

# Flying with the Stars: Performance, Loyalty, and Awards in the Soviet Air Force during WWII

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March 3, 2022\*

## Abstract

One of the main debates in the study of authoritarianism concerns whether autocrats promote and reward agents based on performance or ideological loyalty to stave off the threat of elite coups. Yet autocrats often face existential crisis situations, particularly military conflict, where their survival depends on the performance of lower-level cadres defending the regime. In this paper, we develop a new theoretical framework for understanding how autocrats manage bureaucratic selection under crisis. Introducing the concept of ‘bounded meritocracy’, we theorize that although merit dominates decisions over rewards and promotions, autocrats also strategically prioritize other non-merit considerations in order to prevent shirking and defection by out-group members. To test our hypotheses, we combine qualitative archival work with analysis of a new dataset of 2,820 top Soviet fighter pilots during WWII that includes unique measures of individual performance –a number of downed Axis planes– as well as markers of regime loyalty and out-group status. The results show that wartime imperatives led Soviet officials to prioritize merit over party loyalty, while also trumpeting the achievements of non-Slavic aces as part of a propaganda campaign to increase support for the war effort among potentially disloyal minority groups.

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# 1 Introduction

Autocrats face tough choices evaluating and promoting subordinates. Elevating the most capable agents to positions of power may lead to better policy outcomes, but also increases the risk of coups by these very lieutenants (Egorov and Sonin, 2020). Loyalty-based promotions improve coup proofing but lead to sub-optimal government performance (Zakharov, 2016). Recent work has shown that how autocrats balance this trade-off can depend on the autocrat’s time horizons (Egorov and Sonin, 2011), electoral constraints (Buckley and Reuter, 2019) and even the level of cadre decision being made (Landry, Lü, and Duan, 2018). Indeed, most of our knowledge on this critical question presumes that the main threat to the autocrat’s survival comes from coup attempts organized among a narrow circle of elites (Svolik, 2009).

Yet autocrats face a variety of crisis situations that undermine their hold on power beyond coup threats. Mass protests have consistently overthrown governments over the last century. And just as importantly, military conflict threatens the very existence of many autocratic regimes. If democracies do not fight each other, then by definition every war involves at least one non-democratic participant. Wars, systemic crisis and social upheaval place immense strain on governments and require active participation of large groups of state agents to overcome. Furthermore, because mass participation in this response effort is often required, an autocrat’s survival might critically depend on state agents – soldiers, street level bureaucrats or first responders – who do not belong to the autocrat’s loyal ideological or identity groups. During such crises the key danger for the autocrat, therefore, is not an elite coup but defection or underperformance by lower level subordinates. The scholarship on promotions in non-democracies focuses almost exclusively on top elites during periods of relative calm and thus overlooks this common and acute danger to the autocrats’ survival.

How do autocracies evaluate and promote agents during crisis? A purely meritocratic system would help weather the storm but might also empower subordinates who do not belong to the autocrat’s loyal groups. Prioritizing loyalists might alienate the best-performing agents precisely when their support is needed the most. In this paper we make several new theoretical arguments. First, we argue that that during crisis, autocrats adopt a system that we label as *bounded meritoc-*

*racy*. Bounded meritocracy is a mixed system in which performance is the key criteria in evaluating and promoting subordinates but at the same time, criteria other than merit are also used strategically to evaluate subordinates who do not belong to the regime's core in-groups. Furthermore, we demonstrate that whereas the existing political science scholarship focuses exclusively on formal, rank promotions, autocrats also use other tools, namely state awards and decorations to evaluate, reward and promote subordinates to ensure their loyalty. Finally, even in the most centralized autocratic governments, the evaluation criteria might differ based on the level of evaluation and the wider audience observing the personnel decisions. We argue that that evaluation and promotion do not occur in a vacuum, but rather produce important signaling effects for the broader society. In other words, concerns over loyalty and merit alone are not sufficient to guide cadre selection and rewards.

We test our arguments by analyzing Red Army aviators during WWII. More specifically, we use a recent Russian language compendium of 2,820 top scoring WWII Soviet fighter aces to measure their combat performance and combine these data with WWII-era award nomination and approval documents made available by the Russian Ministry of Defense. These detailed forms include, in addition to other information, the pilots' ethnicity, party affiliation and military service details. The evaluation of pilots was performed at two levels: the mid-level superiors, usually regimental commanders who nominated aces for awards, and the higher level authorities, occasionally Stalin personally, who reviewed and approved or revised these nominations.

We find that merit and individual performance, that is the official score of Axis (mostly, but not exclusively German) aircraft downed by the ace, was the key factor determining whether they received a combat decoration and that award's prestige. Belonging to the country's core East Slavic (Russian, Ukrainian, Belorussian) ethnic groups or affiliation with the communist party had no impact on decorations. Belonging to the minority ethnic group, however, did have an effect. Non-Slavic pilots were subject to discrimination by regimental commanders but benefited from affirmative action at the higher levels of approval. We use qualitative evidence to argue that this affirmative action was practiced strategically to better position these aviators as propaganda role models among their co-ethnics in the Red Army and increase the support for the war effort among potentially disloyal minority groups.

In addition to making these novel theoretical arguments the paper contributes to our understanding of the internal functioning of non-democracies in several ways. In contrast to the overwhelming majority of existing scholarship we study autocratic government’s personnel strategies during crisis (but see [Aaskoven and Nyrup forthcoming](#)). WWII-era Red Army also offers an opportunity to analyze a crucial non-democratic institution that is overlooked in the literature despite the availability of extensive and high-quality data (but see [Rozenas, Talibova, and Zhukov 2020](#) and [Rozenas and Zhukov 2019](#)). The paper also moves the literature beyond the narrow focus on top elites, such as regional governors or the Communist Party Central Committee members. Fighter pilots are an important group within the military (and often the broader society) yet they are numerically larger and more heterogeneous than governors or Politburo members.

Crucially, we are able to overcome the key methodological and analytical problem that bedevils existing scholarship, namely the difficulty to clearly observe and measure *individual* performance and competence. In the literature, merit is typically proxied by imprecise indicators such as economic growth, voter turnout or unemployment levels. These indicators, however, are influenced by numerous factors over which individuals, even the most elite ones, have limited control. On the other hand, outcomes achieved by fighter pilots are directly linked to individual capabilities and skills. In our setting, the pilots’ main performance criteria—destruction of enemy aircraft in combat—is observable and measurable ([Ager et al., 2018](#)).

Finally, even though state awards and combat decorations are widely used by almost all governments and the analysis of awards is a fast growing research agenda in the economics discipline, political scientists have generally overlooked this topic. To the best of our knowledge, we are among the first to analyze quantitatively how autocratic leaders use awards to signal approval and appreciation of agents’ actions, increase subordinates’ status and visibility, reward loyalists, motivate better performance and create or strengthen regime commitments.

## 2 Literature And Theory

### 2.1 Why Awards?

The existing research on how autocracies evaluate and reward agents has focused on formal, rank promotion. An important contribution of this paper is to focus on a different type of evaluation, namely awards and decorations, which are ubiquitous in every government system yet overlooked by political scientists. The "economics of award" research agenda is still in its infancy (for an overview, see [Frey and Gallus 2017](#)), but existing work clearly demonstrates its promise and relevance for political scientists interested in understanding how governments and state institutions function, engage in symbolic politics, and evaluate and recognize agents.

The literature distinguishes between two main types of awards: confirmatory and discretionary. Confirmatory awards "are more or less automatically given, based on clearly defined and observable criteria of achievement, or due to the specific position the person occupies ... The eligibility criteria are fixed and therefore this type of award becomes an ex ante incentive whose receipt can be expected" ([Frey and Gallus, 2017](#), 29-30). Discretionary awards are "based on the discretion of the givers. The latter enjoy leeway in decision-making as to whether and to whom to bequeath an award" ([Frey and Gallus, 2017](#)).

Decorations are an especially promising research agenda for several reasons. Awards are a readily available and inexpensive yet powerful signaling and recognition device that is used by almost every government. Discretionary awards reveal the preferences of the givers and indicate which traits and behaviors they value and desire to promote ([Frey and Gallus, 2016](#)). The impact of awards goes beyond their signaling value. Studies demonstrate that awards create and strengthen bonds of special relations, loyalty and reciprocity between the giver and the award recipients ([Bradler et al., 2016](#); [Frey and Gallus, 2016](#)), thus better protecting the giver from the subordinates' disloyalty, a permanent concern of leaders in non-democracies ([Egorov and Sonin, 2011](#)). Decorations also establish an alternative hierarchy system within an organization that runs parallel to the formal one. Awards do not only recognize achievement, they also endow recipients with status and influence ([Chan et al., 2014](#); [Frey and Gallus, 2017](#)) that might not correspond to their formal rank. Awards can increase the performance of not only the recipients but also of their

colleagues ([Bradler et al., 2016](#); [Gallus and Frey, 2016](#); [Kosfeld and Neckermann, 2011](#)). Finally, because awards are ubiquitous within and across organizations and systems, researchers can utilize ample data and numerous opportunities for both cross- and sub-national comparative and quantitative analysis.

## 2.2 Hypotheses

How do autocrats evaluate and reward subordinates? This important question is one of the key research agendas in the study of non-democracies. However, the existing theoretical arguments tend to focus predominantly on the top elites and "politics as usual" periods ([Magaloni and Kricheli, 2010](#)), during which the autocrat's main concern is a threat of a coup from within the regime rather than a broader social or security crisis. In times of such a systemic crisis, the autocrat's survival might depend not only the small group of elites, but on the dedicated effort of a much larger and potentially more diverse group of subordinates such as members of the security services, first responders and healthcare workers, or other types of street level bureaucrats and state agents. If these lower level agents defect or simply underperform on the job, the consequences for the autocrat's survival might be as devastating as a coup.

Unfortunately, these lower level agents, critical though they might be for the endangered autocracy's functioning and very survival (as well as the policies used to evaluate and promote them) are ignored by the scholars of non-democracy. Instead, scholars of autocracy in crisis focus on the origins of such upheavals, their outcomes ([Gasiorowski, 1995](#)), formal institutions, and governing coalitions ([Timoneda, 2020](#)). Some scholars analyze the autocrats' specific decisions such as initiating wars ([Weeks, 2014](#)) or repressing the opposition ([Egorov and Sonin, 2011](#); [Tanneberg, Stefes, and Merkel, 2013](#)). But the actual processes of autocratic governance during times of upheaval still remain largely unpacked below the elite level (but see [Pepinsky 2009](#)).

The existing research on promotion in autocracies, while not focusing on period of crisis, does offer several arguments that might us better understand how autocrats evaluate subordinates. The autocrat's main concern is to remain in power and to achieve that goal it is an imperative to safeguard against potential coups. Thus, autocrats would promote and reward regime loyalists and in-groups even when (or rather, because of) their skills and performance might be sub-optimal

(Egorov and Sonin, 2011; Reuter and Robertson, 2012; Shih, Adolph, and Liu, 2012). Historical evidence clearly shows that Stalin was obsessed with potential internal threats to his rule. During the purges of the late 1930s countless members of the Soviet elite were executed or imprisoned based on trumped up charges of disloyalty to the regime. More broadly, by the time of the German invasion the USSR had become a "National Bolshevik" state in which the Communist Party controlled every state institution and official ideology permeated all spheres of public life (Brandenberger, 2002). The Russian people were explicitly positioned as the leading ethnic group of the state. At time of crisis it might be only natural for such a regime at to promote and reward subordinates belonging to presumably loyal core groups—the Communists and the Slavs—regardless of their performance.

**Hypothesis 1.** *In crisis situations, autocrats will reward and promote cadres based on visible signals of their loyalty to the regime.*

At the same time, when the autocrat's main concern is an external rather than internal challenge, and when the danger is sufficiently grave, the autocrat's calculus might shift to prioritize better policy outcomes over loyalty. Several studies claim that even during periods of calm, autocracies are meritocratic and promote those who achieve the best outcomes, loyalty concerns notwithstanding (Landry, Lü, and Duan, 2018; Lee and Schuler, 2020; Li and Zhou, 2005). Meritocratic militaries also achieve better battlefield outcomes (Talmadge, 2015). According to this line of reasoning, at times of crisis autocrats may adopt meritocratic system in which the subordinates' performance and skills is the only thing that affects evaluation. This lends support to the following alternate hypothesis.

**Hypothesis 2.** *Autocrats will prioritize individual merit during evaluation decisions in order to ensure better outcomes in crisis situations.*

In this paper we build on the key insights of existing explanations to offer a new theoretical argument to explain how autocracies evaluate and promote agents during crisis. More specifically, we argue that crises substantially expand the pool of subordinates that the autocrat needs to monitor, motivate and reward to ensure survival and that some of these agents might not belong to the regime's core in-groups. WWII-era Soviet Union clearly demonstrates these dynamics. The

pre-1941 Red Army was an ostensibly loyal, extensively purged and thoroughly coup proofed force that consisted predominantly of trusted East Slavs and Russian-speaking members of ethnic minority groups.

In the wake of the German invasion, its composition changed drastically. The catastrophic losses of 1941 transformed the military's makeup. Fighting for its very survival, the regime drafted into the Red Army large numbers of people from the Caucasus and Central Asia who often were hostile to the regime, lacked the motivation to serve and were hastily trained. In many instances the new recruits did not even speak Russian and thus could not communicate with commanders and fellow soldiers from other backgrounds. Infantry officers, recalled [Slutskii \(2005, 119\)](#), now resembled 'overseers on the construction of the Tower of Babel the morning after the confusing of languages.' When such diverse units went into battle they suffered heavy casualties and fought poorly. German frontline propaganda actively encouraged ethnic minority soldiers to desert and the rates of desertion were higher among non-Russians servicemen. Numerous sources also recount instances of prejudice, discrimination and even physical violence that non-Slavic soldiers suffered at the hands of their comrades and immediate superiors ([Edele, 2017](#); [Schechter, 2012](#); [Shaw, 2016](#)).

Such a situation is not unique to the WWII USSR and is in varying degrees experienced by numerous autocracies that are suddenly forced to rely on previously excluded identity or ideological groups whose effort and sacrifice is required to overcome an emerging crisis. For instance, the Iraqi military under Saddam had large numbers of Shia and Kurdish soldiers ([Peled, 1998](#)) while Sunni servicemen are a key component of the Syrian military. It also creates a dilemma for an autocratic leader. In a meritocratic system these non-Slavic soldiers stood little chance of promotion and recognition as their performance and skills, at least initially, were inferior to those of their Slavic comrades. The meritocracy's alternative—a system that promotes agents based on their origin and loyalty to the regime—would have also prevented the promotion of out-group soldiers, non-Slavs and by and large non-Communists. Thus, the two main evaluation systems discussed by scholars of autocracy ran the risk of alienating non-core group subordinates exactly when their active effort on behalf of the regime was needed the most. At the same time, a widespread affirmative action program aimed at promoting out-groups would have undoubtedly harmed the



autocrat's standing among the regime's core supporters.

We argue that in such a situation the autocracy would adopt a system that we define as *bounded meritocracy*. In bounded meritocracy, performance is the general guiding principle used to evaluate agents. At the same time, criteria other than merit are used for evaluation and promotion of small, but strategically important categories of agents and these criteria might differ depending on the level at which such evaluation is conducted. Thus, lower level superiors will be more likely to stick to pre-crisis promotion criteria or prefer agents who are similar to them or pose lesser risks. The higher lever authorities, however, will be focused on balancing the preexisting status quo with the emerging strategic demands.

**Hypothesis 3.** *Although merit will predominate in most evaluation decisions, autocrats will strategically reward certain members of out-groups to achieve signaling and propagandistic goals.*

Thus, we demonstrate that instead of engaging in widespread promotion of out-group agents, autocrats might focus on a limited number of such strategic promotions. These, in turn, could serve as signals to increase the out-groups' support of the regime. In that part of our argument, we join both classic ([Arendt, 1973](#)) and emerging ([Egorov and Sonin, 2020](#); [Gurieva and Treisman, 2020](#)) research that focuses on the importance of propaganda, information management in autocratic regimes and demonstrate how symbolic politics such as decorations awarded by the state is a part and parcel of broader personnel, promotion and evaluation decisions. We test our argument by analyzing combat decorations received by top scoring Soviet fighter pilots during WWII.

### 3 Research Design and Data

We test our arguments using a unique dataset on Soviet fighter aces. Fighter aviation is a promising setting to examine the relationship between performance, origin and promotion in autocracies. First, fighter pilots as a group made important contributions to ensuring Soviet victory ([Hardesty and Grinberg, 2012](#)). The strategic importance of dominating the skies raised the stakes for commanders making personnel decisions regarding fighter pilots. Low morale or incorrect assignments could imperil the already fragile air defense systems against the Nazi bombing assaults that had devastated the Red Army during the first years of the war.

Next, the group of fighter pilots was sufficiently large to allow for heterogeneity in origin, ideology, and performance. At the time of German invasion, the Soviet fighter aviation included about four thousand aircraft on its Western borders; by the war's end, over 6,200 fighter planes regularly flew missions against the Wehrmacht ([Hardesty and Grinberg, 2012](#)). Pilots were recruited from all walks of Soviet life, from the children of Kremlin top officials (such as Stalin's own son) to peasants from the USSR's far-flung ethnic republics. Indeed, our data (presented in full below) shows that 65% of pilots came from the working class. Though far from the elite governing the USSR from the Kremlin, fighter pilots nonetheless enjoyed a level of prestige and public notoriety above that of an average bureaucrat or front-line soldier. The war gave rise to a new class of highly decorated and publicly visible aces, who became the wartime embodiments of the Soviet propaganda "hero cult" ([Berkhoff, 2012](#)). Aces were venerated and top scoring pilots such as Ivan Kozhedub, Aleksandr Pokryshkin and Grigorii Rechkalov became household names.

Finally, in fighter aviation, individual-level performance and outcomes are directly linked. WWII fighter planes were piloted by a single individual and hence were less subject to group dynamics, external interference, principal-agent problems and macro-level factors.<sup>1</sup> In the air, it was the pilot's individual skills that mattered the most. While courage and physical prowess were important, the job of a fighter pilot is technically complicated and requires long periods of formal training. Knowledge of and adherence to rules are as crucial for fighter pilots as they are for individuals operating and seeking promotion and survival in other bureaucratic or government settings. Most crucially for our purposes, in the case of fighter pilots individual performance can be quantified and compared to other pilots within their observable peer group. During WWII fighter pilots were occasionally required to perform reconnaissance and ground assault sorties, but their main mission centered on destroying enemy aircraft: an observable and measurable activity that is directly linked to individual merit. Better pilots score more 'confirmed victories' – each enemy plane downed – than pilots who are less meritorious.

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<sup>1</sup>In fact, up until 1943 most Soviet fighter pilots could not even communicate with the outside world while in the air because their planes did not have radio equipment ([Smirnov, 2013](#))

### 3.1 Quantifying Merit

Our data on individual merit and performance from a Russian language compendium (‘Encyclopedia’) of top Soviet fighter pilots entitled *Vse Asy Stalina, 1936-1953* (All Stalin’s Aces, 1936-1953), compiled by Bykov and published in 2014 (Bykov, 2014).<sup>2</sup> The bulk of the material is devoted to WWII and based on materials from the Russian State Military Archive, Central Archives of the Ministry of Defense of the Russian Federation, and the Central Russian Naval Archives. All fighter pilots with at least five individual ‘confirmed victories’ in aerial combat by the end of the war received entries in the Encyclopedia.

In total, 3,197 such pilots fought in the Red Army during WWII.<sup>3</sup> For each pilot entry, the encyclopedia includes the following information: Full name (Last, First and Patronymic), birth year, military rank at the start and finish of combat deployment, pilot’s regiment, periods of combat deployment and the type of the fighter plane that the pilot operated. The encyclopedia also presents detailed information on the pilots’ aerial combat victories by each pilot, including the date, the number and the type of Axis aircraft shot down. A typical entry and its translation to English are shown in Figure A1.

Our main measure of merit is the number of ‘confirmed victories’ for each pilot over their combat service in the war. Because the Soviet aviation’s main task was to provide tactical support for ground troops the destruction of Axis bombers and reconnaissance aircraft was more valuable than downing a fighter plane. For instance, according to a 1943 directive, a Soviet fighter pilot was to be nominated for an award after downing three bombers or four aircraft of other types. Thus we include one count of the total number of planes downed (‘Confirmed Victories: All Planes’) both every quarter that a pilot flew (for the extensive margin analysis) as well as cumulatively at the time of an award nomination (for the intensive margin analysis). As a robustness check, we also create an other variable measuring just Axis bombers and reconnaissance planes downed (‘Confirmed Victories: Bombers’).<sup>4</sup> Because at the time of their awards some pilot had zero ‘con-

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<sup>2</sup>We supplement this data with information on the regiment in which pilots served taken from Bykov and Anokhin (2014).

<sup>3</sup>The Soviet Air Force did have female fighter pilots but their number was small and no female fighter pilot scored enough victories to be included in the Encyclopedia.

<sup>4</sup>If the victory was a result of a joint effort of several Soviet pilots it is recorded as a ‘group victory’ and presented

firmed victories', we calculate an inverse hyperbolic sine transformation (IHS) for each measure, which functionally allows it to perform as if it was log-transformed.<sup>5</sup>

How reliable and accurate are these data? Unfortunately we cannot replicate the archival work of Bykov (2014). Instead, where possible we check the book against historical research, the few available regimental histories, published memoirs, and oral history interviews. Based on these sources we can confirm that details such as names, ranks, units, places and periods of service, awards and in most instances, specific engagements and victories, correspond to that listed in the encyclopedia. When divergences do occur they tend to be minimal, typically a slightly different place or date of a specific engagement.

The other crucial question is how well the measure of 'confirmed victories' captures wartime reality. 'Confirmed victories' entered the pilot's score record following a two-stage process. First, after an engagement the pilot submitted a report claiming downed enemy aircraft. This 'declared victory' (*zaiavlennyyi sbitym*) would then become a 'confirmed' one (*zashchitannaia/podtverzhdennaia pobeda*) after investigation and approval by higher military authorities. Because in practice most supporting evidence was often unavailable,<sup>6</sup> the most common source used to confirm victories was testimonies from other pilots who participated in the engagement (Bykov, 2014; Smirnov, 2013). Yet even if the pilot claiming the victory and his comrades clearly saw a hit after which enemy aircraft exited the battle, unless it exploded in the air or hit the ground immediately thereafter, Soviet pilots and military authorities had no way of knowing if it was actually destroyed. As a result, confirmed victories cannot be viewed as a precise measure of *destroyed* enemy aircraft. According to (Bykov, 2014), the ratio of confirmed victories to actually destroyed planes is between 3:1 and 5:1.<sup>7</sup>

That said, this discrepancy between confirmed victories and destroyed enemy aircraft affected

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as an individual fraction of the group effort (i.e. 1/3 if three Soviet planes shot down one Axis aircraft). We show robustness checks using different calculations.

<sup>5</sup>The inverse hyperbolic sine transformation is defined as  $\log(y + \sqrt{y^2 + 1})$ . For large values of  $y$ , it performs similarly to the logarithmic transformation and is interpreted the same, but it is able to accommodate values of 0.

<sup>6</sup>Examples include gun camera (*kinofotopulemet*) footage, reports from ground observers, wreckage or pieces of the downed enemy plane, etc.

<sup>7</sup>An analysis of Soviet confirmed victories and German reported losses in several air battles presents a slightly higher ratio of 5.6:1 (Smirnov, 2013) The issue was not unique to the Red Army; all WWII air forces suffered from the same recording problem, though probably to a lesser degree.

all Soviet pilots equally and we are not aware of any unit- or commander-level variation in dealing with this deficiency of WWII recording. The measure of confirmed victories should more be seen not as a count of destroyed enemy aircraft but as a very related measure of the ability to damage enemy aircraft in combat, also a central component of the fighter pilot's job. Importantly, Appendix Figure A5 shows that there are no discontinuities in the our measure of number of victories around certain thresholds used to determine eligibility for awards. We see no evidence in our data that pilots (or their commanders) explicitly gaming the system to artificially increase victories and qualify themselves for more prestigious awards.

### 3.2 Combat Decorations

The main outcome measures we use are from the awards given to fighter pilots. Combat awards were widely used in the Red Army; during WWII, about eleven million decorations were distributed to Soviet servicemen.<sup>8</sup> Many were confirmatory awards given for participation in various campaigns and battles but discretionary awards designed to recognize individual achievements were common. When it came to fighter pilots, the Red Army's combat decorations system was simultaneously clear and precise enough to provide general guidance and benchmarks yet at the same time flexible and vague enough to allow each commanding officer almost complete freedom to decide which subordinates to recognize and reward and which to discriminate against.

For the vast majority of fighter pilots, shooting down enemy aircraft was the key criteria for recognition was the number 'confirmed victories' discussed above.<sup>9</sup> Although orders from Stalin and the Air Force commander Aleksandr Novikov regularly set guidelines about the number of victories needed to qualify for combat decorations, overall the Soviet awards system was discretionary, not confirmatory in its nature. Nominations for awards were the commanding officers' prerogative and pilots who met the criteria had no automatic right to receive an award. Furthermore, with the exception of the most prestigious award (Hero of the Soviet Union), the criteria

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<sup>8</sup>The US awarded less than 1.5 million. 'The US army often took as long as six months to process individual awards. In Stalin's army the equivalent was frequently three days,' writes Merridale (2006).

<sup>9</sup>In some fighter regiments that specialized in escort of bombers or ground attack aircraft or aerial reconnaissance other criteria were also important (Kichin, 2012) but the number of such units was small and even there aerial combat victories also played a role in the awards' nomination and approval.

did not specify for which exact award pilots were to be nominated, thus giving commanders substantial leeway even when guidelines were strictly followed. In numerically small aviation regiments, the commanders that submitted award nominations knew the pilots, their backgrounds and records, and made their decisions based on this personal familiarity.

But being nominated for an award was only the first step in the process. All nominations had to be approved by higher authorities, the level of which depended on the award's prestige. Almost by definition, the higher-ups had no up-close knowledge of the pilot's records and had to rely instead on the Award Forms (*Nagradnye Listy*) that accompanied each nomination. These handwritten or typed documents listed essential information such as the pilot's demographic data, ethnicity, party affiliation, service record and provided a brief explanation for why the person deserved the award.<sup>10</sup> Our dataset codes up these Award Forms, collected from Pamiat' Naroda, a website created by Russia's Ministry of Defense to preserve the memory of the war and its Soviet participants.<sup>11</sup> Using names (including patronymic), birth years, and regiment numbers, we located the Award Forms of pilots listed in the aces' encyclopedia. Fighter pilots were a highly decorated elite group and of the aces with at least five WWII-era individual victories, only nineteen did not receive any combat decorations during that period; most aces had multiple awards to their name. After missingness in the Award Forms was accounted for, we are left with 8,464 awards for 2,820 pilots (86%) out of the original group of 3,197 in the encyclopedia.<sup>12</sup>

Our first analysis analyzes whether pilots received any award in, i.e. the extensive margin. Building a panel dataset at the pilot-quarter level (our first unit of analysis), we code up a binary indicator for whether a pilot was nominated for an award each quarter, as well as whether a pilot received a top award (defined below). We start with this analysis to investigate any discrimination in the actual nomination process, either based on merit or other measures of loyalty.

Next, we digitized the data in the Award Forms in order to code up several other key outcomes.

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<sup>10</sup>There is some minor variation in the form's content across units and time periods. A subset of forms also list the nominee's social origin (i.e. worker, clerk, peasant).

<sup>11</sup><https://pamyat-naroda.ru/>

<sup>12</sup>Our measures of loyalty are derived from the Award Forms, and not the Encyclopedia. Therefore, our analysis sample only includes pilots which received at least one award. In the Appendix, we convert our data to a time series and show our results are robust to pilot-quarter level analysis, where the outcome is whether a pilot won an award in a given time period.

The higher authorities made the final decision whether to approve the original nomination, or whether a different award was given instead. In numerous instances the award that the pilot eventually received was less prestigious (or, infrequently, more prestigious) than the one they were originally nominated for. Therefore, we code several outcomes for each pilot-award (our second unit of analysis): the level of the nomination ('nominated award') and the actual given award ('received award').<sup>13</sup> To better fit the realities in which fighter pilots operated and the awards they were eligible for we slightly adjust the official order of precedence of Soviet decorations (i.e. *Nagradsnaia Sistema Sovetskoi Armii*, 2012) and use a continuous prestige ranking of decorations received by fighter pilots in our dataset.<sup>14</sup> This ranking of prestige functions as the intensive margin.

**TABLE 1: NOMINATED AND RECEIVED AWARDS**

Ranking	Award Name	Num. Nominated	Num. Received
13	Geroi Sovetskogo Soyuza	750	615
12	Orden 'Lenina'	402	169
11	Orden 'Krasnaya Znamya'	5,020	4,463
10	Orden 'Suvorova'	44	51
9	Orden 'Ushakova'	4	5
8	Orden 'Kutuzova'	30	21
7	Orden 'Nakhimova'	2	2
6	Orden 'Bogdana Kmel'nitskogo'	16	7
5	Orden 'Aleksandr Nevskiy'	466	559
4	Orden 'Otechestvennaya Voina' - 1st Level	1,041	1,312
3	Orden 'Otechestvennaya Voina' - 2nd Level	297	588
2	Orden 'Zvezda'	586	842
1	Orden 'Slava'	0	25

This table gives the distribution of awards that all pilots in the sample either were nominated for or actually received for their service during the war.

Table 1<sup>15</sup> shows the distribution of both nominated and received awards connected to the 2,820 pilots. We assign the highest value of 13 to *Geroi Sovetskogo Soyuza* (Hero of the Soviet Union), as the most prestigious award given out during the war. Technically the least prestigious award

<sup>13</sup>Data on 'received awards' comes from a separate document accompanying the Award Form confirming its approval and receipt

<sup>14</sup>In Appendix Section A4, we collapse this ranking into just seven categories (which results in a more normal distribution), while in Appendix Section A5, we look at close calls between closely related awards. All of our results are robust to these alternate coding.

<sup>15</sup>Suvorov and Kutuzov were famous Russian tsarist-era military commanders. Ushakov and Nakhimov were tsarist admirals. Bogdan Khmel'nitskii was a Ukrainian cossack leader. Aleksandr Nevskii was a medieval Russian prince.

aces are nominated to is the *Orden Krasnoi Zvezdy*, but because 24 pilots actually received a lower decoration (*Orden Slavy*), the latter serves as the floor for our analysis. The other main outcomes of interest come from these mismatches between nominated and received awards. We code a variable ‘promotion’ if the award the pilot received was more prestigious than that he was nominated for (4% of cases). ‘Demotion’ codes the reverse: the ‘received award’ was less prestigious than the one nominated (21% of cases).<sup>16</sup>

### 3.3 Other Pilot Characteristics

As noted above, the Award Forms (*Nagradnye Listy*) data from *Pamyat Naroda* provide compelling data on pilots’ background to test our other hypotheses. First, we measure explicit loyalty using a field in the *Nagradnye List* form listing party affiliation. Although pilots joined the Communist Party of the Soviet Union (CPSU) for many reasons (including to advance their careers), party members are publicly perceived as more ideologically committed to the Communist project. The higher authorities making decisions on awards only have sparse information on the pilots through Award Forms to adjudicate loyalty. We argue that if the regime indeed rewarded loyalty with more prestigious decorations, the most logical mechanism for that information to be communicated to the higher-ups would be through the various types of party membership and affiliation.

Therefore, we code up several measures aggregating information from the Award Forms. First, at the time of their award roughly 55% were full members of the party at the time of their nomination. In most cases, the year the pilot joined is given in the field. Second, roughly 24% had ‘candidate’ (probationary) status, meaning their full party status was under consideration but had not received final approval. Third, many younger pilots (or 17% of the sample) listed membership in the Komsomol youth organization as their party affiliation. The Komsomol is usually seen as a stepping stone for young people on their way to joining the party but did not automatically lead to membership. Only 5% of pilots had no Communist party affiliation at any level when they were nominated. This variation maps onto qualitative assessments of the heterogeneity in party loyalty

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<sup>16</sup>We are not aware of cases in which nominations were rejected entirely. We also focus only on decorations awarded for performance and merit and hence do not code campaign or battle participation medals.



among pilots during the war. The German invasion led to catastrophic losses among the already serving pilots and made it imperative to quickly train and deploy large numbers of new ones. As a result, the screening criteria softened and it became possible for candidates from less politically reliable backgrounds such as descendants of the tsarist nobility or those with no prior history of communist activism to also join the ranks ([Besklubov, 2006](#); [Burovin, 2010](#)).

We incorporate this party information in a couple of ways. In our main specifications, we code a simple indicator if a pilot had any formal political affiliation with the regime (as a full, candidate, or Komsomol member). We also show models with each of the four party ranks included as separate categorical variables. Next, to better capture dedicated loyalty to the party, we code a ranking that takes a 2 if a pilot was both a member of the party and joined before the war began in 1941; 1 if they became a member during the war, when CPSU admission requirements for soldiers were substantially relaxed or were affiliated in the other two ways (candidate status or Komsomol), and 0 if they never had any affiliation. As the war was explicitly framed by both the Soviet and the Nazi governments in ideological terms, the varying degrees of Communist party membership and affiliation is the best observable indicator of loyalty to the Soviet regime during wartime. Finally, we include a measure for whether the pilot served as a Party Commissar, e.g. a political officer embedded in the regiment and tasked with enforcing party and ideological obedience within the unit. These roles were usually filled by those most loyal to the regime.

Next, the Award Forms list the official ethnicity of each pilot.<sup>17</sup> Soviet Union started out as an "affirmative action empire" ([Martin, 2001](#)) that promoted and institutionalized ethnic particularism among the country's many nationalities as long as it did not deviate from the official communist doctrine. Since mid-1930s, however, the central government started promoting a different, Russocentric image of the state, according to which Russians were the "elder brother," first among equals in the Soviet family of nations ([Berkhoff, 2012](#); [Brandenberger, 2002](#)). While Russians were clearly at the top, a special place within the system was reserved for the two other East Slavic ethnic groups, Ukrainians and Belorussians. In the Red Army the official distinctions between the

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<sup>17</sup>This determination was based on official records kept by the state. One's ethnicity was automatically determined based on the ethnicity of the parents. In case of mixed marriages the child could choose the ethnicity of the father or the mother.

three East Slavic people mattered little, especially at the unit level.<sup>18</sup> Minorities, even those who spoke fluent Russian and were affiliated with the communist party were harder for commanders to understand at best and victims of xenophobic prejudice at worst. Therefore we code a binary indicator for whether a pilot was not a member of one of the three East Slavic ethnicity. Roughly 3% of the sample falls into this group.

Finally, we employ a robust set of controls for other factors that could affect both a pilot's nomination potential and their treatment at the hands of higher authorities. We first include several measures of pilot experience that are essential for parsing out the independent effects of merit and loyalty on award outcomes. We use pilots' birthdates to code up their age at the time of their nomination: older pilots are more likely to have additional flight hours (and opportunities for downing enemy planes) and graduated from the Komsomol youth organization into higher party ranks. In the same vein, we count the number the years of military experience for each pilot; this is created using the difference between their entry into the air force and the year they were nominated for each award. Next, we code an indicator for whether a pilot was a commander or deputy commander in their unit ('Commander'). Such leadership positions might signal extraordinary ability beyond that captured in the 'confirmed victories' score and result in preferential treatment throughout the awards process. We also include a four-point scale of the military rank of each pilot roughly corresponding to the categories: NCOs, junior officers (junior lieutenant to captain), mid-level officers (major and Lt. colonel) and high-ranking officers (colonel and above). We also include a binary indicator if the pilot had been wounded during the feat for which he was nominated for an award, and a count of the number of award that a pilot had won any award previous to the one he or she was being nominated for.

Finally, combat performance was also influenced by the region and the period of the war the pilot was active. Some regions experienced heavier fighting than others, and the diminished and exhausted Luftwaffe of 1945 was an adversary very different from the well equipped German aerial war machine of 1941-42. Naturally, areas and periods of heavier fighting increased the

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<sup>18</sup>Commanders explicitly treated Russians, Ukrainians and Belorussians as belonging to a single category (Dmitriev, 2013; Schechter, 2012) and members of the three groups, especially young working class males who constituted the majority of fighter pilots were usually indistinguishable from each other in behavior or attitudes. Appendix Tables A10-A12 show that with regards to awards, all three nationalities were treated fairly equally.

pilot's risk of being shot down but also tended to drive up the confirmed victories count. To account for this variation, we code up each pilot's regiment number. This fixed effect captures where the pilot was deployed as well as the type of aviation unit they participated in: frontline, air Defense, and naval.<sup>19</sup> In addition, we include a fixed effect for the time period (either year or quarter depending on the analysis) when the award nomination was submitted for consideration. This picks up over-time variation in combat intensity and type of missions pilots were tasked with. As an additional robustness check, we combine the two into a regiment-quarter or regiment-year fixed effect to focus on within-regiment differences at the same point in time. This provides an additional control for exposure to combat. Summary statistics for all the variables can be found in Appendix Table A1.

## 4 Empirical Results

Our modeling strategy for assessing the importance of merit, loyalty, and signaling on combat decorations first analyzes data at the pilot level. The main outcome in Columns 1-3, Table 2, is whether a pilot received any award during any quarter that they flew in combat, while that in Columns 4-6 creates a binary indicator for whether they were nominated for a 'top' award, i.e. an award ranked 11 or above in Table 1. This latter category captures the most prestigious awards pilots could be nominated for. We remove all quarters prior to a pilot's entry into the military and after their death if they were killed in action.

To run these specifications, we must assume that ethnicity is fixed over time. In other words, to build a panel data set at the pilot-quarter level, we need to backwards impute ethnicity based on award forms that hadn't yet submitted. Take for an example a pilot who began flying in 1942, yet was not nominated for an award until July 1943 when an award form was first submitted. If that pilot's form marked Russian on the ethnicity field, we backwards impute data for the quarters he fought in prior to being nominated for the award. This assumption is more justifiable for ethnicity than it is for party membership status, which can change over the course of the war.

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<sup>19</sup>Frontline units were the most combat active, since they were tasked with protecting Soviet ground troops and conducting offensive actions. Air defense and naval units defended key civilian centers, strategically important installations and naval operations and facilities against enemy aircraft, giving them fewer opportunities.

Therefore for each outcome in Table 2, we first show two types of models, first with only fixed pilot characteristics as well as those we can easily measure over time (years of experience, age, previous awards, etc.), one with separate fixed effects for quarter and regiment and the other with a regiment-quarter FE. Then for the last model, we backwards impute missing data on party membership, commander roles, and military rank that is only available from the award forms, but interpret these point estimates with caution.<sup>20</sup>

As the initial decision handed down by the regiment commander (the lower-level bureaucrat), we argued in Hypothesis 1 that merit should matter most. The results in Table 2 demonstrate quite clearly that the measure of planes a pilot downed each quarter is most significantly correlated with the probability of being nominated for any award, as well as for the most prestigious ones. The Soviet Union, at least at this level of selection, was fundamentally meritocratic, rewarding those who outperformed with deserved recognition.

However, non-Slavic pilots experienced discrimination over whether or not they were nominated for awards. In all specifications, the indicator for non-Slavic ethnicity is negatively signed and statistically significant, both for models analyzing any award given as well as just top awards. Regimental commanders may have been prejudiced against successful members of minority ethnic groups and prevented them from gaining due recognition for their military accomplishments. All predictors are scaled, allowing us to compare effect sizes. Discrimination based on ethnicity is roughly the same magnitude as military experience and may be slightly larger than age. We do see party members, commanders, and pilots with higher rank all are more likely to be nominated, controlling for the number of victories, but the data on award nomination forms for more precision about the role of these predictors in the process. **NOTE: PARTY POSITIVE AND SIGNIFICANT HERE. WE NEED TO RETHINK INCORPORATION INTO THEORY**

We turn to this intensive margin in Table 3, where we run simple OLS models with the ‘rank’ of the nominated award as the outcome variable. The unit of analysis is the pilot-award; pilots can be nominated for multiple awards and each award enters the analysis separately. We therefore cluster standard errors at the pilot level. For all models, we include the full set of controls and then

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<sup>20</sup>In the next set of models examining the intensive margin, we include an indicator for wounded status that cannot be justifiably be backwards imputed.

**TABLE 2: AWARD NOMINATIONS**

	Won Any Award			Won Top Award		
	(1)	(2)	(3)	(4)	(5)	(6)
Confirmed Victories: All Planes	0.144*** (0.003)	0.128*** (0.003)	0.143*** (0.003)	0.117*** (0.003)	0.108*** (0.003)	0.116*** (0.003)
Non-Slavic Ethnicity	-0.007*** (0.003)	-0.006** (0.003)	-0.008*** (0.003)	-0.007*** (0.002)	-0.006*** (0.002)	-0.007*** (0.002)
Years Military Experience	0.008*** (0.003)	0.004 (0.003)	0.003 (0.003)	0.011*** (0.003)	0.007*** (0.003)	0.006** (0.003)
Age (log)	-0.003 (0.003)	-0.003 (0.003)	-0.007** (0.003)	-0.005* (0.002)	-0.004* (0.003)	-0.007*** (0.003)
Number of Previous Awards (IHS)	-0.049*** (0.003)	-0.034*** (0.004)	-0.056*** (0.003)	-0.032*** (0.003)	-0.020*** (0.003)	-0.039*** (0.003)
Any Party Affiliation			0.010*** (0.002)			0.007*** (0.002)
Commander			0.018*** (0.002)			0.023*** (0.002)
Military Rank			0.011*** (0.003)			0.003 (0.002)
Quarter FE	Yes	No	Yes	Yes	No	Yes
Regiment FE	Yes	No	Yes	Yes	No	Yes
Regiment-Quarter FE	No	Yes	No	No	Yes	No
Observations	32,656	32,656	32,549	32,656	32,656	32,549
R <sup>2</sup>	0.187	0.409	0.189	0.142	0.355	0.145

This table examines outcomes for whether a pilot received any award in a quarter (Columns 1-3) or whether they received a 'top' award (ranking of 11 or higher) in a quarter (Columns 4-6). All analysis is done at the pilot-quarter level with standard errors clustered on pilot. Columns 3 and 6 include pilot characteristics reported on award forms that submitted after the quarter analyzed, and therefore should be interpreted with caution.

vary the fixed effects listed above. All coefficients are standardized to better all for comparisons across different predictors.

**TABLE 3: NOMINATED AWARD RANK**

	(1)	(2)	(3)	(4)	(5)	(6)
Confirmed Victories: All Planes	0.094*** (0.014)	0.117*** (0.016)	0.093*** (0.014)	0.090*** (0.015)	0.094*** (0.014)	
Confirmed Victories: Bombers						0.023** (0.012)
Any Party Affiliation	-0.012 (0.011)	-0.011 (0.011)			-0.012 (0.011)	-0.013 (0.011)
Pre-War Member Ranking			-0.015 (0.011)			
Party: Komsomol				-0.051** (0.022)		
Party: Candidate				-0.033 (0.023)		
Party: Full Member				-0.006 (0.026)		
Party Kommissar					0.004 (0.010)	
Non-Slavic Ethnicity	-0.023** (0.010)	-0.025** (0.011)	-0.023** (0.010)	-0.024** (0.010)	-0.023** (0.010)	-0.023** (0.010)
Commander	0.105*** (0.012)	0.104*** (0.012)	0.103*** (0.012)	0.096*** (0.012)	0.105*** (0.012)	0.113*** (0.012)
Wounded	0.020** (0.010)	0.015 (0.011)	0.020* (0.010)	0.018* (0.010)	0.020** (0.010)	0.022** (0.010)
Had Previous Award	0.170*** (0.014)	0.169*** (0.015)	0.167*** (0.014)	0.160*** (0.014)	0.170*** (0.014)	0.186*** (0.014)
Age (log)	0.008 (0.015)	0.009 (0.016)	0.011 (0.015)	-0.004 (0.015)	0.007 (0.015)	0.012 (0.015)
Years Military Experience	-0.058*** (0.014)	-0.050*** (0.016)	-0.057*** (0.015)	-0.062*** (0.014)	-0.058*** (0.014)	-0.058*** (0.015)
Military Rank	0.028** (0.013)	0.017 (0.014)	0.029** (0.013)	0.025* (0.013)	0.028** (0.013)	0.029** (0.014)
Year FE	Yes	No	Yes	Yes	Yes	Yes
Regiment FE	Yes	No	Yes	Yes	Yes	Yes
Regiment-Year FE	No	Yes	No	No	No	No
Observations	8,487	8,487	8,487	8,487	8,487	8,487
R <sup>2</sup>	0.166	0.272	0.166	0.168	0.166	0.162

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 This table examines the rank of the award pilots were initially nominated for. Coefficients have been standardized by subtracting each value by the overall mean and dividing by its standard deviation. The unit of analysis is the pilot-award with standard errors clustered at the pilot level.

Table 3 also shows definitively that merit matters most. Comparing the standardized coefficients, we see that the number of ‘confirmed victories’ a pilot has is by far the strongest predictor of the prestige of the award he is nominated for. This result holds for both measures of merit, e.g. the total count of Axis planes downed, and the count of bombers. Importantly, the various party

measures are not correlated with award prestige. A binary indicator if a pilot had any sort of party affiliation (Columns 1-2) is negatively signed, while an indicator for whether the pilot joined prior to the war (Column 3) is also negative and not statistically significant. Column 4 compares all three measures of party affiliation to the reference category of 'no party affiliation' and finds no significant effects for any of the levels. Finally, Party Commissars are not more likely to win more prestigious awards (Column 5). We do not see any evidence that lower-level commanders placed a premium on pilots demonstrating some sort of formal connection to the party.

Ethnic discrimination, however, does rear its head again at this stage. Pilots outside of the three Eastern Slavic groups had a significantly lower probability of being awarded more prestigious decorations. This effect is robust across different model specifications and is roughly of the same magnitude as the effect of being wounded in combat. Pilots with leadership roles, a history of previous awards and higher military ranks all saw more favorable treatment, though surprisingly accumulating experience (as measured by the number of years in the military) may have worked against their decoration chances. Commanders tended to reward youth when making decisions about awards.

Next, in Table 4, we analyze how the higher level authorities assessed the nominations submitted by regimental commanders, and more specifically whether they gave the pilot a different award from that he was nominated for. Columns 1-5 analyze what we term 'promotions', which occur if the final award was more prestigious (according to our continuous ranking) than the nominated award. Columns 6-10 analyze the opposite pattern ('demotions'), when the final award is less prestigious. The model specifications are nearly identical to those shown in Table 3, except here in some models we include as a control the rank of the nominated award. This allows us to focus on factors predicting when higher authorities will intervene in the awards process, while controlling for the nomination process.

Here again merit matters. Pilots with more confirmed victories are much more likely to see their nominations revised upwards and receive more prestigious awards. We also see some evidence that having a stronger connection to the CPSU improves ones chances at receiving higher awards. Commanders also tend not to demote in cases when soldiers were wounded in combat or had a higher rank, perhaps placing a higher value on these traits. **THIS DISCUSSION IS VERY**

## DIFFERENT FROM BEFORE.

Importantly, we see also ethnicity factoring into higher-ups decision making. After merit, being a member of a non-Slavic ethnicity is the strongest predictor of receiving an award higher than that initially nominated for. The effect is precisely estimated across the model specifications and is perhaps the strongest evidence of ‘affirmative action’ within the Red Army. Non-Slavic pilots received preferential treatment during the awards process, in part as we argue above because they wield strong propagandistic value for a regime under crisis. Below we provide qualitative data about how this worked in practice.

**TABLE 4: PROMOTIONS AND DEMOTIONS**

	Promotions					Demotions				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Confirmed Victories: All Planes	0.023* (0.013)	0.015 (0.015)	0.052*** (0.013)	0.053*** (0.013)	0.053*** (0.013)	0.040*** (0.013)	0.035** (0.015)	0.025* (0.013)	0.026* (0.013)	0.027** (0.013)
Any Party Affiliation	0.025*** (0.009)	0.028*** (0.010)	0.022** (0.009)			0.009 (0.010)	0.006 (0.011)	0.011 (0.010)		
Pre-War Member Ranking				0.008 (0.011)					0.003 (0.011)	
Party: Komsomol					0.036* (0.019)					0.033* (0.020)
Party: Candidate					0.064*** (0.020)					0.019 (0.021)
Party: Full Member					0.040* (0.022)					0.018 (0.024)
Non-Slavic Ethnicity	0.040*** (0.014)	0.039** (0.015)	0.033** (0.013)	0.033** (0.014)	0.033** (0.013)	-0.004 (0.009)	-0.006 (0.010)	-0.0002 (0.009)	-0.0001 (0.009)	0.0001 (0.009)
Commander	-0.026** (0.013)	-0.022* (0.013)	0.006 (0.012)	0.008 (0.012)	0.007 (0.012)	-0.012 (0.012)	-0.005 (0.012)	-0.028** (0.012)	-0.028** (0.012)	-0.025** (0.012)
Wounded	0.009 (0.012)	0.008 (0.012)	0.016 (0.011)	0.016 (0.011)	0.017 (0.011)	-0.013 (0.011)	-0.011 (0.012)	-0.016 (0.011)	-0.016 (0.011)	-0.015 (0.011)
Had Previous Award	-0.052*** (0.014)	-0.050*** (0.016)	-0.0001 (0.014)	0.002 (0.014)	0.001 (0.014)	-0.009 (0.014)	-0.012 (0.015)	-0.035** (0.014)	-0.034** (0.014)	-0.031** (0.014)
Age (log)	0.017 (0.015)	0.017 (0.016)	0.020 (0.014)	0.016 (0.014)	0.025* (0.015)	-0.026 (0.016)	-0.036** (0.017)	-0.027* (0.016)	-0.028* (0.015)	-0.023 (0.016)
Years Military Experience	0.027* (0.014)	0.032** (0.016)	0.009 (0.013)	0.009 (0.013)	0.010 (0.013)	0.046*** (0.015)	0.047*** (0.017)	0.055*** (0.015)	0.055*** (0.015)	0.056*** (0.015)
Military Rank	-0.004 (0.014)	-0.009 (0.015)	0.005 (0.014)	0.005 (0.014)	0.007 (0.014)	-0.011 (0.014)	-0.009 (0.015)	-0.015 (0.014)	-0.014 (0.014)	-0.014 (0.014)
Nominated Award Rank			-0.308*** (0.017)	-0.308*** (0.017)	-0.307*** (0.017)			0.154*** (0.010)	0.153*** (0.010)	0.154*** (0.010)
Year FE	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Regiment FE	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Regiment-Year FE	No	Yes	No	No	No	No	Yes	No	No	No
Observations	8,487	8,487	8,487	8,487	8,487	8,487	8,487	8,487	8,487	8,487
R <sup>2</sup>	0.083	0.178	0.161	0.161	0.162	0.099	0.213	0.119	0.118	0.119

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 This table examines whether the award a pilot received was either more prestigious (Columns 1-5: Promotions) or less prestigious (Columns 6-19: Demotions) than that he was nominated for. Coefficients have been standardized by subtracting each value by the overall mean and dividing by its standard deviation. The unit of analysis is the pilot-award with standard errors clustered at the pilot level.

The overall implications of these promotions and demotions can be seen in the final distribu-



tion of awards, as shown in Table 5. The outcome variable in this table is the rank of the award received by the pilot at the end of the process, and the model specifications are identical to those used in Table 3.<sup>21</sup> Several interesting findings stand out. First, merit is still the strongest predictor of the level of combat decoration. However, neither party affiliation or ethnicity matter once other factors are controlled for. This contrasts to the results in Table 3, where non-Slavic pilots experienced discrimination at the nomination stage. After higher-ups intervened, non-Slavic pilots received the same recognition as their peers. But stronger party affiliation still did not provide much of a benefit in these assessments. **CHANGE THIS TOO BASED ON THEORY**

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<sup>21</sup>We do not include a measure of the award the pilot was nominated for, as that would functionally approximate the results in Table 4 instead.

**TABLE 5: RECEIVED AWARD RANK**

	(1)	(2)	(3)	(4)	(5)	(6)
Confirmed Victories: All Planes	0.084*** (0.014)	0.099*** (0.016)	0.084*** (0.014)	0.082*** (0.014)	0.084*** (0.014)	
Confirmed Victories: Bombers						0.013 (0.011)
Any Party Affiliation	-0.012 (0.010)	-0.007 (0.010)			-0.012 (0.010)	-0.012 (0.010)
Pre-War Member Ranking			-0.004 (0.010)			
Party: Komsomol				-0.042** (0.020)		
Party: Candidate				-0.024 (0.021)		
Party: Full Member				-0.015 (0.024)		
Party Kommissar					-0.003 (0.011)	
Non-Slavic Ethnicity	-0.012 (0.009)	-0.015* (0.009)	-0.013 (0.009)	-0.013 (0.009)	-0.012 (0.009)	-0.013 (0.009)
Commander	0.087*** (0.011)	0.086*** (0.012)	0.086*** (0.011)	0.081*** (0.012)	0.087*** (0.011)	0.095*** (0.011)
Wounded	0.024** (0.010)	0.019* (0.010)	0.024** (0.010)	0.022** (0.010)	0.024** (0.010)	0.025** (0.010)
Had Previous Award	0.156*** (0.014)	0.155*** (0.015)	0.155*** (0.014)	0.150*** (0.014)	0.156*** (0.014)	0.172*** (0.014)
Age (log)	0.034** (0.014)	0.040*** (0.015)	0.036** (0.014)	0.027* (0.014)	0.034** (0.014)	0.038*** (0.014)
Years Military Experience	-0.074*** (0.014)	-0.065*** (0.015)	-0.074*** (0.014)	-0.077*** (0.014)	-0.074*** (0.014)	-0.075*** (0.014)
Military Rank	0.045*** (0.013)	0.035** (0.014)	0.045*** (0.013)	0.043*** (0.013)	0.045*** (0.013)	0.047*** (0.013)
Year FE	Yes	No	Yes	Yes	Yes	Yes
Regime FE	Yes	No	Yes	Yes	Yes	Yes
Regiment-Year FE	No	Yes	No	No	No	No
Observations	8,487	8,487	8,487	8,487	8,487	8,487
R <sup>2</sup>	0.165	0.278	0.165	0.165	0.165	0.161

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 This table examines the rank of the award pilots finally received. Coefficients have been standardized by subtracting each value by the overall mean and dividing by its standard deviation. All models include nomination year, regiment, aviation unit, and front fixed effects. The unit of analysis is the pilot-award with standard errors clustered at the pilot level.

## 5 Endogeneity and Robustness Checks

As our analysis has shown so far, award nominations depend on a number of factors potentially highly contingent on the nature of combat pilots faced. Regiment-year fixed effects help control for specific situations, but selection effects into regiments and combat opportunities could also creep in earlier and bias the analysis. For example, non-Slavic pilots may congregate into certain units that didn't have the same exposure to dogfights, thereby giving pilots fewer chances to shoot down enemy planes and make themselves eligible for awards. Networks and political connections might hamper non-Slavic pilots at the onset.

In Appendix Section [A3](#), we test for these selection effects, but ultimately find no differences in our data in the experience, combat opportunities, or level of danger that Slavic versus non-Slavic pilots faced. First, in Table [A2](#), we show using data from the award forms and the Aces Encyclopedia that upon entry into the air force, non-Slavic and Slavic pilots looked very much alike on paper. There are no differences in their class background nor their starting rank, suggesting that they have similar military training and connections (as far as we can measure). Table [A3](#) categorizes the types of planes that pilots flew into those of superior quality (new Soviet-made as well as Western aircraft). Non-Slavic pilots flew the same type of fighters as their non-Slavic counterparts; we find no ethnic discrimination in terms of the type of military hardware (and thus technical capacity to perform). Finally, in Table [A4](#), we show that non-Slavic pilots were just as likely to be killed in action as Slavic pilots. Taken together, we argue that non-Slavic and Slavic pilots were roughly similar in terms of background, equipment, and combat exposure. Differences in award patterns are more a function of discrimination by commanders, rather than mechanistically produced by other biases in the system.

Next, we test the sensitivity of our award ranking to other approaches. Appendix Section [A4](#) collapses the 13 point-scale used in the main analysis above to just seven 'categories.' This produces a much more normally distributed outcome variable. We then re-run all our main analysis and find the same patterns come through. Non-Slavic pilots face considerable discrimination at the nomination stage, which dissipates once higher up commanders disproportionately promote them to higher awards. In Section [A5](#), we go further and examine 'close calls', i.e. situations where

pilots narrowly missed out on a slightly more prestigious awards. We isolate four rough discontinuities between similar awards and run our basic specifications. We find no evidence that once promotions and demotions were taken into consideration, non-Slavic pilots faced discrimination in awards received.

We then run a number of extensions of our main results in Appendix Section A6. Our main results are robust to using different controls for regimental affiliation, while we see no differences between Slavic ethnicities (Russians, Ukrainians, and Belorussians) in terms of their treatment by regimental commanders. Finally, we show that using a measure of both individual and group victories similarly shows merit to be the strongest predictor of award nominations. In Table A13, we show that while non-Slavic ethnicity is negatively correlated with pilots' rank promotions over time, the point estimates are noisily estimated. These suggest a similar pattern to awards in little discrimination by the end of the war in terms of promoting pilots, but we are hesitant to put much weight onto these results because we do not observe the same detail by commanders changing nominations like we do with the awards.

## 6 Discussion

The Soviet Union was explicitly a party state in which the Russian people played the leading role. Nevertheless, our analysis demonstrates that, facing its biggest test the regime prioritized merit over Slavic origin or ideological loyalty. At the same time, the meritocratic system was bounded in that factors other than performance also played a role in some strategic areas. The most important of such factor was ethnicity. As we show, pilots hailing from non-Slavic ethnic groups faced discrimination by their immediate superiors but were subject to affirmative action at the higher levels of evaluation. What explain these seemingly contradictory findings?

Discrimination of minority pilots by their regimental commanders might seem counterproductive. According to Frey and Gallus (2017), awards can improve subsequent performance of the recipient and also of those around him, but only if the decoration process is perceived as just. Unjust awards might have the opposite effect, harming collective and individual morale, group cohesion and performance. Evaluation of who is unjustly rewarded or denied honors is especially

easy in small, tightly knit and information rich environments, such as fighter aviation units. The stakes could be especially high for regimental commanders who were not only responsible for their units' performance but also often flew in combat with their potentially disgruntled subordinates. Yet other concerns trumped such considerations and made ethnic discrimination more likely.

According to numerous sources, prejudice was common in the Soviet Air Force, especially at the unit level. The pilots ranks consisted predominantly of East Slavs. To a large degree this was an inevitable, even if unintended outcome of Soviet policies that emphasized ethnic particularism and promoted native language instruction and institutions in non-Russian areas (Martin, 2001). As a result of these policies, by 1941 the number of young males from non-Slavic backgrounds who were fluent in Russian, the army's language of command, was limited. The Russocentric shift in state policies that started in the late 1930s was simply too recent to substantially alter this reality (Dmitriev, 2013, 69,71). Ukrainians and Belorussians were largely unaffected by this problem because members of these ethnic groups could easily understand Russian even if they were educated in their national languages. Furthermore, operating an aircraft required technical sophistication. Urban centers of the Russian Federation, Ukraine and Belorussia was exactly where the majority of Soviet industry was located and thus a high concentration of people hailing from these areas in the Air Force was only natural. In ethnically homogenous units non-Slavs were the inevitable "other." At best, they became butts of ethnic jokes, at worst they were isolated and targeted.

For instance, memoirs of Kazakh pilots "strongly suggest that it was difficult for Kazakhs to join the Red Army Air Force, and once they did, there were substantial administrative barriers that prevented them from joining frontline units" (Carmack, 2019). Whereas Slavic pilots were quickly sent to frontline units after completing their training, Kazakh pilots, who flew no worse than their comrades, were left behind or lingered in reserve regiments. One Kazakh aviator, Talgat Begel'dinov, recalls that when he finally arrived to a frontline regiment and sought assignment, the first two squadron commanders he approached refused taking him whereas the Slavic pilot who arrived with him was accepted without any problems (Begel'dinov, 2000). When Begel'dinov noticed that there are almost no Kazakhs among the Red Army pilots he complained to political

officers but was ignored.

Not only Kazakhs experienced discrimination. Semen Bukchin, a Jew, was "the happiest person on the planet" when he was assigned to the elite 27th Regiment but the reception he encountered there was "rather poor" (Bukchin, 2006). Bukchin was the only Jewish pilot in the unit; his immediate superior, the famed ace Nikolai Gulaev openly complained about getting "a kike" as a wingman and the regimental commander would address him pejoratively as "Abram" (Abraham) rather than using his actual name and rank, as expected. Notably, Bukchin was a CPSU member but even this did not protect him from prejudice. Bukchin's experience might have been more extreme than most, but it was certainly not unique. When Isaac Kichin arrived to the 73rd Guards Regiment the unit already had a high-scoring Jewish pilot, Semen Gorkhiver, to whom Kichin, intentionally or otherwise was assigned as a wingman (Kichin, 2012). Kichin did not experience open hostility, but does recall a squadron commander telling ethnic jokes about Jews and that their flight pair was also labeled "a synagogue." More consequentially, when Gorkhiver's victories score became high enough to merit a nomination for the Hero of the Soviet Union award, the commanders refused to even consider the nomination, in large part because of his ethnicity. Despite having eighteen individual victories to his name, Gorkhiver was never nominated for the decoration, all the official guidelines notwithstanding.

Widespread prejudice is not the only factor that can explain discrimination of minorities by their immediate superiors. Prior to the Nazi invasion the Red Army was subject to violent purges designed to root out the regime's opponents. Loyalty and conformity, not merit played the key role in promotion decisions. The war forced the system to switch to meritocratic evaluation of agents but such a change could not be accomplished overnight even in the most centralized systems. Awards create special bonds of responsibility and the award givers might be held responsible for the future behavior of those they recognized and decorated. As Frey and Gallus (2017, 99) write, "Unconventional and unorthodox candidates may well be neglected because their behaviour is less predictable and therefore exposes the giver to greater risks." From the regimental commanders perspective, non-Slavs were less familiar, unpredictable and potentially troublesome. Nominating them for highly prestigious awards might have simply been too risky (Edele, 2017, 72). Under Stalin, over-vigilance was never punished but the lack thereof might have severe repercussions.

Discrimination was therefore a logical policy for a risk-averse commander. Unfortunately, the available data do not allow us to adjudicate between these two explanations and it is likely that they operated in tandem. Whatever the cause, when it comes to non-Slavic pilots meritocracy was compromised.

Whereas prejudice was common at the lower levels, higher military and civilian leaders were plainly aware of the bigger political challenges that the WWII Red Army faced, most notably the need to turn non-Slavic recruits into capable and committed combatants. To address the problems the military and civilian authorities embarked on an extensive propaganda campaign aimed specifically at ethnic minority soldiers. Propaganda was ubiquitous in the Red Army across the board, yet non-Slavic soldiers presented a special challenge. Such soldiers were unlikely to be motivated to fight and sacrifice their lives by invoking historically Russian myths, symbols and heroes. At the same time, 'non-Russian heroes in Central Asia and the Caucasus of the past three centuries had been fighting Russians' (Berkhoff, 2012, 216) and hence were unsuitable for propaganda purposes in an increasingly Russocentric state. The only solution, which was also in line with the pre-war propaganda 'heroes cult' was elevating and publicizing the heroic deeds of currently fighting Red Army servicemen (Schechter, 2012, 115). Heroes with minority backgrounds became the dominant theme of agitation efforts among their co-ethnics (Carmack, 2014, 96) and aviators were especially suitable serve as heroic role models, the more decorated the better.

A substantial part of this, mostly non-Russian language propaganda was conducted orally or took the form of leaflets and small circulation papers produced by military agitators at various units and did not entirely survive. Yet there are also well documented examples of how such propaganda operated and what it emphasized. For instance, in 1942-1943 Soviet authorities organized the publication of the so-called "People's Instructions" (*Nakazy Narodov*) a series of open letters from Soviet republics addressed to co-ethnic soldiers fighting on the frontlines. Published in the central state media, these open letters implored the soldiers to be patriotic citizens and bravely fight the enemy. Each also listed war hero role models belonging to the ethnic group (Schechter, 2012).

"Honor and glory to the sons of the Tatar people—selfless heroes of the great liberation war: brave pilots, keen-sighted snipers, bold scouts..." declares the People's Instruction of Tatarstan.

In the long list of military professions to be celebrated, aviators thus appear before everyone else. The letter, published in the communist party's mouthpiece *Pravda* in March 1943 also glorifies the heroism of pilot Kamaletdinov, who did not abandon a burning plane and "destroyed a multitude of German soldiers and officers." We were unable to locate the details of this specific pilot, but interestingly, when a Tatar fighter pilot with the same name was later nominated for the OFW 2nd level, he was promoted to the OFW 1st level award. The Azeri People's Instruction describes how the love for the Fatherland "gave courage and determination of steel to the heroic son of Azerbaijan—the pilot Aliev Gusein Bala." According to the text, the heroic Azeri fighter pilot was wounded seventeen times in one engagement in the skies of Leningrad but nonetheless "turned to ashes six enemy aircraft." Letters from other regions also glorify the exploits of their co-ethnic aviators. Obviously, pilots were not the only soldiers praised in People's Instructions, but the coverage and the adulation this numerically small group received was vastly disproportional to their share among both pilots as a whole and their co-ethnics, who were predominantly ground troops.

Occasionally, the propaganda usage of non-Slavic pilots extended beyond their co-ethnics. For the majority of Soviet citizens the main source of information about the war were the morning and evening dispatches of the Soviet Information Bureau. The mobilization and propaganda functions of the dispatches took precedence over presenting accurate information and many dispatches were written or edited by Stalin personally. 14,400 Red Army soldiers were mentioned by name in the dispatches ([Berkhoff, 2012](#)). Out of these we were able to identify almost five hundred aviators, a substantial overrepresentation when compared to their numbers in the Red Army. The vast majority had Slavic last names. Only three had identifiably Georgian last names. One could not be identified and of the remaining two Georgian pilots one, Georgii Kurtsidze had a nomination for the relatively nonprestigious Medal for Courage upgraded substantially to the Order of the Red Star. We have no direct evidence that having a better decorations record made the pilot better suited for all-Soviet coverage but the suggestion is reasonable. Unfortunately, the dispatches provide only the pilot's last names thus making identification of all profiled minority pilots challenging.



## 7 Conclusion

Which criteria guide the autocrats' evaluation of subordinates? The existing scholarship assumes that the main threat to autocratic leaders' rule comes from coups launched by other member of the elite and therefore concentrate on promotions among high ranking officials. During times of crisis, however, the fate of the dictator might be at the hands of lower level agents, thus making defection and shirking the autocrat's key concerns. By analyzing top scoring Soviet fighter pilots during WWII we demonstrate that the USSR adopted a system of evaluation that we define as bounded meritocracy. In this system merit was the key guiding principle yet meritocracy was not universal and other criteria were strategically applied to a small number of ethnic minority pilots. We also demonstrate that these non-performance based criteria changed depending on the level at which the evaluation was performed. Additionally, the paper shows the analytical promise of studying not only rank promotions, as the existing scholarship does, but also of other tools that leaders use to reward and promote subordinate, such as state awards and decorations.

Our findings have important implications for the study of non-democratic regimes. First, the paper demonstrates that the "loyalty versus competence" dichotomy that dominates the existing research does not capture the empirical reality in which autocrats operate. Loyalty and competence are not mutually exclusive and a range of mixed systems can be used to promote subordinates. Bounded meritocracy is one such mixed arrangement but others likely exist as well.

Second, the existing research should pay more attention to periods of crisis because considerations and processes that guide autocrats' decision making during period of calm might differ substantially from those during crises and war. Elite coups are not always the sole (or main) survival concern of non-democratic leaders and scholars of autocracy should devote more effort to understanding the inner working of autocracies facing acute challenges such as war.

Third, as we demonstrate, promotion criteria adopted at the top of the system do not always permeate to the lower levels of the state apparatus and it is important to better understand when and under which conditions such divergence in preferences takes place. Finally, scholars of autocracy should not concentrate exclusively on formal promotions and pay closer attention to the diverse set of promotion and reward tools that the autocratic leaders have at their disposal. Sym-

bolic and non-material benefits such as awards and decorations, as we demonstrate, can be used extensively and strategically to reward, promote and mobilize subordinates. Scholars of both autocratic promotion and propaganda should therefore expand the focus of their research to better understand how autocrats use non-material benefits.

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# Appendix

## A1 Summary Statistics

- Table A1 presents summary statistics for the sample of pilots used in the analysis.

TABLE A1: SUMMARY STATISTICS

Statistic	N	Min	Max	Mean	Median
Nominated Award Rank	8,658	2	13	9.145	11
Received Award Rank	8,659	1	13	8.247	11
Confirmed Victories: All Planes	8,631	0	4.852	2.230	2.312
Confirmed Victories: Bombers	8,631	0	3.829	1.045	0.881
Any Party Affiliation	8,621	0	1	0.954	1
Pre-War Member Ranking	8,621	0	2	1.199	1
Party: Komsomol	8,659	0	1	0.169	0
Party: Candidate	8,621	0	1	0.235	0
Party: Full Member	8,621	0	1	0.549	1
Non-Slavic Ethnicity	8,659	0	1	0.026	0
Any Commander	8,659	0	1	0.644	1
Wounded	8,535	0	1	0.356	0
Had Previous Award	8,659	0	1	0.756	1
Age (log)	8,652	2.890	3.761	3.217	3.178
Years Flying Experience	8,652	0	3.219	1.536	1.609
Military Rank	8,640	1	4	2.079	2

## A2 Examples of Original Documents Used to Construct the Dataset

### A2.1 Wartime Record from Bykov (2014)

- Figure A1 shows the wartime record for Junior Lieutenant Vladimir Plavskii as it was recorded in *Vse Asy Stalina, 1936-1953* (Bykov, 2014). At the top we see his birthyear as well as final and beginning military rank (the beginning rank is shown in brackets). The first set of bullet points describes the regiments he served in during the war, including the dates. The second set lists all of the ‘confirmed victories’ attributed to him, including the victory date, whether it was an individual (integer) or group (fraction) effort, the type of Axis aircraft downed, and the relative location of military action. We also see a list of the awards Plavskii received

during the war. This alongside his birthyear and regiments was used to merge records between the Encyclopedia and the Pamyat Naroda datasets. Finally, we see that he was killed in combat in 1942. Our dataset includes all pilots with such entries in the Encyclopedia.

## A2.2 Nagradnoy List

- Figures A2 and A3 present the final award record and the *Nagradnoi List*, respectively, for one of the decorations received by Junior Lieutenant Vladimir Plavskii, whose wartime record is shown in Figure A1. The form lists Pavlovskii rank, unit, birth year and the award for which he is being nominated (Order of Lenin). The form also lists Plavskii's ethnicity (Russian), Communist Party membership status (Member of the Komsomol since 1933) and the year of joining the Red Army (1938). Additionally, the form has entries on whether Plavskii participated in combat prior to WWII and whether he has been previously wounded (negative to both). Also listed is whether the person has previously received any awards (nominated for the Order of the Red Banner)<sup>22</sup> and by which draft office he was drafted (professional military cadre, not drafted). Finally, the form provides a brief description of Plavskii's actions that merit an award such as personal courage, fifty five combat sorties including eleven ground attack missions<sup>23</sup> and twenty seven sorties protecting Red Army troops.
- According to the nomination, Plavskii's ground attacks caused substantial, though unspecified damage to the enemy's manpower and materiel. The description also lists seven (underlined in red color) enemy planes shot down by Plavskii near Leningrad. The information in the Award Form is identical to that in the encyclopedia with two minor differences: a slightly different description of the same geographic area for victories scored on September 11 and September 15, and more notably, a different type of the German aircraft downed on September 22: Yu-88 vs. Do-215. This might be either a simple typo, a testament to the messiness of record keeping in wartime, or an evidence of Soviet pilots' difficulties in recognizing different types of German aircrafts during the early stages of the war. Whatever

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<sup>22</sup>This nomination resulted in a less prestigious Order of the Red Star

<sup>23</sup>The minimum number of ground attack sorties that merited an award nomination was fifteen



the reason for this discrepancy it should not have affected Plavskii's chances of getting an award.

- According to the nomination form, Junior Lieutenant Plavskii was nominated for the Order of Lenin, but as can be seen on the Pamiat' Naroda website (Figure 4, left image) the decoration he actually received was the less prestigious Order of the Red Banner. We can be certain that the discrepancy is not the result of a data entry mistake on the website or of a clerical mishap in 1941. First, in the final award decree issued by the Supreme Soviet of the USSR Plavskii's name appears on the list of those who received the ORB decoration (Figure 4, right image). Furthermore, on the *Nagradnoi List* itself one can clearly see a red colored handwritten *ord. Kr. Znamia* (ord. R. Banner) at the top of the document and an 'Order of the Red Banner' stamp (both circled by us). We do not know who exactly decided to downgrade the pilot's award but it was clearly a decision, not a omission.

FIGURE A1: EXAMPLE ENTRY FROM THE SOVIET ENCYCLOPEDIA OF PILOT ACES  
RUSSIAN AND ENGLISH VERSIONS

**ПЛАВСКИЙ ВЛАДИМИР АНТОНОВИЧ**  
1915  
старший лейтенант [младший лейтенант]

**Боевая работа в Великой Отечественной войне (1941—1945):**  
191 иап                      июль — нояб. 1941                      И-16  
127 иап                      нояб. 1941 — март 1942                      И-16

**Список воздушных побед:**  
06.09.1941                      1/4                      Ю-88                      сев. Лезье  
06.09.1941                      1/4                      До-215                      Ивановское  
10.09.1941                      1                      Ю-87                      Михайловка  
10.09.1941                      1                      Ме-109                      Пулково  
11.09.1941                      2                      Ю-87                      Николаевское  
15.09.1941                      1                      Ме-109                      зап. аэродром Пушкин  
21.09.1941                      1                      Ме-109                      Углово  
22.09.1941                      1                      До-215                      Лахта — Ольгино  
20.03.1942                      1                      Ю-88                      Басино  
21.03.1942                      1                      Ме-109                      зап. Кондуя

**Сбитых самолетов: 9 + 2**

**Боевые награды:** ордена Красного Знамени, Красной Звезды.

**Погиб 22 марта 1942 г.** Сбит в воздушном бою.

**Plavskii Vladimir Antonovich**  
1915  
Senior Lieutenant [Junior Lieutenant]

**Combat Service in the Great Patriotic War (1941-1945):**  
191 Fighter Aviation Regiment                      July – Nov. 1941                      I-16  
127 Fighter Aviation Regiment                      Nov. 1941– March 1942                      I-16

**List of Aerial Victories:**  
06.09.1941                      1/4                      Yu-88                      North of Lez’e  
06.09.1941                      1/4                      Do-215                      Ivanovskoe  
10.09.1941                      1                      Yu-87                      Mikhailovka  
10.09.1941                      1                      Me-109                      Pulkovo  
11.09.1941                      2                      Yu-87                      Nikolaevskoe  
15.09.1941                      1                      Me-109                      West of Pushkin Airfield  
21.09.1941                      1                      Me-109                      Uglovo  
22.09.1941                      1                      Do-215                      Lakhta-Ol’gino  
20.03.1942                      1                      Yu-88                      Basino  
21.03.1942                      1                      Me-109                      West of Kondui

**Downed Planes: 9+2**

**Combat Awards:** Orders of The Red Banner, Red Star.

**Died 22 March 1942.** Downed in aerial combat.

**Note:** Yu-88 is commonly known in the West as Ju 88, Do-215 as Dornier 215, Yu-87 as Ju 87/Stuka, Me-109 as Bf 109.

FIGURE A2: PAMYAT NARODA WEBSITE

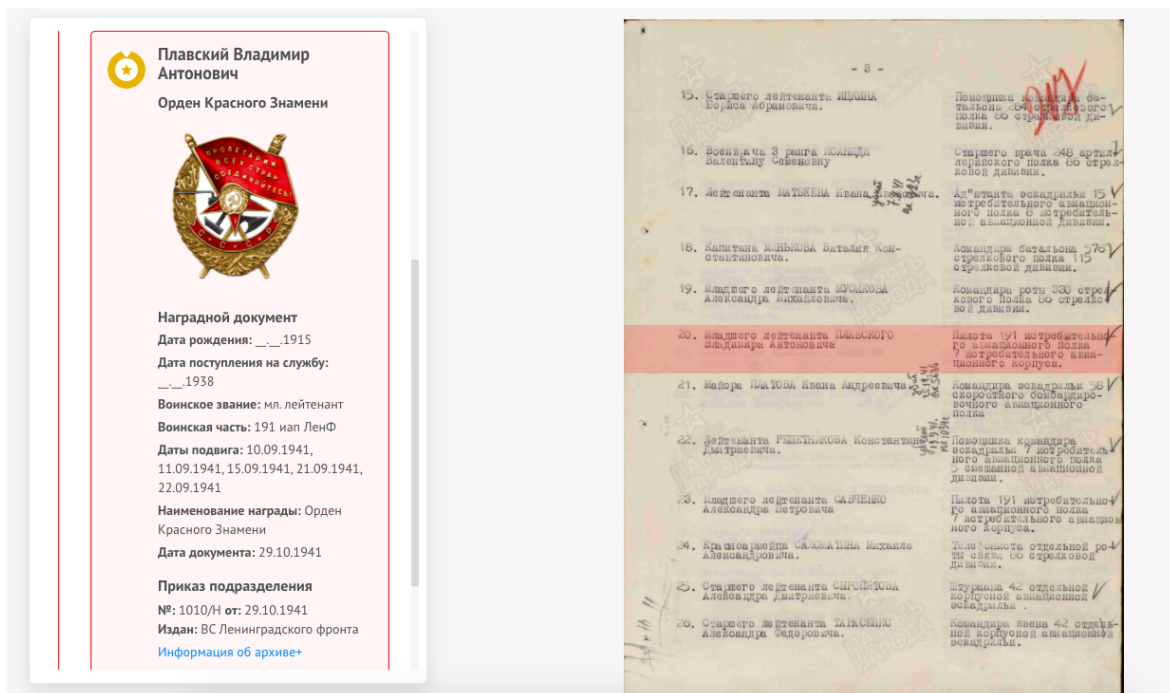


FIGURE A3: EXAMPLE OF NAGRADNOY LIST

**НАГРАДНОЙ ЛИСТ**

Фамилия, имя и отчество **ШЛАВСКИЙ ВЛАДИМИР АНТОНОВИЧ.**

Военное звание **Младший лейтенант.**

Должность, часть **Пилот 191 Истребительного Авиационного Полка.**

**ОРДЕНОМ  
КРАСНОЕ ЗНАМЯ**

Представляется к награде орденом **"ЛЕНИНА"**

1. Год рождения **1915.** 2. Национальность **Русский.**

3. С какого времени состоит в Красной Армии **с 1938 г.** 4. Партийность **Чл. ВЛКСМ с 1933 г.**

5. Участие в боях (где и когда) **Не участвовал.**

6. Имеет ли ранения и контузии **Не имеет.**

7. Чем ранее награжден (за какие отличия) **Представлен к награде орденом "КРАСНОГО ЗНАМЕНИ" в 1941 году.**

8. Каким РВК призван **Кадровый.**

9. Постоянный домашний адрес: (представляемого к награждению или его семьи) \_\_\_\_\_

**I. Краткое, конкретное изложение личного боевого подвига или заслуг**

**За время войны с Германским фашизмом показал себя как смелый, мужественный и отважный летчик-истребитель. С начала войны имеет (55) боевых вылетов из них: штурмовка войск и об"ектов пр-ка - II вылетов прикрытие своих войск - 27 вылетов. При штурмовке нанес большие потери живой силе пр-ка, а так же и матчасти.**

**В воздушных боях и на подступах к Ленинграду сбил один 7 вражеских самолетов из них:**

**10.9.1941 г. I Ю-87 в районе МИХАЙЛОВКА.**

**10.9.1941 г. I МЕ-109 в р-не ПУЛКОВО**

**11.9.1941 г. 2 Ю-87 в р-не ЗАЙЦЕВО-ПУДОСТЬ.**

**15.9.1941 г. I МЕ-109 в р-не КИСКИСАРН.**

**21.9.1941 г. I МЕ-109 в р-не УТЛОВО.**

**22.9.1941 г. I Ю-88 в р-не ЛАХТА-ОЛЬГИНО.**

## A3 Non-Slavic Pilots at War

This section examines both the background of non-Slavic pilots as well as their combat experience during World War II to assess whether their opportunities for medals differed from those with a Slavic ethnicity.

### A3.1 Ethnicity and Social Class

In Table A2, we examine whether pilots of non-Slavic ethnicity came from different class backgrounds, and therefore may have different skills and training than those of a Slavic ethnicity. If, for example, non-Slavic pilots were less educated or were less likely to have attended prestigious military academies, they may have been less able to join top air regiments, gain exposure to the fiercest combat situation, shoot down enemy planes and subsequently qualify for awards.

To address these selection concerns, we use data from both the Nagradnye Listy and the Aces Encyclopedia to focus in on the characteristics *before* they saw combat in the war. Unfortunately, we have relatively little information on their pre-war lives, in particular their performance in flight school or other detailed measure of military training. But we do know their age, the year they entered the military (or were drafted), and their starting rank in the military (which we code). The first two capture how much experience pilots had, while the latter measures pilot seniority, including any leadership experience and responsibilities.

The Nagradnye Listy also contain partial data on the ‘class’ background of pilots through a field with possible entries of ‘student’, ‘laborer’, ‘farmer’, and ‘clerk / white collar’. These fields are only filled in for roughly 25% of pilots, mainly because the specific form that included it was not used in all cases. Though a loaded term in the Soviet context, class background can serve as an imperfect proxy for education and other socioeconomic characteristics.

Our results show that non-Slavic pilots are very similar on observables to Slavic pilots, suggesting the absence of strong selection effects into the ranks of ace pilots. The models in Table A2 regress whether a pilot is of non-Slavic ethnicity on each of these attributes. Non-Slavic pilots do appear to enter the military later than Slavic pilots, a point we discuss in more length in the main text connected to how the Soviet Union conscripted a larger swath of its larger population as the war dragged on. But beyond the year of entry into the military, we do not see any other



critical differences in pilot characteristics. Even though they are drafted later, non-Slavic pilots are roughly of the same age and start at the same rank as Slavic pilots. We also do not see any class differences.

**TABLE A2: CHARACTERISTICS OF NON-RUSSIAN PILOTS**

	(1)	(2)	(3)	(4)
Birth Year	−0.003 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.003)
Draft Year	0.004* (0.002)	0.005** (0.002)	0.005** (0.002)	0.007* (0.004)
Starting Rank		0.005 (0.004)	0.005 (0.004)	0.011 (0.008)
Social Class: Student			0.003 (0.018)	−0.011 (0.024)
Social Class: Laborer			−0.016** (0.007)	−0.027 (0.019)
Social Class: Clerk / White Collar			0.023 (0.021)	0.012 (0.023)
Social Class: Farmer			−0.010 (0.015)	
Observations	2,812	2,812	2,812	657
R <sup>2</sup>	0.002	0.002	0.004	0.019

This table shows models with an outcome of whether a pilot is of non-Slavic ethnicity. Columns 1-3 use the entire sample of pilots who won any award (and entered the main sample), while Column 4 restrict to only pilots for whom social class was entered on their Nagradnoy List. Column 4 uses Social Class: Farmer as the reference category. All models are at the pilot level with robust standard errors.

### A3.2 Ethnicity and Access to Superior Aircraft

Next, we examine whether non-Slavic pilots had access to different military hardware that could have affected their ability to down enemy planes and qualify for awards. Using the Aces Encyclopedia data, we coded up every model of plane that each pilot flew during the war. We then created a binary indicator to capture whether planes were of superior quality and could have offered combat advantages in the sky. First, we create a variable called ‘Newer Soviet-Made Aircraft’, which takes a 1 if a pilot ever flew a Lavochkin La-5, Lavochkin La-7, Yakovlev Yak-3, or Yakovlev Yak-9 in the war. All of these planes debuted during the war and showcased the best in Soviet technology at the time and were critical in turning the tide against the Nazis. We created a second variable called ‘Western-Made Aircraft’ if a pilot flew a Hurricane, Kitty Hawk, Airacobra, Spitfire, or Kingcobra at any point during the war. These US and UK produced aircraft helped Soviet pilots collect the highest number of victories during the war.

Table A3 analyzes each outcome separately at the pilot level, including pilot characteristics, including non-Slavic ethnicity as predictors. Columns 1-3 analyze ‘Newer Soviet-Made Aircraft’ as an outcome, while Columns 4-6 analyze ‘Western-Made Aircraft’. The first two columns in each set use only data about pilots at the beginning of the war, while the third adds information on party membership, commander roles, and wounded status that appeared in the award forms while the war was ongoing. We sum the number of victories and count the number of years in combat (from entry date to either the end of the war or the pilot’s death). For each of the other predictors, we take the ‘maximum’ value as it appeared on the award forms for that pilot during the war. For example, if a pilot was ever listed as a Commander on an award form, that variable takes a 1 in this regression.

We see no evidence that non-Slavic pilots had different access to the top aircraft available to the Soviet air force. Newer Soviet aircraft were used much more by pilots entering the military later as well as those with superior ranks. Better aircraft also entered combat later in the year, as evidenced by pilots being drafted later having more opportunities to fly them. But we do not observe discrimination based on ethnicity in terms of the types of aircraft flown.

**TABLE A3: CORRELATES OF PLANES FLOWN**

	Newer Soviet-Made Aircraft			Western-Made Aircraft		
	(1)	(2)	(3)	(4)	(5)	(6)
Birth Year	0.017*** (0.004)	0.020*** (0.004)	0.020*** (0.004)	0.005* (0.003)	0.004 (0.003)	0.004 (0.003)
Draft Year	0.038*** (0.005)	0.042*** (0.005)	0.042*** (0.005)	0.008** (0.003)	0.008** (0.004)	0.008** (0.004)
Non-Slavic Ethnicity	-0.024 (0.051)	-0.028 (0.051)	-0.036 (0.051)	-0.034 (0.036)	-0.033 (0.036)	-0.035 (0.036)
Starting Rank		0.035*** (0.010)	0.031*** (0.011)		-0.006 (0.007)	-0.006 (0.007)
Planes Downed (Total, log)			-0.054*** (0.019)			-0.011 (0.014)
Party: Komsomol			0.005 (0.055)			0.022 (0.039)
Party: Kandidat			-0.048 (0.052)			0.058 (0.036)
Party: Member			0.010 (0.050)			0.037 (0.035)
Commander			-0.027 (0.025)			-0.006 (0.018)
Party Commissar			0.018 (0.076)			0.091* (0.054)
Wounded			-0.049*** (0.018)			-0.013 (0.013)
Observations	2,812	2,812	2,794	2,812	2,812	2,794
R <sup>2</sup>	0.111	0.114	0.121	0.015	0.015	0.018

This table shows models with an outcome of whether a pilot was killed in combat. Only Column 3 uses the entire set of covariates since we only observe party membership, leadership roles, and wounded status after awards are distributed. All models are at the pilot level with robust standard errors.



### A3.3 Ethnicity and Combat Danger

Finally, we examine whether non-Slavic pilots were more cautious in their risk tolerance and therefore fought differently. Table A4 examines the correlates of whether a pilot was killed in combat using data from the Aces Encyclopedia. We use the same data and specifications as Table A3, but here the outcome variable is a binary indicator for being killed in action.

Importantly, Non-Slavic pilots did not have a different death rate, suggesting they were not in different types of combat situations or more did they exhibit different risk-taking behavior. Other variables do predict death in combat. For example, older pilots as well as those in leadership roles (commanders) were much less likely to lose their lives. Pilots that joined the military later may have also avoided the bloodier early years in the sky and therefore were able to survive the war. Yet even controlling for draft year, non-Slavic pilots appeared to fight very similarly to their Slavic colleagues.

**TABLE A4: ACES KILLED IN ACTION**

	(1)	(2)	(3)
Birth Year	-0.001 (0.004)	-0.003 (0.004)	-0.010*** (0.004)
Draft Year	-0.003 (0.005)	-0.005 (0.005)	-0.010** (0.005)
Non-Slavic Ethnicity	0.001 (0.049)	0.003 (0.049)	-0.005 (0.046)
Starting Rank		-0.016 (0.010)	-0.012 (0.010)
Planes Downed (Total, log)			-0.043** (0.018)
Party: Komsomol			0.139*** (0.050)
Party: Kandidat			0.048 (0.047)
Party: Member			-0.130*** (0.045)
Commander			-0.134*** (0.023)
Party Commissar			-0.015 (0.069)
Wounded			-0.029* (0.017)
Observations	2,812	2,812	2,794
R <sup>2</sup>	0.001	0.002	0.093

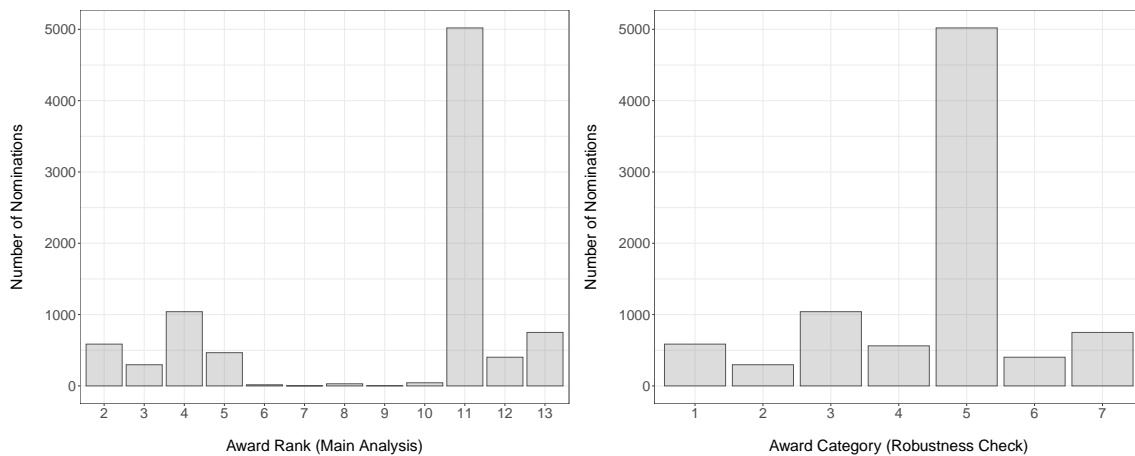
This table shows models with an outcome of whether a pilot was killed in combat. Only Column 3 uses the entire set of covariates since we only observe party membership, leadership roles, and wounded status after awards are distributed. All models are at the pilot level with robust standard errors.

## A4 Categories instead of Ranks

Next, there might be concerns still may remain about using the current continuous rank of awards as our primary outcome measure, particularly because it is far from normally distributed. The left panel in Figure A4 shows the distribution of the main ranking we use in the paper, with the small number of awards in the middle of the distribution. We probe this robustness by collapsing this ranking a new ‘category’ measure, as shown in Table A5. Here we collapse ranks 6-10 downwards, which has the effect of creating a much more normal distribution (right panel, Figure A4) for this outcome variable.

In Tables A6 - A8, we then re-run this entire analysis using the new ‘category’ measure as the main outcome. Our goal here is to test the sensitivity of our results to a different way of categorizing the prestige of awards. First off, in Table A6 we see that not only does merit still predict higher categories of awards when redefined in this way, but non-Slavic pilots are still discriminated against. Table A7 shows that the results on promotions and demotions still hold: non-Slavic pilots are much more likely to receive a higher award than that they were nominated for. We also see that this degree of affirmative actions results in less overall discrimination once received awards are accounted for.

**FIGURE A4: PARTIALLY COLLAPSING THE AWARD RANKING**



The left panel shows the distribution of the number of awards per rank as defined in the main text (also see the leftmost column in Table A5). The right panel shows the distribution of awards per ‘category’ as redefined and analyzed in this section (also see the rightmost column in Table A5).

**TABLE A5: SCHEMA FOR COLLAPSING AWARD RANKINGS**

Ranking	Award Name	Category (Collapsed)
13	Geroi Sovetskogo Soyuza	7
12	Orden 'Lenina'	6
11	Orden 'Krasnaya Znamya'	5
10	Orden 'Suvorova'	4
9	Orden 'Ushakova'	4
8	Orden 'Kutuzova'	4
7	Orden 'Nakhimova'	4
6	Orden 'Bogdana Kmel'nitskogo'	4
5	Orden 'Aleksandr Nevskiy'	4
4	Orden 'Otechestvennaya Voina' - 1st Level	4
3	Orden 'Otechestvennaya Voina' - 2nd Level	3
2	Orden 'Zvezda'	2
1	Orden 'Slava'	1

This table shows the recoding decision to collapse our main ranking of awards into categories.

**TABLE A6: NOMINATED AWARD CATEGORY**

	(1)	(2)	(3)	(4)	(5)	(6)
Confirmed Victories: All Planes	0.080*** (0.016)	0.120*** (0.017)	0.079*** (0.016)	0.072*** (0.016)	0.080*** (0.016)	
Confirmed Victories: Bombers						0.031*** (0.012)
Any Party Affiliation	-0.003 (0.011)	-0.003 (0.011)			-0.003 (0.011)	-0.004 (0.011)
Pre-War Member Ranking			-0.023** (0.011)			
Party: Komsomol				-0.061*** (0.022)		
Party: Candidate				-0.031 (0.023)		
Party: Full Member				0.041 (0.025)		
Party Kommissar					-0.002 (0.010)	
Non-Slavic Ethnicity	-0.022** (0.010)	-0.025** (0.011)	-0.022** (0.010)	-0.024** (0.010)	-0.022** (0.010)	-0.022** (0.010)
Commander	0.134*** (0.011)	0.131*** (0.012)	0.132*** (0.012)	0.116*** (0.012)	0.134*** (0.011)	0.140*** (0.011)
Had Previous Award	0.243*** (0.014)	0.230*** (0.016)	0.241*** (0.014)	0.225*** (0.014)	0.243*** (0.014)	0.255*** (0.014)
Wounded	0.042*** (0.010)	0.035*** (0.011)	0.042*** (0.010)	0.038*** (0.010)	0.042*** (0.010)	0.043*** (0.010)
Age (log)	0.043*** (0.016)	0.045*** (0.016)	0.046*** (0.015)	0.019 (0.016)	0.044*** (0.016)	0.046*** (0.016)
Years Military Experience	-0.102*** (0.016)	-0.090*** (0.017)	-0.100*** (0.016)	-0.110*** (0.016)	-0.102*** (0.016)	-0.101*** (0.016)
Military Rank	0.072*** (0.013)	0.057*** (0.014)	0.074*** (0.013)	0.065*** (0.013)	0.072*** (0.013)	0.072*** (0.014)
Regiment FE	Yes	No	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	Yes	Yes	Yes
Regiment-Year FE	No	Yes	No	No	No	No
Observations	8,487	8,487	8,487	8,487	8,487	8,487
R <sup>2</sup>	0.223	0.333	0.224	0.229	0.223	0.220

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 This table examines the 'category' (as opposed to the ranking using in the main text) of the award pilots were initially nominated for. Coefficients have been standardized by subtracting each value by the overall mean and dividing by its standard deviation. Standard errors are clustered at the pilot level.

**TABLE A7: PROMOTIONS AND DEMOTIONS (CATEGORIES)**

	Promotions					Demotions				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Confirmed Victories: All Planes	0.021 (0.013)	0.015 (0.015)	0.044*** (0.013)	0.044*** (0.013)	0.043*** (0.013)	0.040*** (0.013)	0.036** (0.015)	0.026* (0.013)	0.026** (0.013)	0.028** (0.013)
Any Party Affiliation	0.025*** (0.009)	0.028*** (0.010)	0.024*** (0.009)			0.009 (0.010)	0.006 (0.011)	0.010 (0.010)		
Pre-War Member Ranking				0.006 (0.011)					0.006 (0.011)	
Party: Komsomol					0.033* (0.019)					0.040** (0.020)
Party: Candidate					0.066*** (0.020)					0.020 (0.021)
Party: Full Member					0.053** (0.022)					0.009 (0.024)
Non-Slavic Ethnicity	0.041*** (0.014)	0.039** (0.016)	0.034** (0.014)	0.035** (0.014)	0.034** (0.014)	-0.002 (0.009)	-0.005 (0.010)	0.002 (0.009)	0.002 (0.009)	0.002 (0.009)
Commander	-0.028** (0.013)	-0.024* (0.013)	0.011 (0.012)	0.013 (0.012)	0.009 (0.013)	-0.008 (0.012)	-0.002 (0.012)	-0.032*** (0.012)	-0.031*** (0.012)	-0.026** (0.012)
Had Previous Award	-0.051*** (0.015)	-0.050*** (0.016)	0.019 (0.014)	0.021 (0.014)	0.017 (0.015)	-0.006 (0.014)	-0.009 (0.015)	-0.050*** (0.014)	-0.049*** (0.014)	-0.044*** (0.014)
Wounded	0.011 (0.012)	0.009 (0.013)	0.023** (0.011)	0.023** (0.011)	0.023** (0.011)	-0.010 (0.011)	-0.008 (0.012)	-0.018 (0.011)	-0.018 (0.011)	-0.017 (0.011)
Age (log)	0.017 (0.015)	0.016 (0.016)	0.029** (0.014)	0.026* (0.015)	0.031** (0.015)	-0.021 (0.016)	-0.032* (0.017)	-0.029* (0.016)	-0.031** (0.015)	-0.022 (0.016)
Years Military Experience	0.027* (0.014)	0.032** (0.016)	-0.002 (0.014)	-0.002 (0.014)	-0.002 (0.014)	0.047*** (0.015)	0.048*** (0.017)	0.065*** (0.015)	0.065*** (0.015)	0.068*** (0.015)
Military Rank	-0.007 (0.014)	-0.010 (0.015)	0.014 (0.014)	0.015 (0.014)	0.015 (0.014)	-0.018 (0.014)	-0.016 (0.015)	-0.031** (0.014)	-0.031** (0.014)	-0.030** (0.014)
Nominated Category Rank			-0.291*** (0.018)	-0.291*** (0.018)	-0.291*** (0.018)			0.182*** (0.010)	0.182*** (0.010)	0.184*** (0.010)
Regiment FE	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Year FE	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Regiment-Year FE	No	Yes	No	No	No	No	Yes	No	No	No
Observations	8,463	8,463	8,463	8,463	8,463	8,463	8,463	8,463	8,463	8,463
R <sup>2</sup>	0.079	0.169	0.144	0.144	0.145	0.100	0.213	0.126	0.126	0.127

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 This table examines whether the award a pilot received was either more prestigious (Columns 1-4: Promotions) or less prestigious (Columns 1-4: Demotions) than that he was nominated for . Coefficients have been standardized by subtracting each value by the overall mean and dividing by its standard deviation. Standard errors are clustered at the pilot level.

**TABLE A8: RECEIVED CATEGORY RANK**

	(1)	(2)	(3)	(4)	(5)	(6)
Confirmed Victories: All Planes	0.066*** (0.016)	0.099*** (0.017)	0.066*** (0.016)	0.060*** (0.016)	0.066*** (0.016)	
Confirmed Victories: Bombers						0.015 (0.012)
Any Party Affiliation	-0.003 (0.010)	0.001 (0.010)			-0.002 (0.010)	-0.003 (0.010)
Pre-War Member Ranking			-0.016 (0.011)			
Party: Komsomol				-0.057*** (0.021)		
Party: Candidate				-0.021 (0.022)		
Party: Full Member				0.036 (0.024)		
Party Kommissar					-0.007 (0.012)	
Non-Slavic Ethnicity	-0.013 (0.009)	-0.016* (0.009)	-0.013 (0.009)	-0.014 (0.009)	-0.013 (0.009)	-0.013 (0.009)
Commander	0.118*** (0.011)	0.115*** (0.012)	0.116*** (0.011)	0.101*** (0.012)	0.118*** (0.011)	0.124*** (0.011)
Had Previous Award	0.227*** (0.014)	0.217*** (0.015)	0.225*** (0.014)	0.210*** (0.014)	0.226*** (0.014)	0.238*** (0.014)
Wounded	0.047*** (0.010)	0.038*** (0.010)	0.046*** (0.010)	0.043*** (0.010)	0.047*** (0.010)	0.048*** (0.010)
Age (log)	0.058*** (0.015)	0.066*** (0.015)	0.060*** (0.015)	0.036** (0.015)	0.058*** (0.015)	0.061*** (0.015)
Years Military Experience	-0.111*** (0.016)	-0.098*** (0.016)	-0.110*** (0.016)	-0.119*** (0.016)	-0.111*** (0.016)	-0.111*** (0.016)
Military Rank	0.087*** (0.013)	0.071*** (0.014)	0.089*** (0.013)	0.082*** (0.013)	0.088*** (0.013)	0.088*** (0.013)
Regiment FE	Yes	No	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	Yes	Yes	Yes
Regiment-Year FE	No	Yes	No	No	No	No
Observations	8,463	8,463	8,463	8,463	8,463	8,463
R <sup>2</sup>	0.217	0.337	0.217	0.221	0.217	0.214

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 This table examines the 'category' (as opposed to the ranking using in the main text) of the award pilots finally received. Coefficients have been standardized by subtracting each value by the overall mean and dividing by its standard deviation. Standard errors are clustered at the pilot level.

## A5 Award Pairs

Finally, we go one step further in assessing the robustness of our results to the ranking procedure. We cannot claim that the intervals between awards of different kinds definitively capture the level of prestige accorded to them by the decision-makers. Therefore in this section, we break up the pilot-award sample into what we term ‘award-pairs.’ Although ranking all thirteen awards on one scale presents difficulties, our historical work on the period suggests that there was only a fine line distinguishing certain awards from one another. In these instances, nominations could have gone either way based on a pilot’s performance and much discretion was left to the higher authorities on the final decision.

More specifically, we focus on several award-pairs. The three most prestigious awards – Hero of the Soviet Union (Table 1, #13), Order of Lenin (#12) and Order of the Red Banner (#11) – stood apart from the others and had a very clear pecking order. Yet the actual distinction between the awards was somewhat limited. The Hero of the Soviet Union decoration was in fact the Order of Lenin supplemented with the Gold Star medal while the Order of the Red Banner, the country’s oldest combat decoration was seen by some servicemen as no less prestigious than the more recently instituted Order of Lenin. The less prestigious Order of the Fatherland War (#4 and #3) had a built-in internal rank system (1st and 2nd levels), the latter of which was just a slight cut above the Order of the Red Star (#2).

These ‘close calls’ provide another opportunity to test our hypotheses. First, we split the sample into pairs based on the award the pilot received: Hero of the Soviet Union (HSU) versus Order of Lenin (OL); OL versus the Order of the Red Banner (ORB) and the Order of the Fatherland War (OFW) 1st level versus OFW 2nd level. The outcome variable takes a 1 for those pilots that receive the more prestigious (higher ranked) awards in each pair (this is always the first award listed above and in the table). Our model specifications use the same set of predictors and fixed effects as the main analysis that looks at the ‘received awards’ in Table 5.

Table A9 confirms several of our main hypotheses. First, we see merit (‘confirmed victories’) plays a substantial role in propelling pilots to the more prestigious awards in the close calls scenarios. The only exception are the decisions at the very top of the pyramid (between HSU and OL). However, both awards were also used to reward one-time extreme heroic deeds that would



not be reflected in normal cumulative performance metrics. Next, Communist Party allegiances do not predict final outcomes in these close calls. We see weak evidence across the board party members fare better in these decisions. Finally, ethnic discrimination by regimental commanders and affirmative action by higher ups cancel each other out. There is little evidence that non-Slavic groups fare worse once the interventions have taken place with regards to these close calls.

**TABLE A9: CLOSE CALLS ANALYSIS**

	HSU vs OL		OL vs ORB		OFW I vs OFW II		OFW II vs OKZ	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Confirmed Victories: All Planes	-0.416*** (0.054)	-0.409*** (0.053)	0.090*** (0.021)	0.088*** (0.021)	0.148*** (0.029)	0.147*** (0.029)	0.161*** (0.035)	0.156*** (0.035)
Any Party Affiliation	-0.007 (0.031)		0.014 (0.009)		0.029 (0.026)		-0.008 (0.026)	
Party: Komsomol		-0.052 (0.065)		0.018 (0.020)		0.070 (0.050)		-0.052 (0.052)
Party: Candidate		-0.064 (0.093)		0.025 (0.020)		0.021 (0.056)		0.030 (0.052)
Party: Full Member		-0.0001 (0.101)		0.035 (0.022)		0.075 (0.062)		-0.012 (0.055)
Non-Slavic Ethnicity	-0.008 (0.028)	-0.009 (0.027)	-0.002 (0.010)	-0.002 (0.010)	0.025 (0.022)	0.025 (0.022)	-0.027 (0.023)	-0.029 (0.023)
Commander	0.025 (0.028)	0.024 (0.028)	-0.009 (0.014)	-0.011 (0.015)	0.068*** (0.026)	0.071*** (0.027)	0.051 (0.032)	0.043 (0.032)
Wounded	0.054* (0.031)	0.054* (0.030)	0.012 (0.015)	0.012 (0.015)	0.001 (0.024)	-0.001 (0.024)	0.070** (0.028)	0.071** (0.029)
Had Previous Award	0.376*** (0.049)	0.363*** (0.047)	0.027 (0.020)	0.026 (0.020)	0.167*** (0.033)	0.173*** (0.033)	0.174*** (0.040)	0.162*** (0.040)
Age (log)	0.006 (0.041)	-0.011 (0.042)	0.025 (0.019)	0.022 (0.019)	-0.009 (0.037)	-0.011 (0.037)	-0.016 (0.039)	-0.021 (0.040)
Years Military Experience	-0.249*** (0.043)	-0.251*** (0.042)	0.089*** (0.021)	0.088*** (0.021)	0.107*** (0.038)	0.105*** (0.038)	-0.014 (0.040)	-0.014 (0.040)
Military Rank	0.095** (0.042)	0.087** (0.042)	0.007 (0.018)	0.007 (0.018)	0.051* (0.030)	0.046 (0.030)	0.001 (0.032)	-0.002 (0.033)
Award Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regiment FE	Yes	No	No	Yes	Yes			
Observations	748	748	4,550	4,550	1,865	1,865	1,403	1,403
R <sup>2</sup>	0.765	0.768	0.283	0.283	0.294	0.296	0.408	0.411

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 This table examines the rank of the award pilots finally received, but outcomes are separated into close calls according to our ranking system. Coefficients have been standardized by subtracting each value by the overall mean and dividing by its standard deviation. Standard errors are clustered at the pilot level.

## A6 Further Robustness Checks

In this section, we show an additional set of robustness checks of the main results using the main ranking. The first column in each table shows the original result from the paper. We then use a slightly different indicator for regimental affiliation in the next two columns, as indicated by the rows IAP Alternative FE and GIAP Alternative FE. We do this because some fighter aviation regiments (IAP) changed names over the course of the war, becoming ‘guard’ regiments IAP (for example, the 71 IAP was later referred to as the 10 GIAP). Concerned about data consistency, we created a IAP Alternative FE which captures only the IAP regiment in each of these pairs, and then the GIAP Alternative FE that just takes the ‘Guard’ IAP. Our main results are all robust to using this alternate formation.

Next we check for any difference in the treatment of Russians, Ukrainians, and Belorussians by including indicators for the latter two. We see no distinct patterns in nominations, promotions, demotions, or the final awards between the different Slavic ethnicities. Finally we include a different measure of merit that includes both pilots’ solo and group victories as equal. Once again we find no significant changes to our main results.

**TABLE A10: NOMINATED AWARD RANK, ROBUSTNESS**

	(1)	(2)	(3)	(4)	(5)
Confirmed Victories: All Planes	0.090*** (0.015)	0.090*** (0.015)	0.090*** (0.014)	0.090*** (0.014)	
Confirmed Victories: All Planes, Frac					0.082*** (0.014)
Party: Komsomol	-0.051** (0.022)	-0.051** (0.022)	-0.052** (0.022)	-0.052** (0.022)	-0.051** (0.022)
Party: Candidate	-0.033 (0.023)	-0.033 (0.023)	-0.033 (0.023)	-0.033 (0.023)	-0.033 (0.023)
Party: Full Member	-0.006 (0.026)	-0.006 (0.026)	-0.006 (0.026)	-0.006 (0.025)	-0.007 (0.026)
Non-Slavic Ethnicity	-0.024** (0.010)	-0.024** (0.010)	-0.024** (0.010)	-0.023** (0.010)	-0.023** (0.010)
Ukrainian				0.010 (0.010)	
Belarussian				0.006 (0.010)	
Commander	0.096*** (0.012)	0.096*** (0.012)	0.096*** (0.012)	0.096*** (0.012)	0.096*** (0.012)
Wounded	0.018* (0.010)	0.018* (0.010)	0.018* (0.010)	0.018* (0.010)	0.018* (0.010)
Had Previous Award	0.160*** (0.014)	0.160*** (0.014)	0.160*** (0.014)	0.160*** (0.014)	0.161*** (0.014)
Age (log)	-0.004 (0.015)	-0.004 (0.015)	-0.005 (0.015)	-0.005 (0.015)	-0.003 (0.015)
Years Military Experience	-0.062*** (0.014)	-0.062*** (0.014)	-0.061*** (0.014)	-0.061*** (0.014)	-0.063*** (0.015)
Military Rank	0.025* (0.013)	0.025* (0.013)	0.025* (0.013)	0.025* (0.013)	0.025* (0.013)
Year FE	Yes	No	Yes	Yes	Yes
Regiment FE	Yes	No	No	Yes	Yes
IAP Alternative FE	No	Yes	No	No	No
GIAP Alternative FE	No	No	Yes	No	No
Observations	8,487	8,487	8,487	8,487	8,487
R <sup>2</sup>	0.168	0.168	0.167	0.168	0.167

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 This table examines the rank of the award pilots were initially nominated for. Coefficients have been standardized by subtracting each value by the overall mean and dividing by its standard deviation. Standard errors are clustered at the pilot level.

**TABLE A11: PROMOTIONS AND DEMOTIONS, ROBUSTNESS**

	Promotions					Demotions				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Confirmed Victories: All Planes	0.053*** (0.013)	0.053*** (0.013)	0.053*** (0.013)	0.053*** (0.013)		0.027** (0.013)	0.027** (0.013)	0.026** (0.013)	0.026** (0.013)	
Confirmed Victories: All Planes, Frac					0.045*** (0.012)					0.031** (0.012)
Party: Komsomol	0.036* (0.019)	0.036* (0.019)	0.036* (0.019)	0.036* (0.019)	0.036* (0.019)	0.033* (0.020)	0.033* (0.020)	0.033* (0.020)	0.034* (0.020)	0.034* (0.020)
Party: Candidate	0.064*** (0.020)	0.064*** (0.020)	0.064*** (0.020)	0.064*** (0.020)	0.064*** (0.020)	0.019 (0.021)	0.019 (0.021)	0.019 (0.021)	0.019 (0.021)	0.019 (0.021)
Party: Full Member	0.040* (0.022)	0.040* (0.022)	0.040* (0.022)	0.040* (0.022)	0.039* (0.022)	0.018 (0.024)	0.018 (0.024)	0.018 (0.024)	0.018 (0.024)	0.018 (0.024)
Non-Slavic Ethnicity	0.033** (0.013)	0.033** (0.013)	0.033** (0.013)	0.033** (0.013)	0.034** (0.013)	0.0001 (0.009)	0.0001 (0.009)	0.0001 (0.009)	-0.0001 (0.009)	0.0004 (0.009)
Ukrainian				-0.001 (0.010)					0.004 (0.011)	
Belarussian				-0.003 (0.010)					-0.010 (0.010)	
Commander	0.007 (0.012)	0.007 (0.012)	0.006 (0.012)	0.006 (0.012)	0.007 (0.012)	-0.025** (0.012)	-0.025** (0.012)	-0.025** (0.012)	-0.025** (0.012)	-0.025** (0.012)
Wounded	0.017 (0.011)	0.017 (0.011)	0.017 (0.011)	0.017 (0.011)	0.017 (0.011)	-0.015 (0.011)	-0.015 (0.011)	-0.015 (0.011)	-0.015 (0.011)	-0.015 (0.011)
Had Previous Award	0.001 (0.014)	0.001 (0.014)	0.001 (0.014)	0.001 (0.014)	0.002 (0.014)	-0.031** (0.014)	-0.031** (0.014)	-0.031** (0.014)	-0.031** (0.014)	-0.033** (0.014)
Age (log)	0.025* (0.015)	0.025* (0.015)	0.023 (0.015)	0.024 (0.015)	0.025* (0.015)	-0.023 (0.016)	-0.023 (0.016)	-0.024 (0.016)	-0.024 (0.016)	-0.023 (0.016)
Years Military Experience	0.010 (0.013)	0.010 (0.013)	0.011 (0.013)	0.011 (0.014)	0.010 (0.013)	0.056*** (0.015)	0.056*** (0.015)	0.057*** (0.015)	0.057*** (0.015)	0.057*** (0.015)
Military Rank	0.007 (0.014)	0.007 (0.014)	0.007 (0.014)	0.007 (0.014)	0.007 (0.014)	-0.014 (0.014)	-0.014 (0.014)	-0.014 (0.014)	-0.014 (0.014)	-0.015 (0.014)
Nominated Award Rank	-0.307*** (0.017)	-0.307*** (0.017)	-0.307*** (0.017)	-0.307*** (0.017)	-0.307*** (0.017)	0.154*** (0.010)	0.154*** (0.010)	0.155*** (0.010)	0.155*** (0.010)	0.154*** (0.010)
Year FE	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Regiment FE	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
IAP Alternative FE	No	Yes	No	No	No	No	Yes	No	No	No
GIAP Alternative FE	No	No	Yes	No	No	No	No	Yes	No	No
Observations	8,487	8,487	8,487	8,487	8,487	8,487	8,487	8,487	8,487	8,487
R <sup>2</sup>	0.162	0.162	0.161	0.161	0.160	0.119	0.119	0.118	0.118	0.118

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 This table examines whether the award a pilot received was either more prestigious (Columns 1-5: Promotions) or less prestigious (Columns 6-10: Demotions) than that he was nominated for . Coefficients have been standardized by subtracting each value by the overall mean and dividing by its standard deviation. Standard errors are clustered at the pilot level.

**TABLE A12: RECEIVED AWARD RANK**

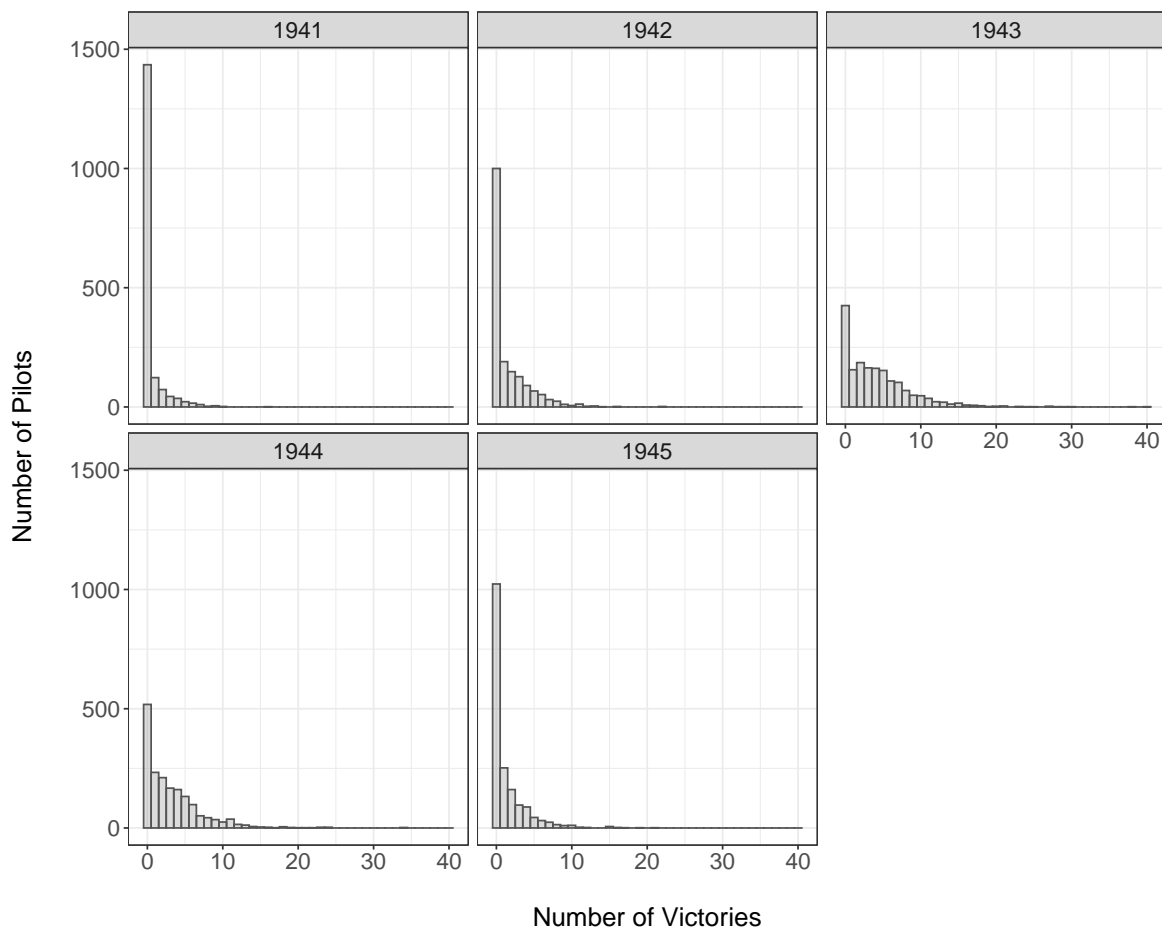
	(1)	(2)	(3)	(4)	(5)
Confirmed Victories: All Planes	0.082*** (0.014)	0.082*** (0.014)	0.082*** (0.014)	0.082*** (0.014)	
Confirmed Victories: All Planes, Frac					0.070*** (0.013)
Party: Komsomol	-0.042** (0.020)	-0.042** (0.020)	-0.042** (0.020)	-0.042** (0.020)	-0.042** (0.020)
Party: Candidate	-0.024 (0.021)	-0.024 (0.021)	-0.024 (0.021)	-0.024 (0.021)	-0.024 (0.021)
Party: Full Member	-0.015 (0.024)	-0.015 (0.024)	-0.015 (0.024)	-0.015 (0.024)	-0.015 (0.024)
Non-Slavic Ethnicity	-0.013 (0.009)	-0.013 (0.009)	-0.013 (0.009)	-0.012 (0.009)	-0.013 (0.009)
Ukrainian				0.004 (0.009)	
Belarussian				0.011 (0.009)	
Commander	0.081*** (0.012)	0.081*** (0.012)	0.080*** (0.012)	0.081*** (0.012)	0.081*** (0.012)
Wounded	0.022** (0.010)	0.022** (0.010)	0.023** (0.010)	0.023** (0.010)	0.022** (0.010)
Had Previous Award	0.150*** (0.014)	0.150*** (0.014)	0.150*** (0.014)	0.150*** (0.014)	0.151*** (0.014)
Age (log)	0.027* (0.014)	0.027* (0.014)	0.027* (0.014)	0.027* (0.014)	0.029** (0.014)
Years Military Experience	-0.077*** (0.014)	-0.077*** (0.014)	-0.076*** (0.014)	-0.077*** (0.014)	-0.078*** (0.014)
Military Rank	0.043*** (0.013)	0.043*** (0.013)	0.044*** (0.013)	0.044*** (0.013)	0.043*** (0.013)
Year FE	Yes	No	Yes	Yes	Yes
Regiment FE	Yes	No	No	Yes	Yes
IAP Alternative FE	No	Yes	No	No	No
GIAP Alternative FE	No	No	Yes	No	No
Observations	8,487	8,487	8,487	8,487	8,487
R <sup>2</sup>	0.165	0.165	0.165	0.165	0.164

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 This table examines the rank of the award pilots finally received. Coefficients have been standardized by subtracting each value by the overall mean and dividing by its standard deviation. Standard errors are clustered at the pilot level.

## A7 Stats Thresholds

Pilots gain eligibility for awards based on the number of planes they have downed. This could open up an incentive for pilots and commanders to falsify data or inaccurate report on their combat activities in order to qualify. In Figure A5, we investigate the distribution of the number of victories per pilot over the course of the war. If we see discontinuities around key thresholds (for example, 5 victories), that should give us pause about trusting the veracity of the victories data as accurately reflecting the merit performance of pilots during the war. However for each year we see a somewhat smooth distribution across the different figures, suggesting that juking the states was as common as believed, according to the data we have collected.

**FIGURE A5: DISTRIBUTION OF VICTORIES PER PILOT DURING THE WAR**



## A8 Rank Promotions

In this section, we investigate whether discrimination also crept into the assignment of military rank. From the Aces Encyclopedia, we know both the starting rank of each pilot when they entered the military as well as their final rank at either the time of their death, their the end of the war, or their resignation from the service. Unfortunately, we do not know exactly when this end rank was measured, somewhat undermining how much weight we can put on this exercise. Though we have these start and final military ranks, we also do not observe when promotions occurred during the war in order to link to merit or other considerations.

Table [A13](#) analyzes change in rank over the war at the pilot level using our standard battery of pilot-level characteristics. Just as above, we use a cumulative measure of victories and the maximum value of the other predictors as they are derived from award forms submitted during the war. We also control for ‘starting rank’, and divide the same according to the number of victories as well as pilots that survived the war. In all specifications, we do not see a significant effect of non-Slavic ethnicity on rank promotion. Instead merit combat years, and leadership experience appear to matter most.

**TABLE A13: RANK PROMOTIONS**

	(1)	(2)	(3)	(4)	(5)
Age (log)	3.144*** (0.178)	2.444*** (0.182)	2.543*** (0.274)	2.369*** (0.246)	2.791*** (0.224)
Planes Downed (Total, log)	0.309*** (0.038)	0.364*** (0.038)	0.570*** (0.071)	-0.078 (0.110)	0.364*** (0.043)
Years Military Experience	0.898*** (0.058)	0.753*** (0.057)	0.655*** (0.094)	0.807*** (0.077)	0.713*** (0.075)
Party: Komsomol	0.135 (0.104)	0.121 (0.101)	0.220 (0.195)	0.114 (0.118)	0.195 (0.135)
Party: Kandidat	0.153 (0.098)	0.144 (0.095)	0.184 (0.181)	0.159 (0.113)	0.201 (0.122)
Party: Member	0.461*** (0.094)	0.427*** (0.092)	0.535*** (0.174)	0.403*** (0.109)	0.498*** (0.116)
Commander	0.463*** (0.049)	0.422*** (0.047)	0.349*** (0.094)	0.434*** (0.056)	0.396*** (0.060)
Party Commissar	0.320** (0.142)	0.374*** (0.139)	0.234 (0.193)	0.513*** (0.193)	0.371** (0.163)
Wounded	0.114*** (0.034)	0.148*** (0.033)	0.144*** (0.048)	0.145*** (0.046)	0.164*** (0.039)
Killed in Action	-0.097 (0.096)	-0.061 (0.094)	-0.192 (0.125)	0.100 (0.135)	
Non-Slavic	-0.002 (0.095)	-0.029 (0.093)	-0.191 (0.152)	0.076 (0.121)	0.005 (0.111)
Num. Awards, log	0.364*** (0.041)	0.380*** (0.040)	0.294*** (0.070)	0.418*** (0.052)	0.399*** (0.047)
Starting Rank		0.236*** (0.019)	0.222*** (0.028)	0.245*** (0.025)	0.216*** (0.022)
Sample	All	All	>8 Victories	<=8 Victories	Survived War
Aviation Type FE	Yes	Yes	Yes	Yes	Yes
Final Year FE	Yes	Yes	Yes	Yes	Yes
Observations	2,786	2,786	1,259	1,527	2,040
R <sup>2</sup>	0.592	0.614	0.526	0.644	0.564

This table examines the final military rank of pilots using covariates measured using the entirety of data for each pilot during the war. The unit of analysis is the pilot with robust standard errors.