Fratricidal Coercion in Modern War*

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Abstract

Armies as diverse as the Red Army, Syrian Arab Army, and the Islamic State have turned their weapons against their own soldiers to force them to fight. There is little systematic evidence on how this fratricidal coercion affects battlefield performance. We argue that such practices generate compliance through fear, compelling soldiers with variable levels of resolve to conform to a uniform standard of battlefield behavior. First, coercion keeps some reluctant soldiers on the battlefield. This reduces rates of desertion, disappearances, and premature surrender, but increases deaths and injuries, as these reluctant warriors now find themselves in harm's way. Second, fratricidal coercion lowers the resolve of more committed soldiers, leading to lost battlefield initiative, and fewer acts of bravery. We test our claims using a mixed-method strategy, drawing on (1) monthly panel data on 1,048 Soviet Rifle Divisions in 1941–45, built from millions of declassified personnel files; (2) a paired comparison of two Rifle Divisions at the Battle of Leningrad (1941); and (3) 526 land battles (1939–2011) to assess generalizability. We find that fratricidal coercion reduces battlefield flight but increases casualties and suppresses initiative.

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Six months into its full-scale invasion of Ukraine in February 2022, credible reports began surfacing that the Russian Army, along with its associated paramilitary formations, had started turning its weapons against its own soldiers. Frustrated by unexpected delay and rising indiscipline, Russian commanders reportedly reached for methods of shocking brutality to force reluctant soldiers to continue fighting. This toolkit of coercion has allegedly included the use of artillery fire against surrendering soldiers;[1] the torture and mock-execution of junior officers;[2] imprisonment in open-air pits for disciplinary infractions (and hostage payments to senior commanders);[3] executing deserters with sledgehammers;[4] withholding medical assistance to wounded soldiers, and even executing them;[5] and the forced incorporation of conscripts and convicts into penal battalions to hurl frontal assaults ("meat storms") against entrenched Ukrainian defenses, resulting in casualties as high as 80 percent of the entire unit.[6] Reviving Soviet-era practices, the Russian Army has reportedly fielded specialized "blocking detachments" to enforce compliance by threatening to shoot retreating soldiers.[7] "They placed barrier troops behind us," said one soldier, "and they weren't letting us leave our position."[8] As Anton, a Russian conscript, bluntly noted, "if we go back, they'll shoot us."[9]

[1] "The Russian Soldier Who Surrendered to a Ukrainian Drone," *Wall Street Journal*, 14 June 2023.

[2] "Russian Officer Accuses Wagner Group of Abductions, Torture of Russian Military Personnel," *RFE/RL*, 8 June 2023.

[3] UK Ministry of Defence Intelligence Update, 30 April 2023.

[4] "Video shows sledgehammer execution of Russian mercenary," *Reuters*, 13 November 2022.

[5] "Deadly and disposable: Wagner's brutal tactics in Ukraine revealed by intelligence report," *CNN*, 26 January 2023.

[6] "'They're just meat:' Russia deploys punishment battalions in echo of Stalin," *Reuters* 3 October 2023.

[7] UK Ministry of Defence Intelligence Update, 4 November 2022; "'Execution on the Spot' - Russian Commanders Threatening to Shoot Troops for Refusing to Fight," *Kyiv Post*, 14 March 2023; "General Staff: Russian national guard shoots own soldiers for planning to surrender to Ukraine," *The Kyiv Independent*, 8 January 2023.

[8] "Russian soldiers say commanders used 'barrier troops' to stop them retreating," *The Guardian*, 27 March 2023.

[9] "Tattered and Bandaged, Russian POWs Describe Ukraine's Offensive," *Wall Street Journal*, 17 June 2023.

Russia's alleged threat and use of violence against its own soldiers — what we term "fratricidal coercion" — may appear shocking. But it is neither novel nor unexpected. Armies as different as Confederate forces during the American Civil War, Chinese factions fighting during the 1916-1928 Warlord era, and Islamic State in Iraq (2015-2017) have converged on similar forms of fratricidal coercion on their respective battlefields. By one estimate, nearly one-third of all armies have fielded some type of blocking detachment in conventional wars since 1800.[10] Political scientists and historians have long acknowledged coercion's role in compelling soldiers to fight. Yet debate still exists around the effects, and effectiveness, of such tactics. Early scholarship on combat motivation and military effectiveness viewed armies, especially those in *ancien regime* Europe, as principally held together by the lash.[11] As John Keegan wrote, "men fight from fear of the consequences first of not fighting (i.e. punishment), then of not fighting well enough (i.e. slaughter)."[12] A new generation of research has instead argued that coercion, while perhaps a hallmark of an earlier age, is an "ineffective and unreliable instrument for motivation,"[13] one that is "not very good at the intended aim…it may not deter desertion but provoke it."[14] Prevailing theories of combat motivation now tend to emphasize positive inducements, like ideology and nationalism,[15] material incentives,[16] or primary group bonds.[17]

We argue that each camp has a measure of truth. Fratricidal coercion has cross-cutting battlefield effects: it renders soldiers more compliant and thus more uniform in their behavior, but at the cost of higher casualties and lower tactical initiative. Our argument

[10] Lyall 2020.

[11] On the importance of coercion for recruitment and cohesion, see Ardant du Picq (1904); Howard (2009); Duffy (1987); Best (1988, 32-33). For a critique of this literature, see Berkovich 2017, 17-54.

[12] Keegan (1976, 71).

[13] Hamner (2011, 3).

[14] McLauchlin (2020, 34).

[15] Posen (1993); Levi (1997); Lynn (2003); Reiter (2007); Castillo (2014).

[16] Lichbach (1998); Weinstein (2007); Berkovich (2017, 128-30).

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

hinges on viewing combat resolve as variable across soldiers. For soldiers with low resolve ("malcontents"), fratricidal coercion can create and sustain a credible threat of punishment for shirking, thus compelling them to fight. Soldiers with high resolve ("true believers"), however, will become alienated from fear that their efforts to exceed their formal orders will be punished by authorities wary of too much battlefield initiative. Fratricidal coercion thus reshapes the distribution of resolve within armies, driving those with low and high motivation toward a shared standard of perfunctory compliance. Our theoretical framework helps make sense of disparate findings about whether wartime coercion "works." We expect, for example, that such practices decrease the number of soldier disappearances and desertions, improving one measure of military effectiveness, but at the cost of increased casualties and dampened initiative — creating new battlefield vulnerabilities.

We test our claims using a three-pronged empirical strategy. We first draw on 34 million declassified personnel records of Red Army soldiers to create monthly panel data for 1,048 Rifle Divisions fighting on the Eastern Front (1941-45). We combine these data with declassified records on division-level secret police (NKVD) presence to test how fratricidal coercion affects battlefield outcomes, including killed (KIA) and wounded in action (WIA), prisoners of war (POW), missing in action (MIA), desertion, and medals for valor.[18] Second, we use declassified war logs, maps, personnel records, and divisional histories to process-trace how NKVD presence affected the tactical performance of two matched Rifle Divisions at the Battle of Leningrad (July–October 1941). Finally, we draw on crossnational evidence from 526 land battles (1939-2011) to explore how far our results travel.

Taken together, our evidence suggests that fratricidal coercion bolsters soldier compliance but does not improve — and, in some ways, worsens — battlefield performance. We find that Red Army divisions with larger NKVD contingents witnessed lower soldier in-

[18]NKVD is the Russian acronym for National Commissariat of Internal Affairs, the state security agency that oversaw blocking detachments in the Red Army.

discipline. Disappearances, desertions, defections, and surrenders all diminished as NVKD presence increased. Yet casualties also increased with NKVD presence. Medals for valor, an indicator of soldier initiative, were awarded at lower rates as the size of embedded NKVD units increased. Similarly, our paired comparison trace how the 168th Rifle Division's large NKVD detachment deterred would-be deserters while driving reluctant soldiers forward in savage frontal assaults, feats that the 90th's tiny NKVD detachment could not match. Still, individual soldiers in the 90th were more likely to receive medals for bravery than soldiers in the 168th. Our crossnational investigation yields similar patterns: blocking detachments are associated with fewer missing soldiers but also higher casualties and worse loss-exchange ratios. These findings suggest the need to jettison claims that coercion solely stiffens *or* debilitates resolve and instead consider its cross-cutting behavioral effects.

Fratricidal Coercion and Soldier Compliance

We define *fratricidal coercion* as the threatened or actual use of physical violence by military authorities and their representatives against their own soldiers in wartime. Fratricidal coercion has taken different forms historically, including forced labor and extrajudicial punishment for disobedience, the shelling of retreating or deserting soldiers, maiming, execution, and forcible return to the front. In some instances, fratricidal coercion has been the responsibility of specialized units with their own recruitment procedures. These so-called "blocking detachments" typically position themselves behind front-line units to prevent desertion or defection through the threat, or actual use, of violence. Not all efforts reach this level of organization, and desperate commanders frequently use ad hoc measures to push reluctant soldiers forward and cauterize the flow of deserters. We focus on blocking detachments as the clearest example of fratricidal coercion.

Why do armies resort to such extreme measures? We argue that fratricidal coercion

represents a simple but costly solution to the problem of variable soldier resolve. We begin with two assumptions. First, soldiers are rational and capable of evaluating the costs and benefits of fighting versus fleeing. Second, not all soldiers in an army are equally motivated to fight.[19] This latter point departs from much existing research on military effectiveness, which assumes that armies have solved basic mobilizational challenges and are reasonably cohesive organizations with little internal differentiation in soldier resolve.[20]

We follow recent theoretical work on combat motivation[21] by placing resolve on a broad spectrum from shirking (a desire to avoid combat) to initiative above and beyond one's call of duty. Multiple factors dictate a soldier's position on this spectrum. Some of these considerations are intrinsic (e.g. sense of duty, honor, ideological conviction), others are extrinsic (e.g. expectations of how others will perform, how authorities will react). Some considerations may predate the war, like prior exposure to state repression and discrimination.[22] Other considerations stem from wartime fighting conditions (e.g. loss rates, quality of food, shelter, combat pay). We focus on the latter set of considerations here.

Fratricidal coercion offers a potential means to maintain combat effort when soldiers' intrinsic motivation to fight is low. Visible displays of brutality can deter reluctant soldiers from fleeing, by updating their beliefs 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"). The threat of additional violence revises inclinations away from shirking and toward compliance, if only grudgingly.

Fratricidal coercion's effects are not uniform. For soldiers with high resolve, exposure to fratricidal coercion may increase alienation from authorities who threaten, or impose, these

[19] Lyall (2020, 41-62); Rozenas, Talibova and Zhukov (2023); Henn and Huff (2021).

[20] See, for example, Millett and Murray (1988); Posen (1993); Biddle (2004); Talmadge (2015); McNerney et al. (2018).

[21] Rozenas, Talibova and Zhukov (2023).

[22] Lyall (2020); Rozenas, Talibova and Zhukov (2023)

draconian punishments. These soldiers may be horrified by the regime's bloodthirstiness; they may also conclude that the war itself is illegitimate. Above all, these highly resolved soldiers may recognize that any perceived deviations from norms of appropriate conduct (including over-performance) will be punished, not rewarded, by authorities. Since modern battlefields are marked by noise and confusion, the application of fratricidal coercion may become collective in nature, lumping low and high resolve soldiers together. If true believers can be caught in the same net as malcontents, incentives are to dampen one's zeal for fear of punishment. Coercion, then, makes soldiers' behavior more uniform — making malcontents more compliant with orders, but also making true believers less likely to exceed these orders.

The push-forward, pull-back logic of fratricidal coercion generates multiple predictions for soldiers' battlefield outcomes. Since we cannot observe resolve directly, we follow the literature in viewing different categories of casualties as empirical realizations of this latent concept.[23] First, we anticipate a decrease in shirking — as captured by recorded instances of desertion and surrender. Such cases should decline as fratricidal coercion forecloses escape opportunities and pushes reluctant soldiers into the fight. Second, we expect soldiers' chances of being killed or wounded in action to increase with fratricidal coercion. Casualties and loss-exchange ratios (LERs) are driven by many factors, but it is reasonable to assume that soldiers who stay and fight face a higher immediate risk of physical trauma than those who flee. Third, we expect fewer medals for valor where coercion is high, as fratricidal coercion reduces incentives for highly motivated soldiers to draw attention to themselves by displaying initiative. As these competing forces of deterrence (for low resolve soldiers) and alienation (for high resolve ones) collide, the distribution of battlefield behaviors will favor perfunctory compliance over shirking or initiative.

Commanders will also feel the weight of fratricidal coercion. Fearing punishment for both their own performance and that of their unit, reluctant or battle-shy commanders

[23] Ager, Bursztyn and Voth (2022); Rozenas, Talibova and Zhukov (2023)

will feel more compelled to fight if blocking detachments are present. Bold commanders, meanwhile, may eschew ambitious but unproven tactics, so as to avoid becoming scapegoats in the event of failure. They may also avoid measures — like dispersion — that improve force protection but make soldiers harder to monitor and control. These decisions are intertwined with soldier resolve. If fratricidal coercion has indeed truncated soldier initiative, then ambitious tactics might be even more prone to fail, leaving forward-looking commanders to seek safety in conservative approaches. Forced frontal assaults, advances without sufficient supporting firepower, and a reluctance to disperse are all more likely when fratricidal coercion constrains tactical choices.

Finally, we expect the effects of fratricidal coercion to be observable at the battle level. Armies that deploy blocking detachments should experience fewer missing soldiers and POWs, but higher numbers of killed and wounded in action — in absolute terms and as a percentage of their pre-battle strength. We also expect loss-exchange ratios, the relative share of enemies killed to own soldiers killed, to be increasingly unfavorable (i.e. below parity) as an army's reliance on these units increases.[24]

These propositions are falsifiable. It is possible that fratricidal coercion has no discernible effect, being applied too sparingly or haphazardly to be a credible deterrent. Some armies might have such a large proportion of soldiers with low (high) morale that no amount of coercion can shift their resolve. It is also plausible that fratricidal coercion might accelerate an army's disintegration by encouraging soldiers to seek escape from indiscriminate punishment.[25] In this scenario, shirking would accelerate while casualties decrease, the opposite of what we expect. We remain open to the possibility that fratricidal coercion might increase, decrease, or have no effect on battlefield performance.

[24]The 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.

[25]Wesbrook (1980).

Empirical Strategy

We adopt a three-part empirical strategy. First, we draw on new microlevel data to explain how fratricidal coercion affected battlefield outcomes across combat units within the same army. We construct and analyze a monthly panel dataset of 1,048 Soviet Rifle Divisions during the Second World War (June 1941-May 1945), combining data from 105 million declassified Red Army personnel records with 25,079 secret police (NKVD) officer files. Second, we identify a matched pair of Rifle Divisions at the Battle of Leningrad (July-October 1941), and use divisional histories, maps, soldier letters, and operational logs to process trace how NKVD presence shaped multiple aspects of battlefield performance.[26] Third, we assess the external generalizability of our claims with a crossnational analysis of blocking detachments and battlefield outcomes in 526 land battles in 75 wars (1939-2011).

Each approach has strengths and weaknesses. Yet finding congruent patterns across such a diverse assortment of evidence should increase confidence in the internal and external validity of our findings. Given the difficulty of isolating fratricidal coercion's wartime effects, along with the likely non-random assignment of blocking detachments, we caution against a causal interpretation of our findings. To the extent possible, our empirical strategy seeks to screen out alternative explanations for battlefield performance, and tests the robustness of our findings to violations of key estimation and measurement assumptions.

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.[27] Due to its scale, it represents an outlier in the study of both fratricidal coercion and battlefield losses. This outlier

[26] On process tracing within matched pairs, see Lyall 2015.

[27] See, for example, Bartov (2001); Millett and Murray (1988); Reese (2011).

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. A within-country, within-army design 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 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.[28] An estimated five million more soldiers surrendered, disappeared, deserted, defected, or otherwise fled the battlefield. To prevent indiscipline, the military counterintelligence arm of Stalin's secret police — the NKVD's Directorate of Special Sections (OO) and its successor, "Death to Spies" (SMERSH) — took a series of prophylactic steps.[29]

Facing staggering attrition among front-line units, the NKVD resorted to manufacturing soldier compliance through coercion. Spinning an elaborate web of surveillance and censorship measures, the NKVD 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 downplay the effects of these units, pausing only to highlight their shocking nature before returning to blow-by-blow accounts of battles.[30] Nationalist Russian historians have

[28] Krivosheev (2001); Zemskov (2012).

[29] OO/SMERSH supplemented the wider system of monitoring and sanctioning in the RKKA, which included military prosecutors, penal and labor units, political commissars, and overlapping counterintelligence agencies. The NKVD oversaw much of this system. OO/SMERSH was responsible for identifying, detaining and (extra-judicially) punishing soldiers suspected of indiscipline.

[30] For example, Bartov (2001) — a classic work — omits any mention of blocking detachments. See Daines (2008); Lyall (2017) for reviews.

questioned the very existence of these units, dismissing them as exaggerations by Western historians seeking to denigrate Soviet war contributions (*degeroizatsiya*, or "deheroization").[31] Other historians have argued that NKVD executions were too infrequent and haphazard to create a credible deterrent. "Soldiers may have been afraid," writes Roger Reese, but "that does not explain the compliance of the majority of the army."[32]

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."[33] Alexander Statiev makes a similar observation, noting the "nearly unanimous opinion of Soviet veterans [that] the threat to be sent to a penal unit strengthen[ed] discipline."[34] A consortium of Russian military historians concluded that Stalin's Order No.227 ("Not a Step Back!", July 1942), which mandated blocking units in each army, played "a major role in increasing the resilience and military activity of Soviet forces [and] creating a turning point in the course of military operations."[35] David Glantz makes perhaps the strongest claim: "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."[36]

Data

We enter these debates by creating a new unit-level dataset on fratricidal coercion within the RKKA during the Great Patriotic War. Our dataset tracks 1,048 Red 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

[31] See, for example, Starikov (2014, 120-24).
[32] Reese (2011, 173).
[33] Merridale (2006, 317).
[34] Statiev (2010, 745).
[35] Zolotarev (1996, 330).
[36] Glantz (2005, 582).

of these observations (78%) are of Rifle Divisions (i.e. infantry).[37]

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 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 21,241 unique division-months. We have information on combat operations for 16,330 (77%) of these division-months.[38]

Measuring Battlefield Performance

We measure our dependent variable, the battlefield performance of Soviet Rifle Divisions, using declassified personnel records for 34 million RKKA soldiers. The primary source for these records is the Russian Ministry of Defense's *People's Memory* archive,[39] assembled and pre-processed by Rozenas, Talibova and Zhukov (2023). In total, this collection holds over 105 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 8,483,491 soldiers, including unit names, dates, and reasons

[37] We compiled this list using monthly orders-of-battle from Fes'kov, Kalashnikov and Golikov (2003).

[38] This 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.

[39] pamyat-naroda.ru, accessed December 25, 2023.

for discharge, allowing us to match records to specific divisions and months.[40]

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 six causes: death, injury, missing in action, capture, desertion, and punishment for misconduct. The "missing in action" category deserves special attention. 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 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.[41]

While this reporting practice was not universal, "missing in action" (MIA) became the second-most common loss designation (12% of an average division's monthly casualties, or approximately 137 soldiers per month), behind only killed in action (KIA, 39.6%, 549 soldiers per month) and ahead of prisoner of war (POW, 2.2%, 18 soldiers), wounded (WIA, 0.25%, 4 soldiers), desertion (0.2%, 1 soldier) and punishment (0.9%, 6 soldiers).[42] Soldiers who were honorably discharged or reassigned (i.e. finished their tours without death, injury, or misconduct) represent less than half of monthly discharge records (44.8%).

[40] Much of this missingness is due to incomplete or imprecise information, including missing unit details, illegible handwriting, or incomplete data entry for some fields (e.g. listing year of discharge but not month). Any inferences we draw rest on the assumption that missingness is distributed randomly across soldiers.

[41] https://www.newsru.com/russia/04feb2011/stalin.html

[42] These numbers reflect monthly losses for the average division, not cumulative losses over the war. Notably, the WIA statistic 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.

To measure soldiers' initiative in battle, we calculated the proportion of each division's personnel who received a valor decoration for combat service each month.[43] In an average division-month, 16.5% of personnel received at least one such decoration.

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 in the regular army and had authority to bypass military tribunals, detain and execute suspected deserters and stragglers. Special Sections were active from the first days of the war. Their duties intensified after September 1941, when Stalin demanded that a blocking company be organized in each rifle regiment. Regular soldiers under the command of NKVD OO officers staffed these companies, with a mission to patrol rear areas and "liquidate the instigators of panic and flight."[44]

Although most primary sources on the actions of blocking units remain classified,[45] we can measure the numerical presence of NKVD officers in each division. Our assumption is that units with a larger counterintelligence presence saw higher levels of monitoring and coercion against troops. Using declassified records on NKVD personnel, we extracted the service histories of the 25,079 officers who served in OO and SMERSH during the war, along with information on the army units to which they were assigned and when.[46] The number of OO/SMERSH personnel per division-month ranged from 0 to 243 (303rd

[43]Following Rozenas, Talibova and Zhukov (2023), we include only medals that recognized individual performance in situations involving a risk to life ("For Courage," "For Battle Merit," Order of Glory, Hero of the Soviet Union), and exclude decorations unrelated to combat performance, like career service awards, commemorative awards, battle participation awards and decorations awarded collectively to units.

[44]Statiev (2012, 487-488).

[45]Statiev (2012); Daines (2008).

[46]Our 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. We filtered these records to include only NKVD officers assigned to counterintelligence duties behind the front lines (OO or SMERSH).

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 army, which does not always correspond to operational tempo on the front. 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 .33 standard deviations apart) over the same time period (see Appendix A1).

What explains this variation in OO/SMERSH presence? If we regress the (logged) number of embedded OO/SMERSH personnel on the attributes of RKKA divisions, several patterns emerge (Appendix A1). First, there were more NKVD personnel in units where political authorities may have expected higher rates of flight. For example, the NKVD assigned many more officers to branches of the army where opportunities for direct contact with the enemy and crossing of front lines were more abundant. On average, Rifle Divisions (infantry) had almost twice as many NKVD personnel as armored or mechanized divisions, while engineering units had the smallest NKVD contingents of any unit type.

Second, units to which more NKVD officers were assigned were demographically different on several dimensions. There was a larger NKVD presence in units with a lower percentage of ethnic Russians, and whose troops were more geographically diverse, older and more rural.[47] These patterns reflect the idea that the NKVD devoted greater resources to monitoring soldiers from "politically suspect" backgrounds: minorities, peasants, and older soldiers with potentially longer exposure to pre-revolutionary institutions. They are

[47]We 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.

also consistent with the view that armies rely on harsher discipline where primary group bonds are harder to foster[48] — in this case, because soldiers were conscripted into the same unit from distant communities, with 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 and 227. With each passing month, the average division's OO/SMERSH contingent grew by 6 percentage points.

Statistical Analysis of NKVD Presence and Soviet Performance

Did fratricidal coercion matter for Soviet battlefield performance? Figure 1 reports estimates of the effect of NKVD presence on seven types of battlefield outcomes. Each line reports a coefficient estimate and 95% confidence interval from a separate three-way fixed effects model (Appendix A2), regressing the percentage of a division's monthly losses (i.s. KIA, WIA, MIA, POW, desertion, punishment) and medals on the number of OO/SMERSH personnel assigned to the unit at that time.[49]

All models account for the average demographics of a unit's soldiers (age, ethnicity, geographic diversity, and urbanization in soldiers' home towns), and allows each unit, battle and month to have a different baseline level of losses.[50] Point estimates represent

[48] Luttwak and Koehl (1991, 126-127).

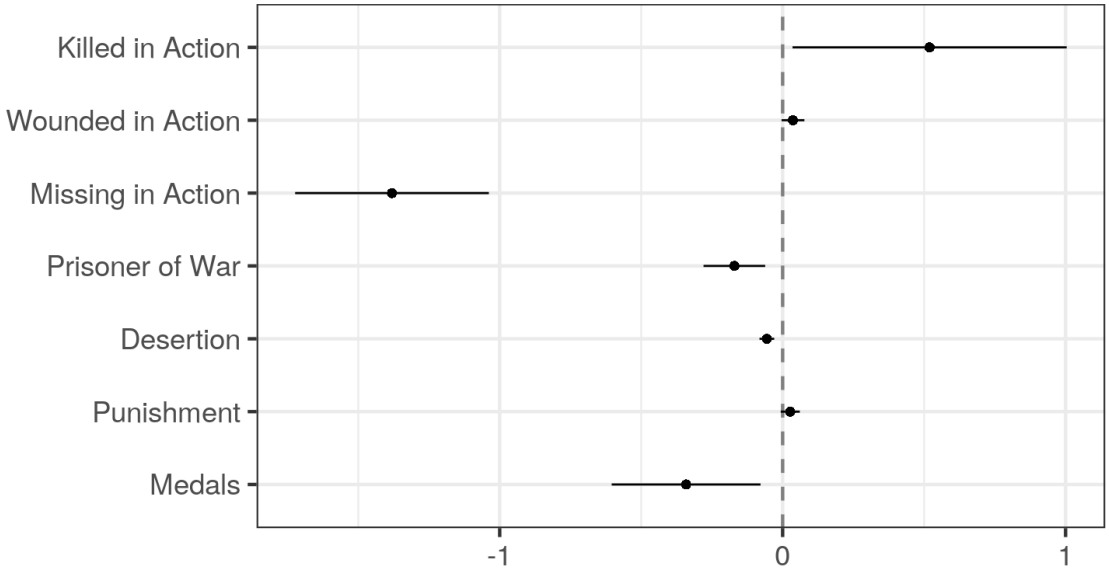
[49] We use absolute numbers of NKVD personnel, rather than per capita, on the assumption that the military units in our dataset are of similar division-level strength (8,000-12,000 troops). In Appendix A3, we present a sensitivity analysis that considers how variation in unit strength might affect our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

[50] Our baseline model specification is

$$y_{ijt}^{(k)} = \log(\text{NKVD}_{it})\beta + \mathbf{X}_{it}\gamma + \text{unit}_i + \text{battle}_j + \text{month}_t + \epsilon_{ijt} \quad (1)$$

where i indexes divisions, j indexes battles, and t indexes months (1-48). y_{ijt} is the percentage of a division's monthly losses that fall into category $k \in$ {KIA, WIA, MIA, POW, Desertion, Punishment, Medal}. NKVD_{it} is the number of OO/SMERSH personnel assigned to unit i at time t, log-transformed to reduce right skew. $\mathbf{X}_{it}$ is a matrix of covariates representing the average demographics of soldiers assigned to i, t. We weigh division-months by number of personnel reports, because casualty percentages are likely to be more accurately reported when more records are available.

Figure 1: **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.

the impact of doubling NKVD presence on the percentage point change in an average division's battlefield outcomes, by category. Estimates whose confidence intervals do not intersect the dashed line at zero are significant at the 95% level.

Figure 1 highlights several key findings. First, there is a significant negative relationship between fratricidal coercion and key categories of flight. Doubling OO/SMERSH presence within a division is associated with a 1.4 percentage point decline in the share of troops reported as missing in action in a given month, a .2 percentage point decline in troops reported as prisoners of war, and a .06 percentage point decline in desertions. The magnitude of these shifts is substantively meaningful. In an average division, this decline is equivalent to approximately $137 \times .014 = 2$ fewer soldiers missing each month.[51]

The negative result with respect to POWs is particularly striking. Considering that

[51] 137 is the average number of MIA cases per division-month.

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 NKVD scrutiny stop reporting POW's as MIAs, and begin to report them as POWs. In the latter, commanders continue to report most POWs as MIAs, but the "true" number of POWs nonetheless declines due to the NKVD's deterrence of surrendering troops. The negative estimate for POWs makes the first scenario appear unlikely, since the decline in reported MIAs is not accompanied by a significant increase in reported POWs. Indeed, the opposite is true. Taken together, these results suggest that NKVD presence actually decreased POWs (recorded as both MIAs and POWs); it is not an artifact of a shift in reporting.

Second, fratricidal coercion came at the cost of higher fatalities. Doubling OO/SMERSH presence within a unit increased the share of troops killed by .52 percentage points. For an average division-month, this increase is equivalent to approximately $549 \times .0052 = 3$ additional deaths each month.[52] This pattern suggests that soldiers who might otherwise have deserted or gone missing became marginally more likely to stay and die in battle. For every two soldiers whom the NKVD potentially deterred from fleeing, three soldiers died.

Third, in divisions with a larger NKVD presence, a significantly smaller share of soldiers received medals for valor (-0.34 percentage points). This latter finding casts doubt on the idea that coercive pressure universally increases the resolve of soldiers in combat. Had this been the case, we would observe not only a decline in flight — and the accompanying rise in fatalities — but also more acts of bravery. Instead, compliance appears to have come at the cost of individual initiative, with fewer soldiers daring to go beyond their call of duty.

Finally, we turn our attention to Red Army officers. Given the granularity of RKKA personnel records, we can isolate all individuals that held the rank of Junior Lieutenant (equivalent to a US Army O-1) or higher at the time of the unit-month observation. We re-

[52] 549 is the average number of KIA cases per division-month.

estimated our main specifications using only the records of commissioned officers (Appendix A3). We find, as expected, that officers behave in much the same fashion as rank-and-file soldiers when the NKVD is watching. All coefficient estimates are in the same direction as the general sample, although their magnitude varies by battlefield outcome. We observe a dampening of the estimated effect for all measures of flight, including MIA, desertion, and – especially – POW. Officers, in other words, might be insulated from the full brunt of NKVD effects, but their behavior was nonetheless influenced by the NKVD's presence.

We conduct a battery of robustness checks to address possible inferential challenges and alternative explanations. We discuss these and additional tests in the Appendix. We first used placebo tests that randomized the allocation of NKVD officers to test for their possible selective assignment to specific divisions (Appendix A3.1). We ran an extension of our multilevel models with time-varying coefficients to explore how the effect of fratricidal coercion changed over time (A3.2). We then used multiple methods, including simulations, to test whether unobserved variation in divisional strength, due perhaps to disease or heavy losses in prior battles, is driving our results (A3.3). We re-estimate our analyses using subsets of the RKKA data to isolate the first month of each division's deployment, with the assumption that units are most likely to be full strength when they first enter combat (A3.3). We then explore non-independence across divisions, due to learning by commanders or shared battlefield conditions among neighboring divisions (A3.4). In all but a few cases,[53] our results remain unchanged.

An additional concern, which we cannot directly test, is that our results might be artefacts of unreliable or biased Soviet administrative records. As with all administrative data, we urge readers to treat them not as comprehensive representations of objective truth, but as information collected by the government about that particular truth. These data are

[53]We find, for example, that all measures but KIA remain robust to possible peer effects. We also find that endogenous peer effects are stronger for some outcome (especially MIA and POW) than others (KIA, medal counts), a topic we leave for future research.

partial and imperfect, reflecting the Soviet authorities' finite, if impressive, capacity for record-keeping, as well as the mixed incentives reporting officials faced at the time. It is possible, however, to deduce the likely direction of such reporting biases. If NKVD presence made reporting more accurate, we might expect some relabeling of MIAs as POWs, resulting in a positive correlation between NKVD and POWs. We observe the opposite. If, by contrast, authorities were "cooking the books" to burnish the NKVD's image as enforcers, we would expect a negative correlation between NKVD and our measures of soldier flight. At first glance, this seems to track with our findings. But several caveats are in order. First, the RKKA, not the NKVD, reported casualties, and two agencies' reporting incentives didn't always align. Military commanders, chafing at NKVD oversight, had little incentive to release figures that made the NKVD look good if it meant further political interference in military affairs. Second, even if commanders were "cooking the books" in this way, it isn't clear why they left KIA and medal counts untouched. Unless misreporting only affected indicators of soldier flight, it cannot account for our results.

Part 2: Evidence from Matched Soviet Rifle Divisions

Our statistical results confirm our theoretical expectations, but they cannot shed light on the underlying mechanisms linking fratricidal coercion to battlefield behavior. We now undertake a close-range examination of two similar units, the 168th and 90th Rifle Divisions, which fought in the same frantic defensive operations during the Battle of Leningrad's opening phase (9 July–26 October 1941).[54] For case selection, we used statistical matching to construct a sample of 1,686 pairs of Rifle Divisions from the monthly panel data used above. We then extracted the "top 10" pairs with the largest disparities in NKVD

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

presence, and selected one of these pairs for qualitative analysis: the 168th and 90th Rifle Divisions in October 1941. Since the two divisions were also closely matched in September, we stitch together these monthly records to process trace how these units fought.[55]

Our approach controls for many factors that might explain possible differences in battlefield performance. These divisions were both members of the 55th Army, fought on the same Leningrad Front under the same army HQ, participated in some of the same battles, and had nearly identical organization, strength, and kit.[56] Both divisions had fought Finnish forces during the Winter War of 1939-40, and both were annihilated in the first days of the combined German-Finnish invasion in June 1941. They were then hastily re-assembled as understrength "second" formations to slow invading forces.

Though initially separated in the war's early days — the 168th was stationed near the Finnish border, the 90th near Riga — these Rifle Divisions both converged toward Leningrad as they fought desperate rearguard actions to escape encirclement in July and August 1941 (see Figure 2). By September, these divisions had each retreated nearly 250 kilometers and came to rest side-by-side near Kolpino on Leningrad's southern outskirts, 15 kilometers from the city center (see Figure 3). Each would spend October clinging to neighboring defensive positions, hoping to blunt the last gasp of the Nazi offensive before winter set in. Table 1 and Figures 2-4 summarize this comparison.

[55] Appendix A4 provides additional detail on the matching procedure and balance statistics.

[56] Each division included three regiments and two artillery units, plus support formations. The 168th comprised the 260th, 402nd, and 462nd regiments; the 90th included the 19th, 173rd, and 286th regiments.

Figure 2: **168th, 90th Rifle Divisions, 9 July – 26 October 1941**

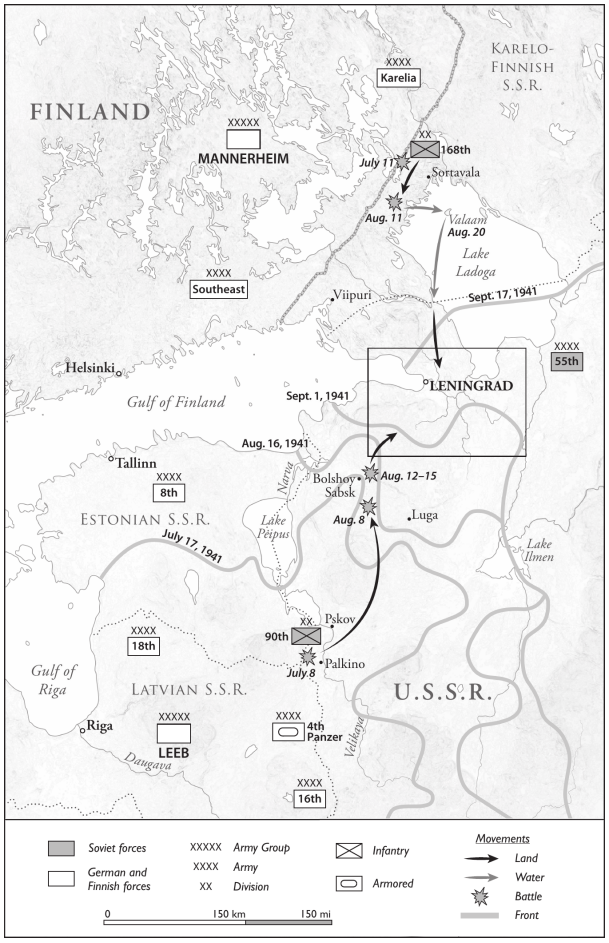


Figure 3: **168th, 90th Rifle Divisions, September 1941 (Detail)**

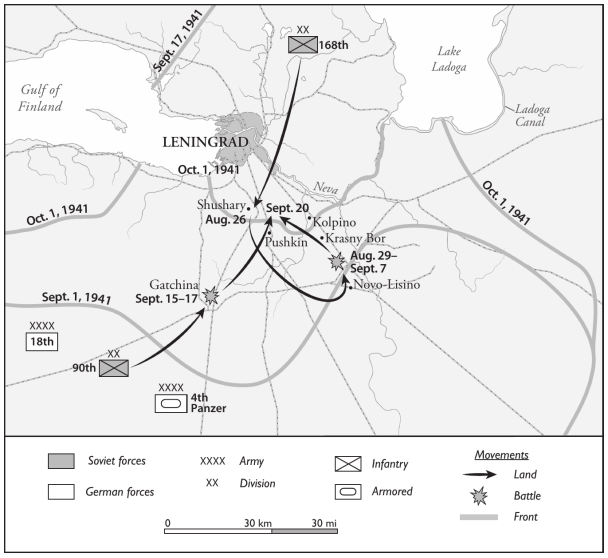


Figure 4: **168th, 90th Rifle Divisions, October 1941 (Detail)**

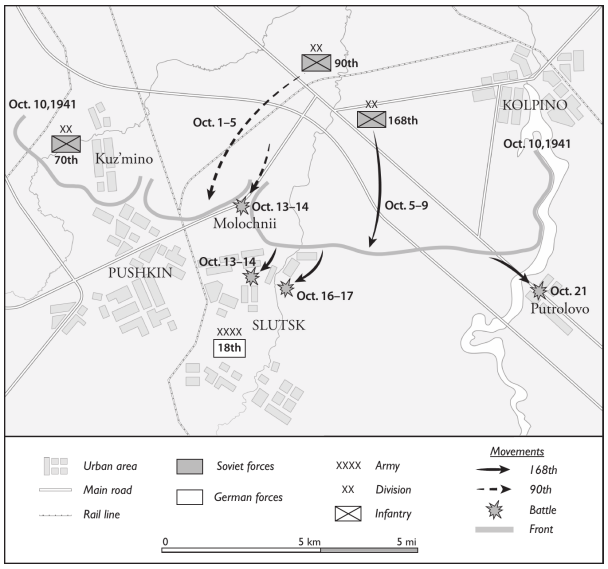


Table 1: **Paired Comparison: Battle of Leningrad (9 July–26 Oct.1941)**

	168th RD	*90th RD*	Difference
NKVD OO/SMERSH	57	1	56
Exact Matching			
Front	Leningrad	Leningrad	
Army	55th	55th	
Unit Type	Rifle Division	Rifle Division	
Additional Unit Traits			
Formation Date	1939	1936	
Formation	Second	Second	
Soldiers (*Approx.*)	10,000–13,654	10,000–10,258	0–3,396
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)	60–65	50–52	10–13
Force to Space Ratio (Linear km)	167–210	198–200	21–10
Force to Force Ratio (USR:GER)	1:2.5–1:3	1:2.5–1.3	0
Soldiers Per Vehicle	13–18	14–15	1–3
Support %	37%	31%	6%
Battlefield Performance			
KIA	33.87%	18.9%	14.97%
MIA	33.64%	34.12%	-0.48%
POW	3.66%	20.21%	-16.55%
Punish	1.14%	1.84%	-0.70%
Div. Commanders KIA	0	3	3
Medals for Valor	1.83	4.99	-3.16

NOTE: Battlefield performance indicators are derived from October 1941 declassified personnel records for the 168th (N=437) and 90th (N=381) Rifle Divisions. Estimates of divisional strength are drawn 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. Neither division reported any WIAs or desertions in October.

Despite these similarities, the two divisions performed very differently on their shared battlefield. In October 1941, the 168th reported a much larger share of soldiers killed in action (33.9%) than the 90th (18.9%). As expected, the trend reverses for prisoners of war: among soldiers whose fate was recorded, 20.2% of the 90th's personnel were reported as POWs, compared with only 3.7% from the 168th (see Table 1). A similar pattern holds for September 1941, when the 168th reported 30.6% of its soldiers KIA and 54% MIA, compared to 11.6% KIA and 73% MIA in the 90th. More generally, the 168th retained the ability to retreat in good order and even launch limited counterattacks. The 90th, by contrast, largely collapsed in August and September, and by October was only entrusted with a small sector of Leningrad's southern defenses. Reflecting this disarray, the 90th saw three of its commanding officers killed in battles in only three months; one survived only two days.[57] Notwithstanding these challenges, the 90th's soldiers exercised more initiative in battle than the 168th, as measured by medals for valor (5%, compared to 1.8%).

We attribute this divergence in battlefield performance to the size of the units' NKVD Special Sections. By October, the 168th had 57 NKVD officers; the 90th, only a single officer.[58] While NKVD officers were able to draw personnel from regular infantry regiments to augment their Special Section, the 90th had far less exposure to NKVD-directed fratricidal coercion. We uncover considerable evidence that NKVD presence in the 168th helped it retain greater organizational coherence and resilience than the 90th Rifle Division, albeit at terrible cost. With sufficient capacity to generate fear among commanders and soldiers, the 168th's 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 tactics with higher expected casualties, since soldiers had

[57] These commanders were Colonel I.I. Plyonkin (7 July-10 August); Colonel A.A. Dar'in (10-11 September); and Colonel A.I. Korolev (12 September-8 November). A fourth, Colonel Ivan Abramov (25 August-9 September), was sentenced to eight years hard labor by a tribunal for poor performance and cowardice.

[58] The comparable numbers for September 1941 are 51 and 1, respectively.

fewer opportunities to escape under NKVD monitoring.

We draw on a rich set of declassified materials to trace the effects of NKVD presence on soldier compliance and officer decision-making in July-October 1941. These include army, division, and regiment-level war logs detailing each battle,[59] collections of soldier letters and interviews,[60] contemporary newspaper articles, 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 NKVD OO records all pose inferential obstacles. Through careful triangulation across sources, however, we are able to lift the fog of war and reveal how variation in fratricidal coercion shaped multiple facets of battlefield performance.

The 168th Rifle Division (the "Bondarevskaya")

On 22 June, the 168th was stationed near the Soviet-Finnish border, some 20 kilometers outside the Soviet-controlled town of Sortavala.[61] Finland's much larger II Corps quickly overran the 168th. The Soviet High Command (Stavka) classified the division "destroyed in detail," and, on 4 July, assembled a motley collection of stragglers from other divisions, cadet formations from neighboring towns, and 10,000 reinforcements into the 168th's second formation. Led by Colonel A.L. Bondarev — the division would take his name ("Bondarevskaya") — the new 168th was tasked with slowing the Finnish advance. Through a series of desperate rearguard actions, the division managed to delay Finnish forces and, on occasion, reclaim lost ground through timely counteroffensives. Yet the crushing weight of Finnish numbers, along with the collapse of neighboring Rifle Divisions, forced the 168th

[59] We cite Leningrad Front (*LenF*) records using the Central Archive of the USSR Ministry of Defense (hereafter, TsAMO)'s Fond/Opis'/Delo/List classification system. For 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 F. 217, O. 1221, D. 204 and "Zhurnal boevykh deistvii voisk 55A," TsAMO F. 411, O. 10189, D. 38.

[60] Petrikeev (1994); Panteleev (2006).

[61] Originally attached to the 7th Army, the division transferred to the 55th Army (along with the 90th Rifle Division) on 4 September.

to retreat steadily toward Sortavala, near the northwestern shore of Lake Ladoga some 260 kilometers north of Leningrad. By 7 August, the division became encircled and cut off from Stavka. Its pocket collapsing, the 168th 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 many of their heavy weapons.[62]

From Valaam, the division next took up defensive positions south of Leningrad, near Pushkin and Kolpino. From 28 August to 7 September, the division launched counterattacks across a 30 kilometer front in at least five directions, recapturing two villages (Krasny Bor and Novo-Lisino) before falling back. By mid-September, the 168th, now accompanied by the 90th Division on its flank, had established a strong line of defense from Pushkin and Kolpino to Moskovskaya Slavyanka and Shushary on the outskirts of Leningrad (see Figure 3). Having conducted a nearly 300 kilometer fighting retreat, the division dug into defensive positions until the German offensive lost steam on 26 September.

This respite was short-lived. In early October, the 168th received orders to take up new fighting positions southeast of Kolpino, a small town astride major road and railway networks (see Figure 4). Fighting its way forward, often bitterly and in close quarters, the division drove German forces back. By 10 October, the 168th had carved out a 12–15 kilometer perimeter that protected the advances to Kolpino and Slutsk.[63] Over the next three weeks, the 168th launched local counterattacks at Pushkin (13–14 October), Slutsk (16–17 October), and Putrolovo (21 October). Though lacking the intensity of September's battles, these limited operations exacted an increasing toll on the 168th. The depleted division was pulled from the line on 25 October, ending its defense of Leningrad.

High compliance and an even higher tolerance for casualties were hallmarks of the 168th's combat operations. Unlike many of its counterparts, the division engaged in

[62] This account is based on 168th operational logs, especially "Khronika sobytii na LenF (s 11.7 po 29.8.41 goda)," TsAMO F. 217, O. 1221, D. 204 and Petrikeev (1994, 13-40).

[63] "Otchetnaya karta LenF na 10.10.41.g.," TsAMO F. 217, O. 1221, D. 473; Petrikeev (1994, 40).

dogged counterattacks, with villages changing hands repeatedly as Finnish and German forces slowly crept forward. II Corps, for example, averaged a 1–2 kilometer daily advance rate against the 168th despite its 3:1 advantage in troops and tanks. Postwar Soviet instructional texts and memoirs singled out the division's operations in July and August as textbook examples of rearguard operations.[64] "Each of the soldiers in 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 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."[65]

This organizational resilience helped the 168th purchase temporary battlefield gains. But the cost was high. On numerous occasions, Bondarev ordered local counterattacks without preparatory artillery bombardment, even when such fires were available and considered necessary by his junior officers.[66] On July 29, for example, he ordered an attack on larger German forces near Sortavala without artillery support and without waiting for tanks from the 198th Motorized Rifle Division that he personally requested. The assault quickly stalled. Soldiers, including many who reported reaching their "breaking point," were thrown into counteroffensives and forced to advance.[67] 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.[68]

[64] Sycheva and Malakhova (1954, 443-46); Zhukov (2013, 86).

[65] Quoted in Petrikeev 1994, 37.

[66] Sycheva and Malakhova (1954).

[67] See especially the letter by I.A. Ivanutin, "Metkie zalpy artilleristov-bondarevtsev," in Petrikeev (1994, 193-95). For a graphic (and official) report of soldier living conditions in early September, see "Vashe razporyazhenie mne sovershenno neponyatno," TsAMO F. 411; O. 10189; D. 14, L. 2.

[68] 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 Petrikeev (1994, 17, 179).

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 all your might!"[69] In at least one instance, 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."[70] Commanders and soldiers alike recall frequent encounters with armed Special Section detachments that were sealing potential escape routes, typically during counterattacks.[71]

We shouldn't overstate 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.[72] But Special Sections could still deliver a powerful deterrent to indiscipline, particularly in the later stages of 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

[69] V.A. Aleksandrov, "Na legendarnom 'pyatachke,"' in Petrikeev (1994, 113).

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

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

[72] Letter 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.[73]

The General Staff recognized that the 168th offered a powerful example, and warning, to other divisions. Journalists were ordered to embed within the division to extol its reputation for new-found resolve.[74] A poem was commissioned for external consumption.[75] War correspondents routinely cited the division's exploits, gained at terrible (self-inflicted) cost, as examples to be emulated by other divisions.[76] *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 its immediate victims.[77]

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 fell off the Soviet order of battle even as its remaining soldiers fought to escape encirclement. On 4 July near the Russian city of Pskov, a new 90th Rifle Division formed from surviving troops and 10,000 reinforcements. The 90th was back in combat by July 8, seeking to drive back, or at least slow, advancing German armored units. It saw little success; its regiments quickly scattered, forced to fight a series of rearguard actions largely in isolation from one another. The steady drumbeat of battlefield setbacks halted

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

[74] See, 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.

[75] "Pesnya o bondarevtsakh," originally from *Na strazhe Rodiny*, reproduced in Petrikeev (1994, 34-35).

[76] Letter by Lt. Colonel L.I. Malikin reproduced from Petrikeev (1994) and reproduced at http://centralsector.narod.ru/arch/168_2.htm.

[77] Quoted in Petrikeev (1994, 36).

periodically during sustained battles at Luga (8 August) and Bolshoy Sabsk (12–15 August). Regiments and smaller groups, some 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 nearly shattered 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.[78]

Official records indicate that the 90th had a much smaller NKVD presence than the 168th. Having been reconstituted as a division about four days before it was set back to the front, the 90th left its NKVD Special Section largely behind, and had not organized many of its ideological tools, including divisional newspapers and political sessions, before combat began.[79] Opportunities for desertion and surrender quickly emerged. In a telling omission, there is almost no mention of any NKVD presence in soldiers' letters or postwar testimonies. While commanders and soldiers remember the propagation of Stalin's Order 272, members of the 90th, unlike the 168th, recall little by way of ideological training sessions or overt propaganda.[80] We found only a single recorded instance where soldiers fleeing toward rear staging areas came across a Special Section, an encounter they described as unexpected.[81] Standing orders to avoid roads ("Everyone who retreated along the highway died"[82]) and move through forests compounded the NKVD's monitoring problem. The NKVD was too

[78]This account is based on Panteleev (2006, 9-34) and operational war-logs, including "Vypiska iz zhurnal boevykh deistvii 173 sp 90 sd," TsAMO F. 1253; O. 1; D. 65.
[79]Letter by I.V. Grigorii, reproduced in Panteleev 2006, 263-65.
[80]Letter by A.N. Klimov, reproduced in Panteleev 2006, 98-99.
[81]Letter by N.A. Panteleev, reproduced in Panteleev 2006, 301-04.
[82]Letter by V.I. Volkov, reproduced in Panteleev 2006, 231-32.

few in number, and the division too scattered, for deterrence to be credible.

Indeed, the 90th struggled to maintain 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 on 9 July.[83] War logs and soldier testimonies 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."[84] Soldier testimonies contain many references to communication difficulties: "Where are the regiments, where's the rear, where's the divisional staff?"[85] Command posts were often abandoned as quickly as they were created; in one instance, retreating soldiers set fire to their command post to prevent sensitive documents from falling into German hands.[86]

Some battalions reported that only one-third of their officers were still alive by mid-August.[87] 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." One rifleman recalled a common joke that soldiers should simply arrest their officers so they would be able to find them.[88]

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,

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

[84] "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.

[85] Panteleev 2006, 159.

[86] Letter by L.A. Kleptsov in Panteleev 2006, 185.

[87] Letter by N.D. Sovin in Panteleev 2006, 191,107.

[88] Letter by N.A. Kurganovich in Panteleev 2006, 213-16.

these embattled soldiers began to flee.[89] "We have had no contact with the rear, with other regiments, or with divisional staff," one soldier recounted.[90] Surrender was openly broached; "Our situation is without hope," wrote one soldier.[91] Rumors of suicide became rife. Other soldiers doffed their uniforms, seeking to escape German patrols in civilian clothes.[92] Desertion, too, became more common.[93] Ironically, the 90th's disintegration into small groups created opportunities for heroic actions as (some) soldiers fought their way out of encirclement. These isolated actions, facilitated in part by the relative absence of blocking detachments, were rewarded with over twice as many medals for valor as soldiers in the 168th received in the same month.

The 90th Rifle Division experienced a modest reversal of fortune in mid-September. To reassemble scattered units and reunite wayward soldiers with their divisions, the Red Army established roadside blocking detachments along Leningrad's southern approaches, including near Kolpino, Pushkin, Moskovskaya Slovyanka and neighboring villages. On 14 September, the remnants of the 90th tried to break out of 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 to receive orders.[94] For two days, remaining officers tried to organize a last push to slip past closing German forces; dozens died, while hundreds went missing.[95]

On the night of 17 September, the division's lead elements met blocking detachments at Shushary state farm near Kolpino. Over two days, NKVD forces helped rebuild the 90th, assigning replacement officers and adding some 10,000 reinforcements to the division's

[89] See, for example, the letter by P.K. Mishura in Panteleev 2006, 193-200 and by M.A. Svetil'nikov in Panteleev 2006, 178-84.
[90] Quoted in Panteleev 2006, 105.
[91] Letter by P.K. Mishura in Panteleev 2006, 198.
[92] *Ibid.*, p.199.
[93] Letter by I.F. Andrianov in Panteleev 2006, 52.
[94] Letter by M.A. Svetil'nikov in Panteleev 2006, 178-84.
[95] *Ibid.*, pp.182-83.

roster.[96] As one soldier noted, "the division became whole again."[97] Fittingly, the division's war log records the reinforcements, but makes no mention of the NKVD's role.[98]

The NKVD parted ways with the 90th around 21 September, leaving the division with only a lone NKVD officer and a skeleton crew of blocking soldiers. The 90th again struggled to maintain cohesion, let alone fulfill the near-daily requests by 55th Army headquarters to launch counterattacks. In early October, the 90th received orders to fight its way to new defensive positions southwest of Kolpino (see Figure 4.) Already understrength, the 90th limped its way south, its path littered with a trail of increasingly desperate requests for soldiers and (especially) officers, weapons, air support, and food.[99] While the 90th suffered significantly fewer fatalities than the 168th (as a share of its combat strength), a steady stream of its soldiers went missing or became POWs, depleting the ranks. One status report from 10 October, countersigned by the 90th's commander and political commissar, claims only around 600 soldiers remained available for duty.[100] Unable to muster the cohesion or strength of the neighboring 168th, the 90th was pulled from the line on 25 October.

Part 3: Evidence from Cross-National Battle Data

Do our findings generalize beyond the Eastern Front? We answer this question by merging data from Project Mars (Lyall, 2020) on blocking detachments with cross-national battle data assembled by Lehmann and Zhukov (2019). This dataset includes 526 land battle

[96] '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 and Letter by V.S. Yakovlevich, reproduced at http://www.polk.ru/forum/index.php?showtopic=2194.

[97] Quoted in Panteleev 2006, 107.

[98] "Vypiska iz zhurnal boevykh deistvii 173 sp 90 sd," TsAMO F. 1253, O. 1, D. 65, L. 31-32.

[99] The Division's official history mostly passes over this period in silence, noting that "it was a most difficult, hungry, and unpleasant time" and "there was never a worse situation." Panteleev 2006, 12.

[100] "Svedeniya," 18.10.1941g, TsAMO, F. 1253, O. 1, D. 54.

from 75 wars involving 185 belligerents, covering 83 percent of interstate wars recorded in Correlates of War between 1939 and 2011.[101] Each observation contains information on losses, including KIA, WIA, MIA, POW, and loss-exchange ratios. With the exception of medals, these measures mirror our RKKA analyses, facilitating a direct comparison.

We fit a generalized linear model (Appendix A5), regressing belligerents' casualties on an indicator of blocking detachment presence, and a battery of belligerent- and battle-level covariates.[102] Figure 5 reports average marginal effects estimates, capturing how the presence of blocking detachments affects battlefield performance.[103] Consistent with our RKKA findings, armies that field blocking detachments experience fewer MIAs, but also more KIAs, WIAs, and higher overall casualties as a proportion of initial troop strength.

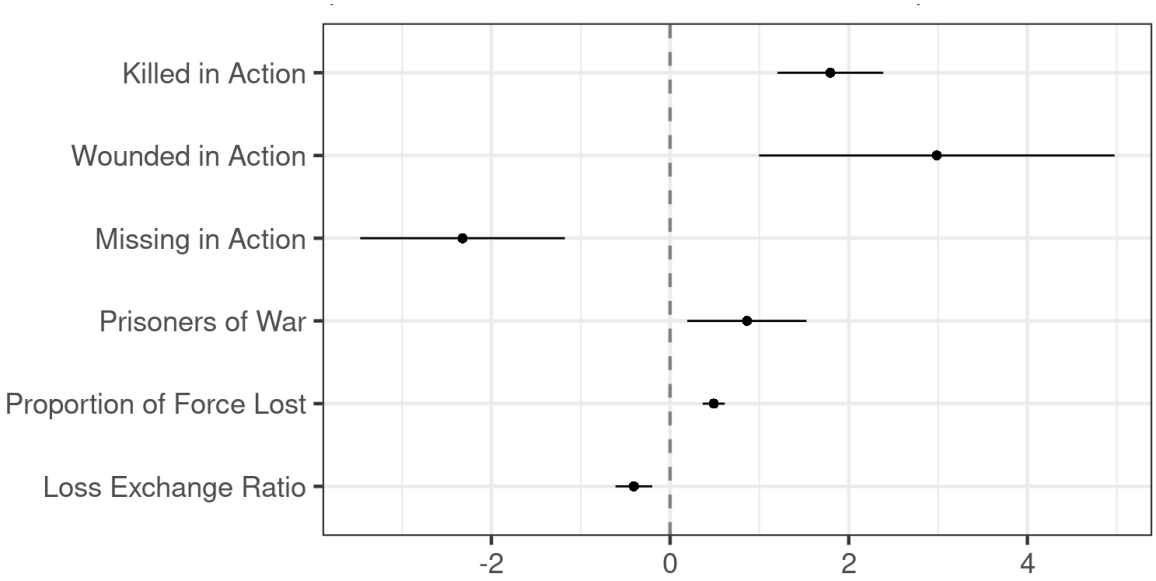
The only result inconsistent with our Soviet findings is the estimate for POWs, which appears positive and statistically significant here. This discrepancy is likely due to three factors. First, it may reflect heterogeneity across different measures of fratricidal coercion. Our battle-level analyses 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 reporting differences: Soviet commanders, as noted above, routinely recorded POWs as MIAs for political reasons, a dynamic not necessarily present in other armies. Third, the meaning and valence of POW status varies across belligerents: most armies do not view falling into captivity as a disreputable act, provided soldiers fought until they exhausted other options. Indeed,

[101] 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.

[102] Covariates include: force ratio, deployment distance, initiator dummy, recruitment type (conscript or volunteer), relative state power (from COW's Composite Index of National Capability), relative regime type (whether a belligerent was more democratic than its opponent), whether each side had signed the Geneva Convention, and an indicator for large battles with $\geq$100,000 soldiers. We also include indicators for WWII, year of battle, and seasons (winter, spring, summer).

[103] Our results are robust to dropping WWII and Eastern Front observations as well as the use of belligerent-level random effects (Appendix A5).

Figure 5: **Impact of Fratricidal Coercion across 526 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

multiple countries award decorations for soldiers held captive, including the Prisoner of War Medal in the US. Our data support this latter possibility: the POW result loses significance once we drop WWII or include belligerent-specific effects (Appendix A5).

Our Soviet and cross-national evidence converge on the same finding: fratricidal coercion increases an army's own casualties. What remains unclear, however, is the effect on relative casualties. Given the absence of detailed Wehrmacht divisional records, we cannot capture how the interaction of German and Soviet forces might condition the effects of blocking detachments. Coercion might, for example, increase one's own casualties but, by forcing soldiers to stand and fight, inflict even higher casualties on enemy forces.

We evaluate this possibility by running additional cross-national analyses, this time with loss-exchange ratios (LER) as our dependent variable.[104] A higher LER indicates

[104]We define LER as irrecoverable enemy losses divided by irrecoverable friendly losses.

greater military effectiveness, in the narrow sense of inflicting relatively higher losses on enemy forces than the enemy inflicts on one's own.

As the bottom row of Figure 5 shows, armies with blocking units tend to experience significantly *lower* loss-exchange ratios: they suffer more casualties themselves than they inflict on their enemies. While fratricidal coercion might prevent soldiers from fleeing, it does not appear to yield broader tactical advantages. If anything, it tends to make battles deadlier for friendly troops than for their adversaries. These armies are, in effect, purchasing discipline at the cost of combat power, exposing friendly soldiers to greater harm while failing to impose comparable harm on the enemy.

Conclusion

We conclude with a normative plea: our findings should not be read as endorsing the use of blocking detachments or, more generally, fratricidal coercion, to manufacture soldier resolve. Our evidence clearly demonstrates that these units sharply increase one's own casualties and stifle battlefield initiative. It is true that driving soldiers forward at gunpoint reduces indiscipline, as measured by disappearances, desertion, and capture. But we make no claim that fratricidal violence offers a pathway to battlefield victory, let alone victory in war. Indeed, it likely makes certain types of modern warfare infeasible (e.g. actions requiring rapid decision cycles, small-unit initiative, dispersal).[105] Fratricidal coercion offers merely the hope of warding off collapse while certain delivering death and injury to one's own soldiers.

Our grim contention — that fratricidal coercion is a costly solution to the problem of uneven soldier resolve — suggests several new theoretical avenues for future research. Above all, our findings illustrate the need to explore how soldier identities and past ex-

[105] Biddle (2004).

posure to state discrimination and repression can shape the distribution of resolve within (and across) armies. New theoretical ground could be broken, for example, by exploring how fratricidal coercion interacts with different group identities to explain variation in the credibility and effectiveness of deterrent threats within and across units. We know little of how fratricidal coercion amplifies, or undermines, other non-punitive motivational strategies, including ideological appeals and the disbursement of battlefield spoils. Similarly, our findings hint at the possibility that blocking detachments have spillover effects on neighboring units. Stories and rumors of fratricidal violence might ricochet through soldier networks, deterring indiscipline even if blocking detachments are far afield.

The data we marshaled here represents only an initial foray into understanding the empirical nature of fratricidal coercion within and across armies over time. There is pressing need, for example, to collect new information on the size, recruitment patterns, battlefield roles, and lethality of blocking units. Even more ambitious efforts might extend data collection to other forms of fratricidal coercion, including extra-judicial executions, the use of penal and labor battalions, and corporal punishment, to facilitate comparison of coercive practices across armies. How soldiers resist or otherwise subvert these coercive mechanisms remains an open question, one that might necessitate a shift toward viewing soldiers not as automatons but victims. Insurgent organizations face similar problems of control and discipline; some, including ISIS, have even fielded blocking detachments. Data collection on fratricidal coercion might offer a bridge that unites the study of armies and rebels.

Our findings also have policy implications. Prevailing frameworks for estimating the military effectiveness of adversaries (i.e. net assessment) ignore the possibility of fratricidal coercion entirely. Given this neglect, analysts might simply miss its emergence on the battlefield or dismiss its importance. Yet, as we have seen, these measures can boost an army's resilience by preventing wholesale disintegration, an unwelcome surprise for those interpreting its use as a sign of pending collapse. That said, the vulnerabilities

introduced by reliance on fratricidal coercion are real; they can be exploited by militaries and intelligence agencies if they primed to look for its cross-cutting battlefield effects. Commanders might, for example, target their adversary's coercive apparatus to create new avenues for desperate and disillusioned soldiers to flee. Social media could be harnessed to stoke further resentment among aggrieved soldiers, raising the costs of imposing fratricidal coercion. Armies might also do nothing, content to watch a hated foe waste blood and treasure trying to hold itself together. Far from a relic of a bygone era, fratricidal coercion remains a persistent feature of modern war, one that both scholars and policymakers would do well to reintroduce to their theories of war and military effectiveness.

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Appendices: "Fratricidal Coercion in Modern War"

Contents

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.

A1.1. What Predicts NKVD Presence?

Table A1.2 reports coefficient estimates from a regression of NKVD presence on the attributes of RKKA division-months:

$$\log(\text{NKVD}_{it}) = \mathbf{X}_{it}\gamma + \text{Army}_i + \epsilon_{it} \tag{1}$$

where i indexes divisions and t indexes months. The matrix $\mathbf{X}_{it}$ includes an index for month of the war, dummy variables indicating unit type (armor/mechanized [omitted category], artillery/anti-air defense, aviation, engineer, rifle), the unit's share of ethnic Russians, geographic diversity (average distance between the birth locations of two soldiers serving in the same unit at the same time), average age of the unit's personnel, and the level of urbanization and population density at the birth location of the average soldier. Army_i is a fixed effect for division i's parent army.

Taken together, the patterns in Table A1.2 suggest that the NKVD assigned more personnel to units where they may have expected higher rates of flight. There were more NKVD officers embedded in Rifle Divisions (infantry) than in other types of units, where opportunities to cross the front lines were more limited. There was a larger NKVD presence in units with a lower percentage of ethnic Russians, and whose troops were more geographically diverse and older.

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: **Predictors of NKVD Presence**. Dependent variable is logged number of OO/SMERSH personnel assigned to each division-month. Observations weighted by number of monthly discharge records. Percentage point change calculated as $(e^{\hat{\beta}} - 1) \times 100$.

Variable	Coefficient (95% CI)	Pct.Change
Month of war	0.06	6.1
	(0.1, 0.1)	
Artillery/AAD	−0.23	−20.8
	(−0.6, 0.1)	
Aviation	0.25	28.5
	(−0.6, 1.1)	
Engineer	−2.35	−90.5
	(−3.5, −1.2)	
Rifle	0.6	82.2
	(0.3, 0.9)	
Pct.Russian	−0.004	−0.4
	(−0.01, −0.002)	
Geo.Diversity	0.0001	0.01
	(0.00009, 0.0002)	
Avg.Age	0.07	7.3
	(0.1, 0.1)	
Urbanization	−0.002	−0.2
	(−0.004, 0.001)	
Pop.Density	0.001	0.1
	(0.00007, 0.001)	
AIC	59055	
Army FE	150	
N	19287	

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 regression models of the form

$$y_{ijt}^{(k)} = \log(\text{NKVD}_{it})\beta + \mathbf{X}_{it}\gamma + \text{unit}_i + \text{battle}_j + \text{month}_t + \epsilon_{ijt} \tag{2}$$

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 $k \in$ {KIA, WIA, MIA, POW, Desertion, Punishment, Medal}. 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 specification also includes unit-specific, battle-specific and month-specific intercepts, 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 $\text{unit}_i, \text{battle}_j, \text{month}_t$. 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 able to reject this hypothesis at the $p < .05$ level in all specifications, indicating that fixed effects are more appropriate.

Tables A2.3 and A2.4 report coefficient estimates and 95% confidence intervals for our fixed and random effects models, respectively. Table A2.3 corresponds to the estimates in Figure 1 (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. Hausman test statistics reach statistical significance at the 5% level in all models, indicating correlation between unobserved effects and explanatory variables. By implication, only the FE estimates are consistent.

Table A2.3: **Coefficient Estimates for Three-Way Fixed Effects Models**. Observations weighted by number of discharge records per unit-month. Null hypothesis for Hausman test: random effects model is consistent.

Outcome	**KIA**	**WIA**	**MIA**	**POW**	**Desert**	**Punish**	**Medals**
Estimate	0.519	0.036	-1.381	-0.171	-0.056	0.027	-0.341
95% CI	(0.03,1)	(-0.004,0.1)	(-1.7,-1)	(-0.3,-0.1)	(-0.1,-0.03)	(-0.01,0.1)	(-0.6,-0.1)
Avg.Age	2.1	-0.1	0.2	-0.4	0.01	-0.1	-1.1
	(1.5,2.7)	(-0.1,-0.002)	(-0.2,0.6)	(-0.6,-0.3)	(-0.02,0.04)	(-0.1,-0.01)	(-1.4,-0.8)
Geo.Diversity	2.3	0.05	-1.1	-0.3	-0.01	0.1	0.3
	(1.8,2.8)	(0.005,0.1)	(-1.4,-0.7)	(-0.4,-0.2)	(-0.04,0.02)	(0.03,0.1)	(0.03,0.6)
Pct.Russian	-0.3	-0.1	-2.9	0.2	-0.03	-0.1	4
	(-1,0.4)	(-0.2,-0.04)	(-3.4,-2.4)	(-5e-04,0.3)	(-0.1,0.01)	(-0.1,-0.002)	(3.6,4.4)
Pop.Density	-1.5	-0.01	-1.2	0.7	0.01	0.1	-0.1
	(-2.2,-0.7)	(-0.1,0.05)	(-1.7,-0.7)	(0.5,0.8)	(-0.03,0.05)	(0.1,0.2)	(-0.5,0.3)
Urbanization	2.9	0.03	-1.1	-0.5	6e-04	-0.1	0.1
	(2.2,3.5)	(-0.03,0.1)	(-1.6,-0.6)	(-0.6,-0.3)	(-0.04,0.04)	(-0.1,-0.03)	(-0.3,0.5)
Hausman p	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
AIC	132770.4	56932.7	120727.5	90011.6	48213.6	62769.6	114898.1
Unit FE	982	982	982	982	982	982	982
Battle FE	129	129	129	129	129	129	129
Month FE	47	47	47	47	47	47	47
N	15142	15142	15142	15142	15142	15142	15142

Table A2.4: **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.

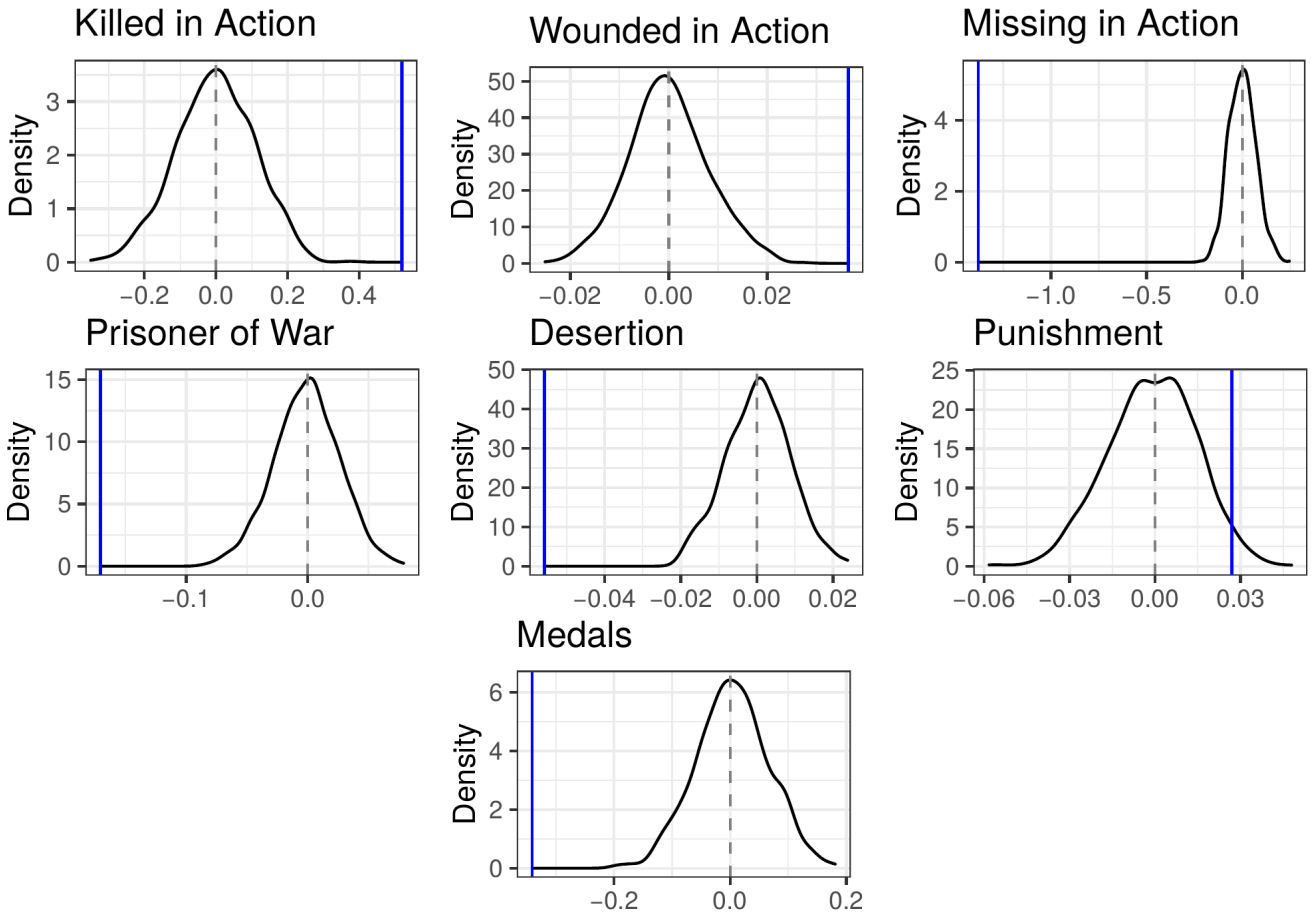
Outcome	KIA	WIA	MIA	POW	Desert	Punish	Medals
Estimate	1.253	0.008	-1.01	-0.014	-0.018	0.025	-0.399
95% CI	(0.9,1.6)	(-0.02,0.04)	(-1.3,-0.8)	(-0.1,0.1)	(-0.03,-0.01)	(0.01,0.04)	(-0.6,-0.2)
Avg.Age	2.7	-0.02	-0.1	-0.4	0.03	0.003	-1.2
	(2.2,3.3)	(-0.1,0.02)	(-0.4,0.3)	(-0.5,-0.2)	(0.001,0.1)	(-0.03,0.04)	(-1.5,-0.9)
Geo.Diversity	2.7	0.05	-1.3	-0.3	-0.02	0.03	0.4
	(2.2,3.1)	(0.01,0.1)	(-1.6,-0.9)	(-0.4,-0.2)	(-0.04,-0.001)	(0.004,0.1)	(0.1,0.6)
Pct.Russian	-0.2	-0.1	-3.2	-0.1	-0.1	0.04	3.7
	(-0.8,0.5)	(-0.1,-0.01)	(-3.7,-2.8)	(-0.3,0.002)	(-0.1,-0.05)	(0.002,0.1)	(3.3,4.1)
Pop.Density	-1.4	-0.02	-1.2	0.6	0.003	0.1	-0.4
	(-2.1,-0.6)	(-0.1,0.04)	(-1.7,-0.7)	(0.5,0.8)	(-0.03,0.04)	(0.1,0.2)	(-0.8,0.03)
Urbanization	2.6	0.03	-1.1	-0.5	-0.02	-0.1	0.1
	(2,3.3)	(-0.03,0.1)	(-1.5,-0.6)	(-0.7,-0.4)	(-0.1,0.01)	(-0.1,-0.02)	(-0.2,0.5)
REML	139279.9	63982.2	128650.2	94621.6	49422.5	57589.6	120957.2
ICC (unit)	0.001	3e-04	5e-04	2e-04	0	0	0.001
ICC (battle)	0.001	3e-04	0.001	0.003	0	1e-04	4e-04
ICC (month)	0.001	1e-04	0.004	0.002	1e-04	0.001	0.004
ICC (residual)	0.997	0.999	0.995	0.994	1	0.999	0.995
Hausman p	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
AIC	139301.9	64004.2	128672.2	94643.6	49444.5	57611.6	120979.2
Unit FE	982	982	982	982	982	982	982
Battle FE	129	129	129	129	129	129	129
Month FE	47	47	47	47	47	47	47
N	15142	15142	15142	15142	15142	15142	15142

A3. Sensitivity Analyses and Placebo Tests

A3.1. Randomization Inference

To assess whether estimates of the same magnitude as those in Table A2.4 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 A3.1 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 all outcomes except Punishment. In this latter case, 3% of simulated coefficients were larger in absolute value than our baseline estimate.

Figure A3.1: **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.

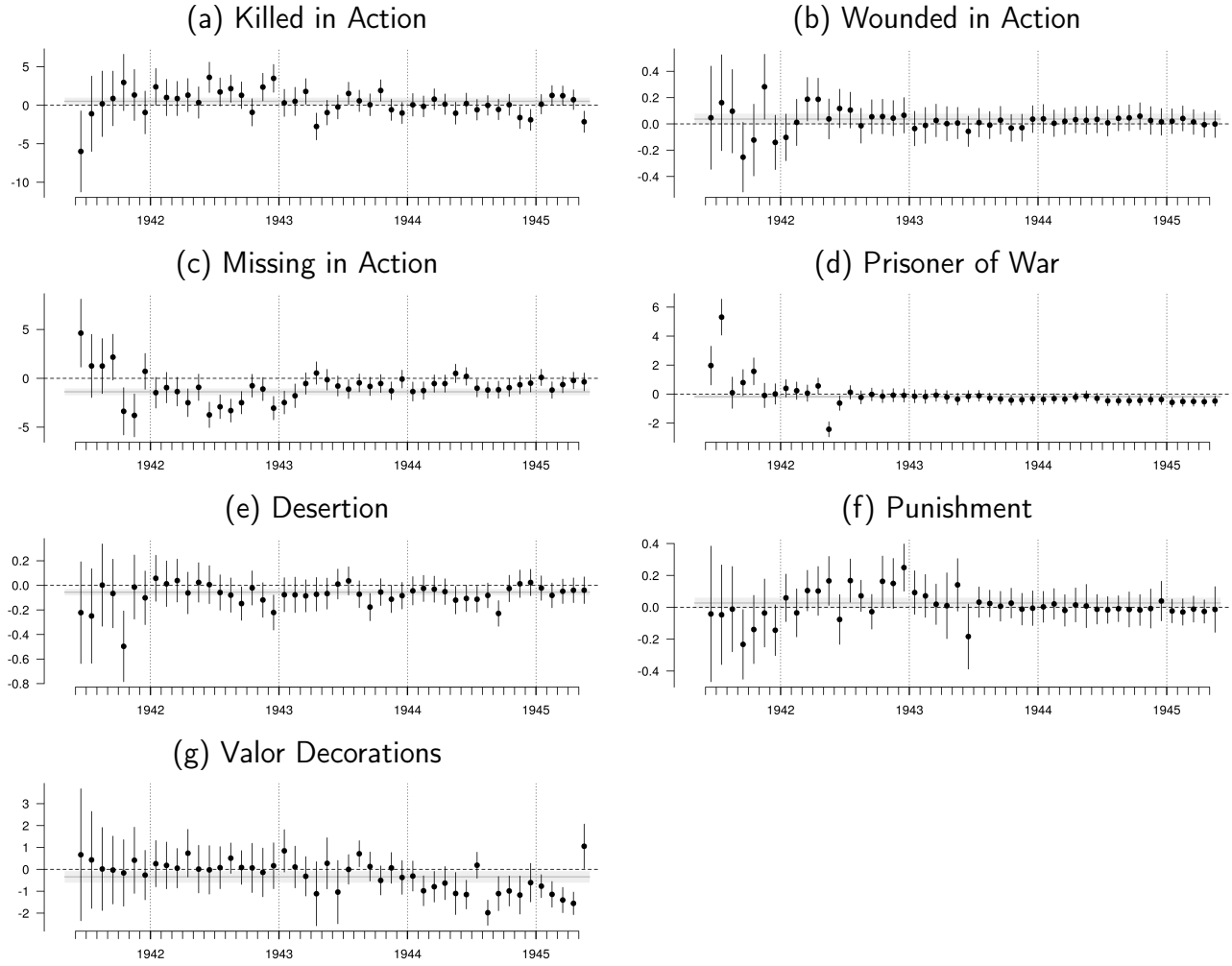
A3.2. Time-Variant Coefficients

To explore how the effect of fratricidal coercion varied over time, we ran an extension of our multilevel models, with time-variant coefficients β_t:

$$y_{ijt}^{(k)} = \log(\text{NKVD}_{it})\beta_t + \mathbf{X}_{it}\gamma + \text{unit}_i + \text{battle}_j + \text{month}_t + \epsilon_{ijt} \tag{3}$$

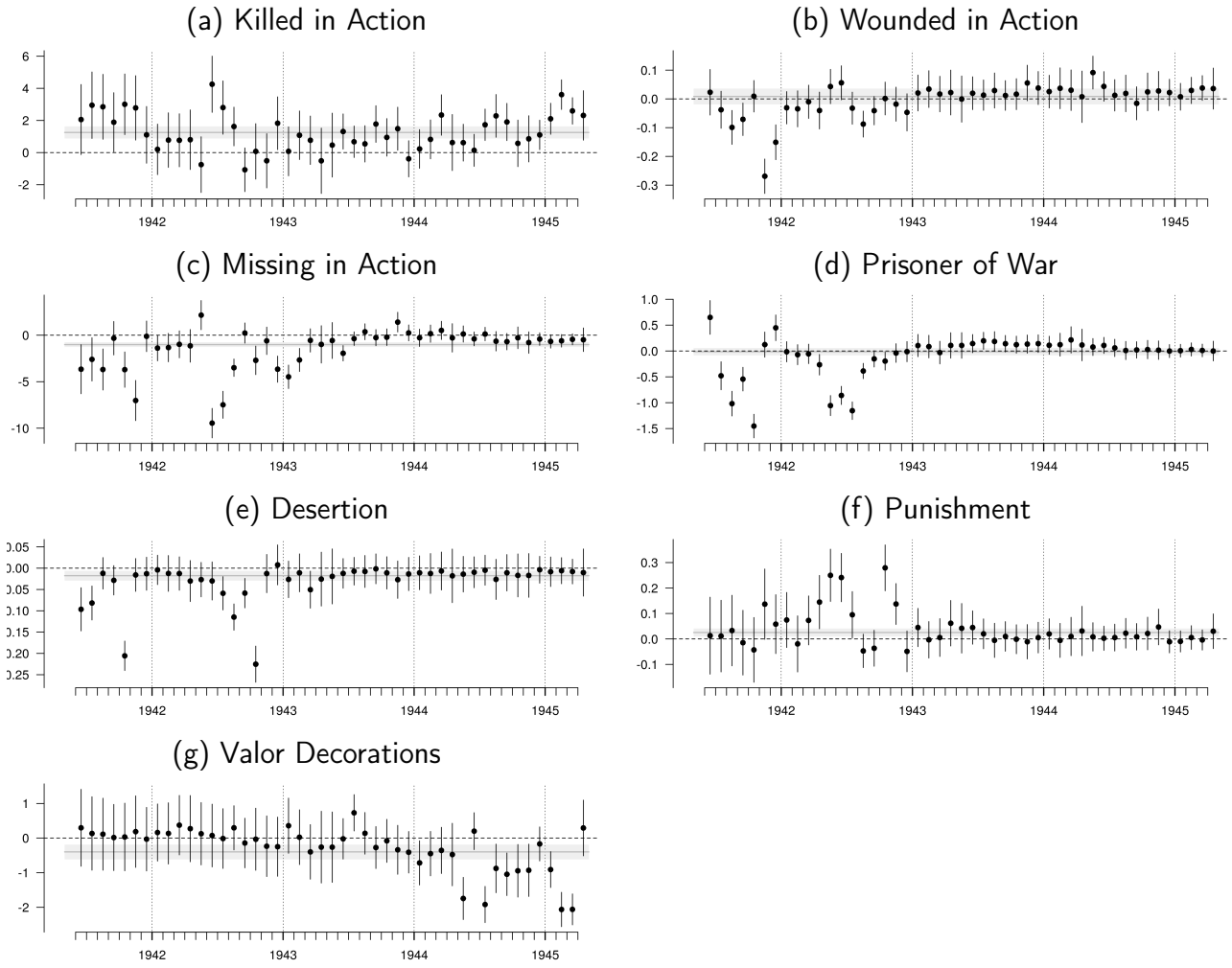
Figure A3.2 reports the full set of $\hat{\beta}_t$ fixed effect estimates for all outcomes. Figure A3.3 reports analogous results from a random effects specification, where $\beta_t = \beta_0 + \alpha_t$ is modeled as the sum of the coefficient for the average time period (β_0), and a month-specific random effect, Normally distributed with mean zero and unknown variance (α_t).

Figure A3.2: **Time-variant coefficient estimates, fixed effects.**



Note: Points and vertical lines represent time-variant fixed effect coefficient estimates and 95% confidence intervals. Horizontal grey line and bar are time-invariant coefficient estimates and 95% CIs from Table A2.3.

Figure A3.3: **Time-variant coefficient estimates, random effects.**



Note: Points and vertical lines represent time-variant random slope estimates and 95% confidence intervals. Horizontal grey line and bar are time-invariant coefficient estimates and 95% CIs from Table A2.4.

Apart from a few outliers — mostly in the chaotic early months of the war — the general directions of these relationships are consistent with those in Figure 1. The highest positive estimates for KIA came after Stalin's Order No. 227 in July 1942, and peaked during the Battle of Stalingrad in December 1942. The relationship remained positive through the end of the war, with some decline in magnitude. Estimates for MIA were negative for most of the war, particularly in late 1941 during the Battle of Moscow, and after Order 227 in 1942. Both cases suggest that the deterrent did not take hold right away — units with more NKVD personnel initially saw fewer KIAs and more MIAs, before these relationships reversed.

Estimates for medals, meanwhile, become more negative over time. This pattern is not surprising, given that 90 percent of all Soviet valor decorations were for actions taken in the second half of the war, as the RKKA took to the offensive and sought to encourage acts of

bravery. They did so by introducing new decorations (e.g. Order of Glory, November 1943), and expanding eligibility criteria for others (e.g. "For Courage," June 1943). Negative estimates during this period suggest that soldiers in units with a larger NKVD presence may have been less responsive to these positive inducements, despite official signals that battlefield exploits would be recognized. Deterrence, in this sense, may have worked too well, disincentivizing both under- and over-performance.

A3.3. Accounting for Variation in Division Strength

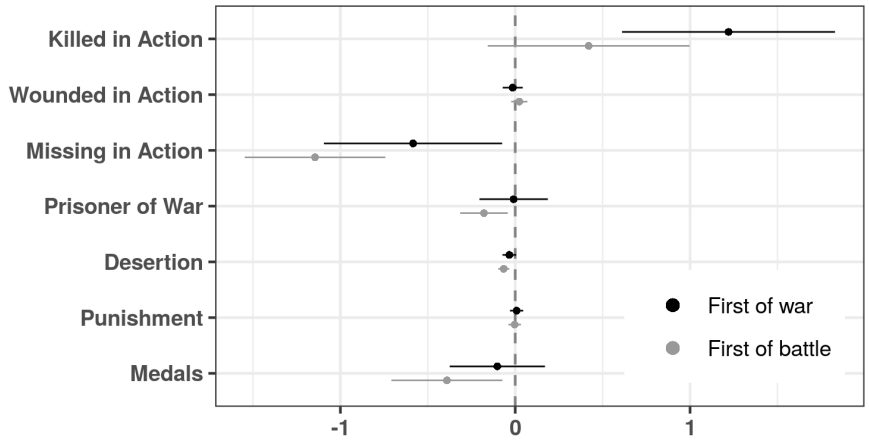
Our measure of NKVD presence employs absolute, rather than proportional, numbers of OO/SMERSH officers assigned to each division-month. This approach assumes that RKKA divisions were all of similar size (8,000-12,000 personnel). On paper, Soviet rifle divisions had an overall strength of 14,483.[1] In 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 several approaches, including time-varying coefficients and simulation. One 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 time-varying coefficient estimates we reported in the main text should capture much of the resulting effect heterogeneity. As those results — and the ones in Figures A3.2-A3.3 — suggest, in most cases, the NKVD effect diminishes over time. This 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 subsample includes units' first documented

[1] The 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 A3.4: **Subsample Analyses: First Months of Deployment**.



appearance in the war, and the second includes units' first appearance in each battle.[2] These estimates, in Figure A3.4, are consistent with our earlier results: for both subsets of the data, an increase in NKVD presence is associated with significant decreases in MIA and Desertion rates. As before, estimates are positive for KIA rates and negative for POWs and Medals, although their precision varies.

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 ($\sim$40% strength) or bring it up to slightly over full strength at 15,000, with an average at 10,500 troops. Formally, we represent this shock with a scaling factor ζ_{it},

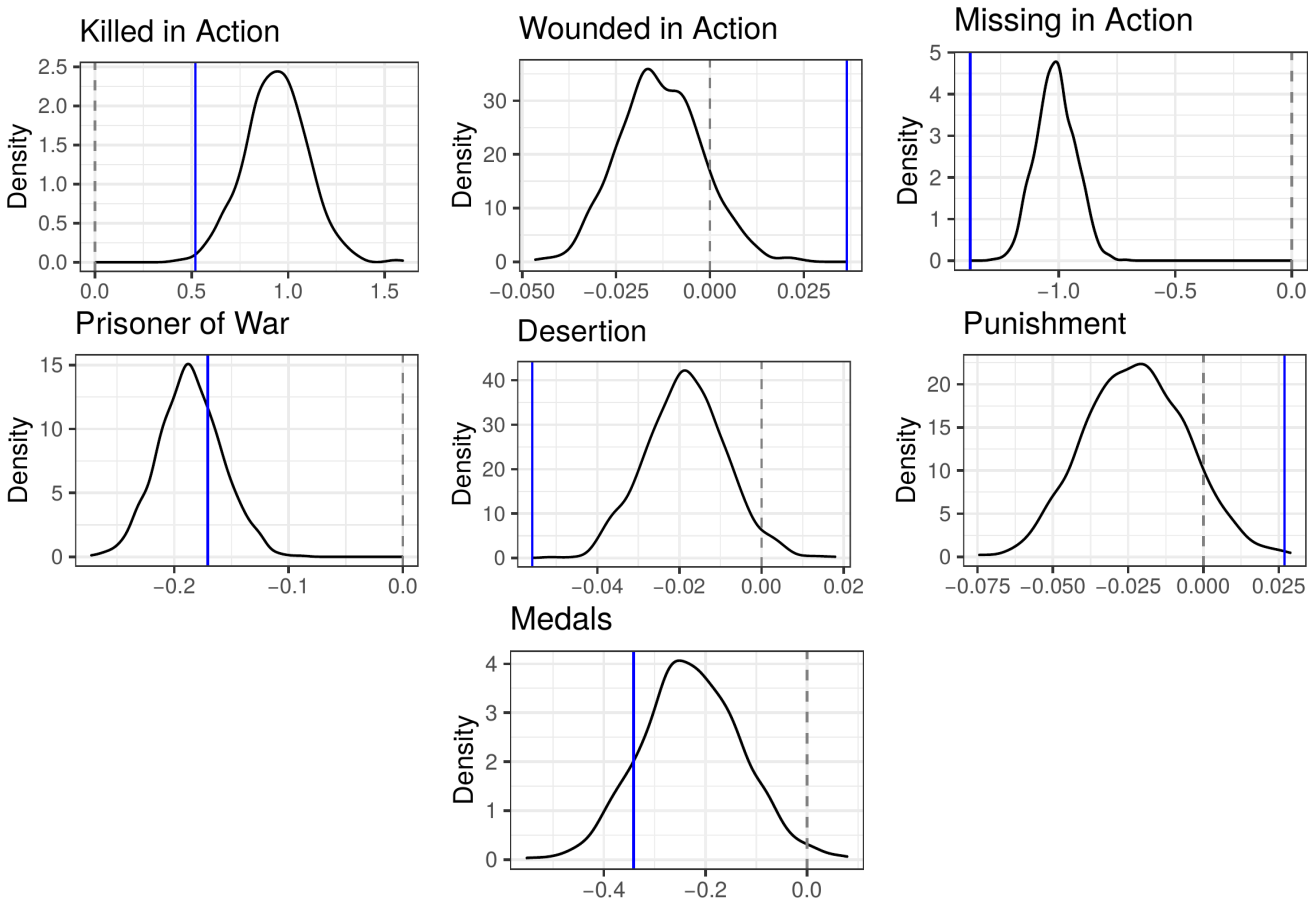
$$\zeta_{it} = \frac{s_{\text{max}}}{s_{it}}, \quad s_{it} \sim U(6000, 15000)$$

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, $\text{NKVD}^*_{it} = \zeta_{it} \cdot \text{NKVD}_{it}$,

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

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

Figure A3.5: **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.

and replicate our full set of mixed effects models with this new measure. We ran this simulation 10,000 times.

Figure A3.5 reports the distribution of coefficient estimates across these 10,000 simulations, along with the original coefficient estimate (blue vertical line) for each dependent variable. These results suggest that our estimates are stable to non-trivial variations in division strength. The coefficient estimates for NKVD presence on KIA rates remain positive for all 10,000 runs. Indeed, the simulations suggest that our original analyses potentially under-estimate the size of this coefficient in under-strength units. Estimates for MIA and POW remain negative in all runs, while those for Desertion and Medals are negative in 97% and 99% of simulations. The two sets of results that are less robust to variation in division strength are WIA and Punishment — where our original (positive, but statistically insignificant) estimates diverge in sign from the bulk of the distribution of simulated coefficients (90% of which are negative).

A3.4. Peer Effects

Military units do not exist in a vacuum. Each division is part of a larger formation, in which the fortunes of one unit depend on the fortunes and circumstances facing all others. We define a "peer effect" in this context as the influence of these other units on a given unit's battlefield outcomes. This peer effect may reflect learning and adaptation by soldiers (Lehmann and Zhukov, 2019), or it may be a statistical consequence of common battlefield conditions and organizational features. Both of these scenarios would violate the independence assumption in our main models. To account for this interdependence, we estimate an extended form of the model in (2):

$$\begin{aligned} y_{ijt}^{(k)} &= \log(\text{NKVD}_{it})\beta + \log(\overline{\text{NKVD}}_{lt[-i]})\psi + \mathbf{X}_{it}\gamma + u_{ijt} \\ u_{ijt} &= \text{unit}_i + \text{battle}_j + \text{month}_t + \epsilon_{ijt} \end{aligned} \tag{4}$$

where $\overline{\text{NKVD}}_{lt[-i]}$ is the average number of NKVD officers assigned to the other units in parent formation l on month t, excluding unit i.[4] If i indexes divisions, the parent formation l may be an army or a front (we consider both below). This specification is a variant of a linear-in-means model (Manski, 1993; Burke and Sass, 2013; Carrell, Sacerdote and West, 2013), with the exogenous peer effect parameter equal to zero. The parameter β represents the "direct effect" of NKVD presence in unit i on the battlefield outcomes of unit i, ψ is the reduced-form peer effect, and $\rho = \psi/(\beta + \psi)$ is the endogenous peer effect.[5] This specification assumes that the behavior

[4] Formally, the "leave-out" mean of x for unit i in group l is $\frac{N_l \bar{x}_l - x_{il}}{N_l - 1}$. Because group composition changes over time, we calculate these group means separately for each unit-month.

[5] Formally, let y represent a battlefield outcome (e.g. percent KIA), let z represent NKVD presence, and let x denote a reference group (e.g. the larger grouping, like army-month or front-month, of which the unit is a member). Consider a structural regression equation of the form:

$$\mathbb{E}(y|x,z) = \alpha + \rho\mathbb{E}(y|x) + \gamma z + \delta x \tag{5}$$

where α is an intercept, ρ captures how a unit's outcomes vary with the outcomes of other units in the same group, β is the direct effect of NKVD presence on a unit's outcomes, and δ is a group fixed effect. The model's right-hand side may also include the effects of additional covariates, which we omit here for simplicity. Following Manski's approach, we integrate out z and rearrange the terms to get

$$\begin{aligned} \mathbb{E}(y|x) &= \alpha + \rho\mathbb{E}(y|x) + \gamma\mathbb{E}(z|x) + \delta x \\ &= \alpha/(1-\rho) + \gamma/(1-\rho)\mathbb{E}(z|x) + \delta/(1-\rho)x \end{aligned}$$

and plug this expression into equation 5:

$$\begin{aligned} \mathbb{E}(y|x,z) &= \alpha + \rho\left(\alpha/(1-\rho) + \gamma/(1-\rho)\mathbb{E}(z|x) + \delta/(1-\rho)x\right) + \gamma z + \delta x \\ &= \frac{\alpha}{1-\rho} + \frac{\delta}{1-\rho}x + \frac{\rho\gamma}{1-\rho}\mathbb{E}(z|x) + \gamma z \end{aligned}$$

This yields the reduced form equation we estimate,

$$\mathbb{E}(y|x,z) = \alpha^* + \delta^* x + \psi\mathbb{E}(z|x) + \beta z,$$

of soldiers in one unit does not depend directly on other units' exposure to NKVD special sections. Rather, other units' exposure to special sections affect the focal unit's fortunes in equilibrium only indirectly, through their effect on the fortunes of other units in the same formation. This is a reasonable assumption in our case, because it does not require soldiers in one unit to form correct expectations about the size of NKVD contingents in other units.

Tables A3.5-A3.6 report coefficient estimates from two sets of models, which consider peer effects emanating from units in the same army (Table A3.5), or the same front (Table A3.6). Estimates for the direct effect of NKVD presence are generally consistent with those in our main specification. As before, units with a larger NKVD contingent generally saw fewer losses due to flight (MIA, POW, Desertion), and a smaller share of soldiers receiving medals for valor. With the exception of KIA, which loses significance, our core results appear robust to the inclusion of peer effects.

The estimates further illuminate that endogenous peer effects may have been stronger for some types of outcomes than for others. For example, MIA and POW rates were significantly higher in units whose parent armies and fronts also experienced exceptionally high MIA and POW rates in the same month. For other outcomes, like KIA and medals, the influence of other units was more variable — effectively null when the peer effects emanate from other units in the same army (Table A3.5), but positive and significant when considering other units in the same front (Table A3.6).

Table A3.5: **Coefficient Estimates for Peer Effects Model (within-army peer effects)**. Linear fixed effect model estimates. Bootstrapped 95% confidence intervals in parentheses. Observations weighted by number of discharge records per unit-month. Null hypothesis for Hausman test: random effects model is consistent.

Outcome	**KIA**	**WIA**	**MIA**	**POW**	**Desert**	**Punish**	**Medals**
Direct effect	0.4	0.03	-1.2	-0.2	-0.1	0.02	-0.4
	(-0.05,0.9)	(-0.01,0.1)	(-1.5,-0.9)	(-0.3,-0.04)	(-0.1,-0.03)	(-0.01,0.1)	(-0.6,-0.1)
Reduced form peer effect	1.2	0.03	-2.7	-0.2	0.03	0.1	0.4
	(0.6,1.8)	(-0.03,0.1)	(-3.1,-2.3)	(-0.4,-0.1)	(-0.01,0.1)	(0.01,0.1)	(0.1,0.7)
Endogenous effect	0.4	0.2	0.6	0.5	-1	0.8	0.3
	(-7.5,6.2)	(-5.1,5.5)	(0.4,0.7)	(0.2,0.7)	(-34.2,28.4)	(-7.6,7)	(-5.9,6.6)
Hausman p	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
AIC	132586.4	56855.5	120461.7	89889.1	48151.7	62677.2	114744.2
Unit FE	982	982	982	982	982	982	982
Battle FE	129	129	129	129	129	129	129
Month FE	47	47	47	47	47	47	47
N	15122	15122	15122	15122	15122	15122	15122

where $\alpha^* = \alpha/(1-\rho)$, $\delta^* = \delta/(1-\rho)$ and $\psi = \rho\beta/(1-\rho)$. If $\rho \neq 1$ and $\beta \neq 0$, we can recover the "structural" parameter $\rho = \frac{\psi}{\psi+\beta}$, which is the endogenous peer effect estimate, alongside β (effect of unit's direct exposure to NKVD) and ψ (reduced form peer effect).

Table A3.6: **Coefficient Estimates for Peer Effects Model (within-front peer effects)**. Linear fixed effect model estimates. Bootstrapped 95% confidence intervals in parentheses. Observations weighted by number of discharge records per unit-month. Null hypothesis for Hausman test: random effects model is consistent.

Outcome	**KIA**	**WIA**	**MIA**	**POW**	**Desert**	**Punish**	**Medals**
Direct effect	0.5	0.03	-1.2	-0.1	-0.1	0.02	-0.3
	(-0.03,0.9)	(-0.01,0.1)	(-1.5,-0.9)	(-0.2,-0.03)	(-0.1,-0.03)	(-0.01,0.1)	(-0.6,-0.03)
Reduced form peer effect	2.5	0.2	-6.8	-1.3	0.01	0.3	-1.7
	(1.2,3.8)	(0.1,0.3)	(-7.7,-5.9)	(-1.6,-1)	(-0.1,0.1)	(0.2,0.4)	(-2.4,-1)
Endogenous effect	0.9	0.7	0.8	0.8	0.3	0.9	1.1
	(0.4,1.2)	(-0.8,2)	(0.7,0.9)	(0.7,0.9)	(-4.3,9.3)	(-2.4,4.9)	(1,1.3)
Hausman p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
AIC	132764.6	56926.9	120542.2	89945.7	48215.5	62759.1	114867.4
Unit FE	982	982	982	982	982	982	982
Battle FE	129	129	129	129	129	129	129
Month FE	47	47	47	47	47	47	47
N	15142	15142	15142	15142	15142	15142	15142

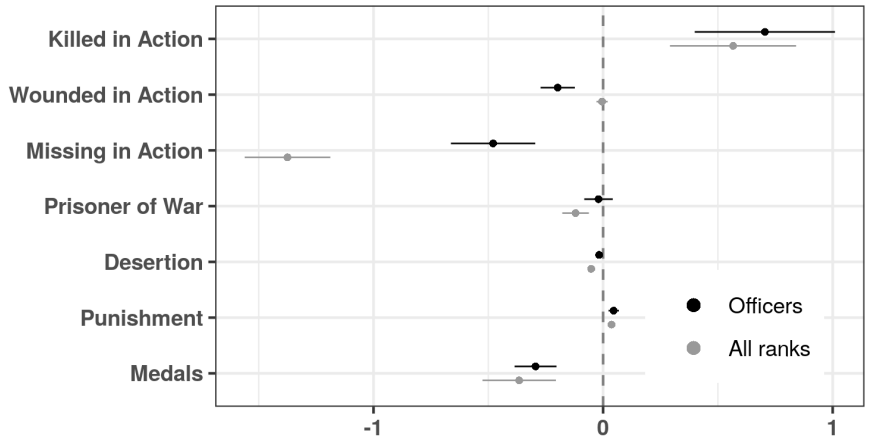
A3.5. Officers

To explore whether NKVD presence affected the behavior of Red Army officers differently than it affected the behavior of rank-and-file troops, we replicated our main model specifications with alternative measurements of battlefield outcomes. Specifically, we replaced our previous measures of loss rates and decorations — which utilize records for *all soldiers* assigned to a unit-month — with measures calculated using exclusively the personnel records of commissioned officers. We included in this category all personnel who held the rank of Junior Lieutenant — the Red Army's O-1 equivalent — and higher at the time of the unit-month observation.

Figure A3.6 reports the coefficient estimates and confidence intervals from this model (in black), alongside the original estimates from our baseline models in the main paper's Figure 1 (in gray). This analysis suggests that the effects of NKVD presence were generally in the same direction for officer as for the general sample. However, the magnitude of these estimates varies by outcome. In particular, we observe a dampening of the estimated effect for all measures of flight, including MIA, POW and Desertion. In the case of POW, the NKVD effect becomes statistically indistinguishable from zero.

Another divergence is in the previously null estimate for WIA, which becomes negative and statistically significant at the 95% confidence level. This category is relatively small, and includes only those servicemen who received wounds that were not lethal, but nonetheless sufficiently severe for a medical discharge. The fact that officers in units with a larger NKVD presence were less likely to receive such a designation is open to several interpretations. First, it is possible that officers in these units were more likely to remain on the battlefield after sustaining an injury, and

Figure A3.6: **Did Officers Respond Differently to Fratricidal Coercion?**



were potentially more reluctant to request a medical evacuation. This pattern is not inconsistent with the numerically larger — albeit insignificantly so — coefficient estimate for KIA. However, such a pattern would also imply a higher incidence of valor decorations for these officers, since continuing to fight after being wounded is an act that meets the eligibility requirements for several of these awards. Yet officers' coefficient estimate for medals is numerically quite close to that for the army as a whole. Another possibility is that higher authorities may have been less likely to approve medical discharges and evacuations for officers serving in units with large numbers of NKVD personnel — either because the NKVD officers discouraged them from doing so, or because they preemptively wished to avoid scrutiny and second-guessing by their political minders. The data do not allow us to definitively adjudicate between these possibilities, or to rule either of them out.

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 (Imai, Kim and Wang, 2018), 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 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, although — as we show below — our exact matching procedure improves balance on these covariates as well. We matched without replacement and with randomly-broken ties.

This procedure yielded 1,686 matched pairs of division-battle observations, including 1,686 with an above-average monthly NKVD contingent (i.e. more than 10) and 1,686 with a below-average NKVD contingent. Table A4.7 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 for all but two covariates.

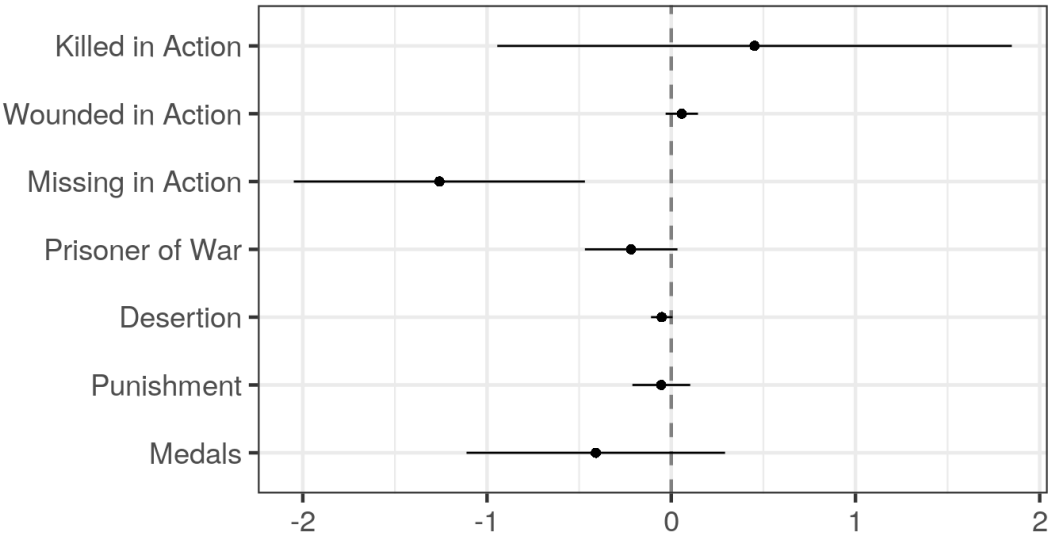
Figure A4.7 reports coefficient estimates and 95% confidence intervals for our fixed effects models, re-estimated on units within the matched sample. While the precision of these estimates declines due to the sample's reduced statistical power, their direction is consistent with those in the full sample. Doubling OO/SMERSH presence is associated with a 0.6 percentage point increase in KIA rates, a 1.4 percentage point decrease in MIA rates and a 0.5 percentage point decrease in Medals.

Table A4.7: **Covariate balance statistics, pre- and post-matching.**

Covariate	Status	Mean T	Mean C	Std. Diff.	KS Statistic
Army ID	pre-matching	52.714	51.723	0.04	0.067**
	post-matching	52.566	51.725	0.032	0.028
Unit type	pre-matching	3.885	3.173	1.303	0.286**
	post-matching	3.504	3.477	0.026	0.014
Month	pre-matching	35.783	27.206	0.95	0.319**
	post-matching	30.471	30.75	-0.025	0.025
Battle ID	pre-matching	72.319	65.729	0.238	0.184**
	post-matching	70.668	71.254	-0.019	0.028
Number of Casualties	pre-matching	409.792	197.74	0.533	0.333**
	post-matching	281.565	269.222	0.033	0.045
Proportion Russian	pre-matching	0.749	0.795	-0.474	0.264**
	post-matching	0.78	0.79	-0.074	0.039
Soldiers' Age	pre-matching	26.558	26.845	-0.12	0.152**
	post-matching	26.781	26.738	0.01	0.036
Geographic Diversity	pre-matching	939.075	619.595	0.826	0.323**
	post-matching	775.7	719.479	0.111	0.055*
Population density	pre-matching	68.315	48.453	0.365	0.219**
	post-matching	60.225	55.595	0.059	0.052*
Cropland	pre-matching	-3.33	-17.011	0.731	0.226**
	post-matching	-9.859	-12.452	0.086	0.046

Standardized difference (Std. Diff.) is $\frac{\text{mean}(T)-\text{mean}(C)}{\text{sd}(T)}$. Significance levels (two-tailed): $^{*}p < 0.05$; $^{**}p < 0.01$.

Figure A4.7: **Impact of NKVD Presence on Battlefield Outcomes, Matched Sample.**



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.

A4.2. Second Stage

Of the 1,686 matched pairs, we extracted ten pairs with the largest disparities in NKVD OO/SMERSH personnel. We did this separately for units participating in defensive battles (Tables A4.8) and offensive battles (Tables A4.9).

Table A4.8: **Unit Pairs with Largest Disparities in NKVD Presence** (Defensive Battles).

	Battle	Unit (T)	Unit (C)	NKVD (T)	NKVD (C)
1	Defensive Operations Near Stalingrad	133 TB 64 A	13 TC 64 A	240	2
2	Defensive Operations South/Southwest of Leningrad	168 RD 55 A	90 RD 55 A	57	1
3	Battle of Lyuban'	310 RD 4 A	44 RD 4 A	94	2
4	Defense of Central Passes of Main Caucasus Ridge	334 RD 4 SA	47 RD 4 SA	46	1
5	Smolensk Defensive Battle	153 RD 20 A	229 RD 20 A	84	2
6	Defensive Operations Near Stalingrad	120 RD 66 A	64 RD 66 A	113	3
7	Defensive Operations Near Stalingrad	354 RD 31 A	118 RD 31 A	22	1
8	Defensive Operations Near Stalingrad	143 RD 13 A	8 RD 13 A	21	1
9	Battle of Lyuban'	65 RD 52 A	305 RD 52 A	19	1
10	Defense of Central Passes of Main Caucasus Ridge	311 RD 54 A	285 RD 54 A	36	2

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

	Battle	Unit (T)	Unit (C)	NKVD (T)	NKVD (C)
1	Belorussian Offensive	81 RC 49 A	69 RC 49 A	217	3
2	Western Ukrainian Offensive	81 RC 50 A	69 RC 50 A	213	3
3	Moscow Counteroffensive	177 RD 55 A	70 RD 55 A	61	1
4	Western Ukrainian Offensive	19 Guards MGAB 10 Guards A	13 MORB 10 Guards A	121	3
5	Baltic Offensive	103 TB 2 та	50 TB 2 та	240	6
6	Kharkov Offensive	6 CC 6 A	2 CC 6 A	34	1
7	Berlin Offensive	11 TC 5 SA	36 TB 5 SA	134	4
8	Right-Bank Ukraine Offensive	45 RC 5 A	72 RC 5 A	29	1
9	Krasnodar-Novorossiysk Offensive	340 RD 40 A	305 RD 40 A	27	1
10	Belorussian Offensive	115 RD 22 A	325 RD 22 A	27	1

A4.3. Third Stage

From the top-10 list in Table A4.8, 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. This is the matched comparison that appears in the main text.

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

Table A5.10 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.

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 A5.10: **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

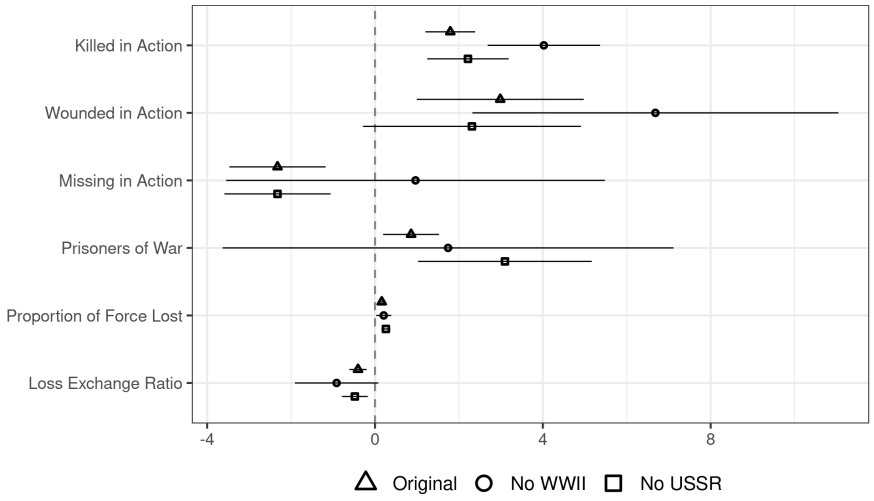
$$y_{ij}^{(k)} = \text{Block}_{ij}\beta + \mathbf{X}_{ij}\gamma + u_{ij} \tag{6}$$

where i indexes belligerents, j indexes battles. $y_{ij}^{(k)}$ represents battlefield outcomes of type $k \in$ {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 j.[6] Block_{ij} indicates whether blocking detachments existed in i's army at the time of j. u_{ij} are standard errors, clustered on the belligerent and conflict. $\mathbf{X}_{ij}$ is a matrix of covariates, including: relative force ratio between i and its opponent in battle j, 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 j, 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 j, whether i and i's opponent had signed on to the Geneva Convention prior to j, whether j was a "major battle" (i.e. participating forces totaled at least 100,000 soldiers), whether j was part of World War II, and dummies for season (winter, spring, summer, fall).

In addition to the baseline model estimates reported in the main text, Figure A5.8 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 A5.8: **Cross-National Battle-Level Robustness Tests**

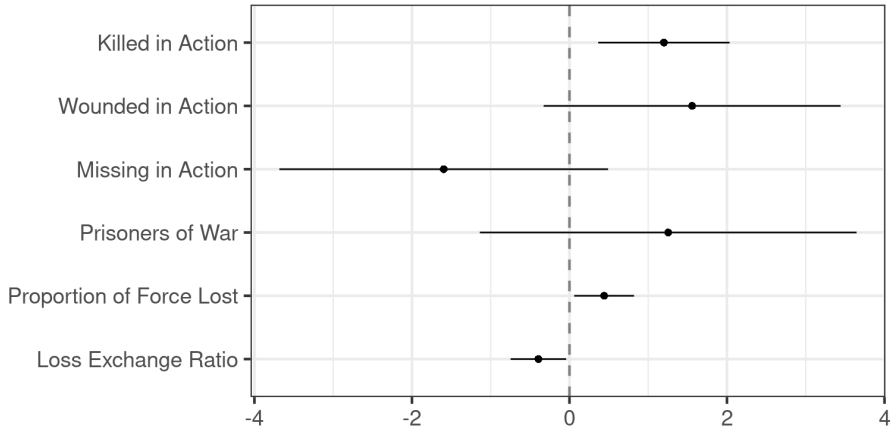


For consistency with the division-level analyses of Soviet army data, we also considered an

[6] We 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.

mixed effects specification, where the error components of u_{ib} include both country-specific errors and idiosyncratic errors. These estimates, reported in Figure A5.9 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 A5.9: **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.

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