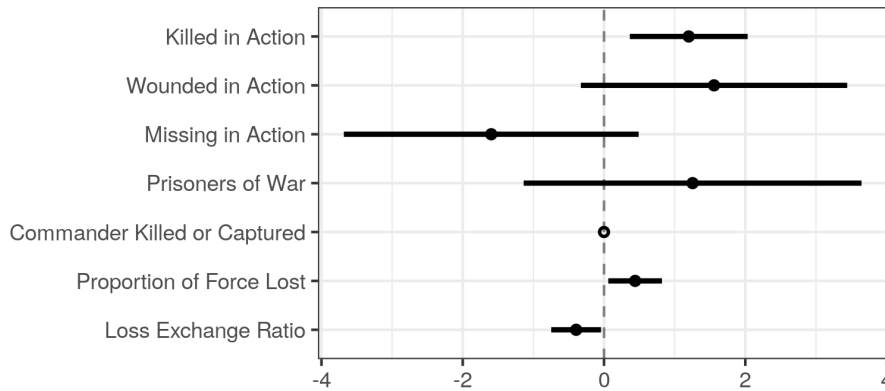
In addition to the baseline model estimates reported in the main text, Figure A5.6 reports the results of two robustness checks, which drop from the sample (a) all battles from the Eastern Front of WWII, and (b) all battles from WWII. Estimates remain positive and significant at 90% confidence or higher for KIA, WIA and Proportion of Force Lost in both reduced samples, while the estimate for LER remains negative and significant. The negative estimate for commanders killed or captured also remains significant at 90% confidence after dropping the Eastern Front (-0.34 , 90% CI: -0.63 , -0.04). Other results, notably MIA and POW, appear more sensitive to the change in sample.

Figure A5.6: Cross-National Battle-Level Robustness Tests



For consistency with the division-level analyses of Soviet army data, we also considered an mixed effects specification, where the error components of u_{ib} include both country-specific errors and idiosyncratic errors. These estimates, reported in Figure A5.7 are consistent in sign with those in the main text. However, several of the coefficients lose significance, including WIA, MIA POW and Commander Killed or Captured.

Figure A5.7: **Cross-National Battle-Level Mixed Effects Specification**



NOTE: country random effects; standard errors clustered by country and conflict.

While these additional analyses allow us to more confidently state that the increase in casualties associated with fratricidal coercion is not unique to the Soviet experience in WWII, cross-national evidence for coercion's deterrent effects on flight is inconclusive.

References

Lehmann, Todd and Yuri Zhukov. 2019. "Until the Bitter End? The Diffusion of Surrender Across Battles." *International Organization* 73(1):133–169.