Martyrs, Morale, and Militarism: The Political Impact of Devastation and Slaughter*

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Abstract

Opinion is sharply divided about whether the bombing of an enemy's civilian targets and the killing of their combatants results in an adversary's population becoming pacifist or pro-military. Identification is difficult because natural experiments are rare, and effects may be heterogeneous. For example, killing enemy combatants may create martyrs, while targeting civilians may lower their pro-war morale. We solve this problem by leveraging a natural experiment in Japan in which military casualties and urban destruction varied exogenously, but differentially, across cities. We then estimate the impact of devastation and slaughter on support for Japan's Liberal Democratic Party, which aims to revise Japan's constitution to enable it to rearm. We find contrasting effects of targeting soldiers and civilians—military deaths induce future pro-military voting, while urban destruction induces pacifist voting. Moreover, these effects persist long after most people with direct experience of the war have died.

JEL Codes: D74, N45, H56

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"Japan proper can be thoroughly, efficiently, and promptly bombed into submission."

—Representative Fred Bradley, Commencement Address at Rogers City High School, June 10, 1943. (Bradley, 1943)

"Atomic bomb survivors are opposed to any move to revise the constitution."

—Terumi Tanaka, Secretary General of Nihon Hidankyo, which won the Nobel Peace Prize in 2024. (Hiroshima Peace Media Center, 2025)

"[For Japan to regain its status as a] respectable member of the community of nations, it would first have to revise its constitution and rearm. If Japan is alone in renouncing war..., it will not be able to prevent others from invading its land. If, on the other hand, Japan can defend itself, there would be no further need to keep United States garrison forces in Japan."

—Prime Minister Nobusuke Kishi (Samuels, 2001)

1 Introduction

What are the political effects of wartime devastation and slaughter? Social science research has not produced a unified answer to this question. Studies of the rise of fascism in the early twentieth century typically find that military service and casualties in World War I caused pro-fascist voting (Acemoglu et al., 2022; Cagé et al., 2023; De Juan et al., 2024), while studies of later times and different countries find that war violence, on average, leads survivors to join peace groups, vote more, and become more altruistic and pro-social (Bauer et al., 2016; Voors et al., 2012; Tellez, 2019).

This paper exploits a unique natural experiment in Japan that lets us unpack these disparate findings by separately identifying the causal effects of urban devastation and military casualties during World War II on pro-military voting behavior throughout the post-war period. In post-war Japan, the amendment of Article 9 of the constitution, which bans Japan's rearmament, has been a salient political issue and a central goal of the Liberal Democratic Party (LDP). Achieving this goal has been difficult, despite the LDP's electoral success, because constitutional amendment requires a supermajority of support in the Diet. By analyzing how differential casualty and urban destruction rates across cities affect voting for the LDP, we isolate their differential impacts on right-wing, pro-military voting. Thus, we obtain a clean identification of the two effects and avoid the difficulties of interpretation that arise from comparing results based on studies of different countries and contexts. Our results reconcile past findings by focusing on how the wartime targeting of civilians differs in its political impact from the targeting of soldiers. We find that destroying civilian targets and killing soldiers produce significant, persistent, *and opposite* effects on voting behavior—urban

devastation causes pacifist voting and military casualties cause pro-military voting. Thus, our study explains the disparate findings of past work by finding that the responses of people to wartime military deaths differ from those of people exposed to wartime civilian devastation.

Postwar Japan is an ideal setting to study the impact of civilian devastation and military casualties on voting because they were exogenously, *but differently*, distributed across cities. Davis and Weinstein (2002), who look at the impact of bombing on urban growth, argue that much of the success and failure of bombing raids depended on the weather, geography, and learning by doing. We also build off Ogasawara and Komura (2022) and Asai and Kambayashi (2023), who argue that the prefectural distribution of military casualties was exogenously determined due to the Japanese army's use of a "hometown regiment" system. Japanese regiments were formed based on soldiers' hometowns and then sent throughout the empire. As a result, if a regiment was sent to a location with a high starvation or battle-casualty rate, a large fraction of the hometown's young men died. By contrast, men in regiments sent to places like Hokkaido or Taiwan, with abundant local food sources and little combat, largely returned unscathed.

One of the data innovations in this paper is to exploit recent insight by Kimura (2023) showing that regiments were formed based on much smaller geographies than prior work has assumed. We build a regional dataset that has approximately 26 times more observations in a typical year than earlier work based on Japan's 47 prefectures. Indeed, all of our identification uses a full set of prefectural fixed effects, so our identification arises from variation across cities within prefectures. We assume that cities with high female-to-male ratios in cohorts of people who were prime-age conscripts suffered high levels of military casualties and validate this hypothesis by looking at female-to-male ratios in cities whose regiments were decimated. We also document that cities with high female-to-male ratios in cohorts of people who were prime-age conscripts do not have high ratios in other cohorts, establishing that these high female-to-male ratios were not caused by overall gender ratios.

We implement an approach that eliminates a large number of potential confounding variables. Our preferred specification is a difference-in-differences regression in which we try to explain the change in a city's pro-military voting between a given postwar year and 1928 based on the deaths and devastation caused by the war. A salient political issue in the 1928 election was whether Japan should expand its navy. Votes for the *Seiyukai* party, which supported an expansion in Japan's military, therefore, capture past "pro-military" voting behavior. This control enables us to run a differences-in-differences specification in which

we estimate the impact of casualties and devastation on changes in pro-military voting. We also include controls for earmarked expenditures in cities to show that traditional pork-barrel politics do not drive our results. We find no evidence that pre-war pro-military voting or earmarked expenditures influence post-war voting within prefectures. Rather, our postwar election results are mostly driven by what happened to the city's inhabitants during the war.

We also make progress in understanding what it is about right-wing political parties that appeals to the friends and families of deceased war veterans. We document that 98 percent of LDP politicians agree with revising the constitution, indicating a clear consensus within the party. Similarly, other major parties almost uniformly oppose constitutional revision and are, therefore, pacifist. As a result of this difference, we use support for the LDP as our measure of pro-military voting.

We also exploit a second natural experiment to understand the importance of the LDP's ability to deliver on its promises of rearming for its political base. The LDP suffered a major electoral defeat in the wake of the bursting of the Japanese stock and land bubbles, briefly enabling an opposition government to come to power. We view this change as exogenous because the bursting of the bubbles had nothing to do with LDP defense policies. The opposition quickly passed a major electoral reform that dramatically weakened the LDP and forced it into a coalition government with a pacifist party. While this enabled the LDP to push through many of its economic reforms, it undermined the party's ability to obtain enough votes to enact constitutional change. We find that forming this coalition government significantly lowered support in cities that suffered high military casualties, consistent with our claim that the pro-military position of the LDP was the driver of its support in locations with high military casualties. Nevertheless, we find the effects of military casualties and urban destruction on pro-LDP voting remain significant even as late as 2021, highlighting the persistence of wartime trauma long after most of the people who directly experienced it have died.

We also conduct a simple counterfactual exercise to assess the magnitude of our point estimates. We examine a counterfactual scenario in which the U.S. decided not to use area bombing to destroy civilian targets but instead just targeted the Japanese military. We find that the magnitude of the reduction in the impact of the morale effect on pro-pacifist voting would have been sufficiently large to enable the LDP to have obtained more than a two-thirds majority in the Diet's House of Representatives. Since this has been one of the major hurdles in achieving constitutional revision, our estimates suggest that the morale effect is sufficiently large that it could have prevented the LDP from succeeding in rearming Japan and removing

American bases.

In order to relate to the existing literature, we adopt some semantic conventions to facilitate discussing the issues. First, Gladwell (2021) notes that "morale bombing" was a euphemism used by the Allies for bombing countries into submission. We, therefore, adopt the term "morale effect" to describe the effectiveness of area bombing of civilian targets on the share of voting for the LDP. Second, right-wing Japanese refer to Japanese war criminals as "martyrs" (e.g., *showa junnansha*), so we adopt the term "martyr effect" to describe the importance of military casualties on pro-LDP voting.[1] Finally, it is standard practice for Japanese politicians who are not affiliated with the LDP to equate revising Japan's constitution and rearming with "militarism" (Asahi Shimbun, 1958). While most LDP politicians draw a sharp distinction between militarism and constitutional revision and rearmament, we use the term "pro-military voting" to mean support for the LDP.

The paper is organized as follows. Section 2 discusses the literature. Section 3 presents a brief discussion of relevant Japanese politics over the last hundred years for readers unfamiliar with Japan. Section 4 describes our data. Section 5 presents our main empirical results. Section 6 concludes.

2 Related Literature

Our paper relates to several important strands in the literature. First, as we noted in the introduction, the literature is divided on the effects of wartime violence on voting behavior. De Juan et al. (2024) find that voting districts with higher WWI casualties voted more "for right-wing, nationalist parties, including the Nazi Party," and Bauer et al. (2016) survey twenty-three careful studies and conclude that "in case after case, people exposed to war violence go on to behave more cooperatively and altruistically, which we will generally call 'prosocial' behavior." Studies like Voors et al. (2012) and Blattman (2009) find that civilians who are terrorized and survive tend to have more altruistic attitudes and are more likely to be members of pacifist organizations. Carmil and Breznitz (1989) look at the political attitudes of Israelis who experienced the holocaust and those that did not and find that survivors did not differ in terms of their self-reported support for left vs. right-wing parties.

Second, our work is also related to work on how military actions affect guerrilla activities. Kocher et al. (2011) and Dell and Querubin (2018) examine the impact of bombing near civilian populations and

[1] The more common term for enshrined Japanese war dead is "*eirei*" or "hero spirits," which also connotes the idea that they died for a noble cause.

find that it increases insurgent recruitment and activity. Lyall (2009) studied counterinsurgency operations in Chechnya, concluding that indiscriminate violence increased local support for insurgents rather than deterring rebellion. Similarly, Jaeger and Paserman (2008) analyze Israeli military actions and find that targeted killings frequently led to retaliatory violence, reinforcing militant group cohesion and increasing future attacks. Finally, Dell (2015) explores the unintended consequences of militarized approaches to drug conflicts in Mexico, demonstrating that government crackdowns on trafficking networks often lead to increased cartel violence.

Third, historians and political scientists disagree about the impact of military actions on enemy morale, defined as the willingness to fight. Pollack (2002) provides further evidence that overwhelming military force can lower morale when it leads to the perception of inevitable defeat, as observed in several Arab military conflicts where high casualties and sustained losses weakened combat effectiveness. Pape (1996) and Dower (1999) argue that bombing had small effects on morale. However, scholars such as Grayling (2007), Lyall (2009), and Jaeger and Paserman (2008) emphasize the morale-hardening effects of indiscriminate violence.

Fourth, a more recent strand of literature examines whether exposure to war induces hawkish or dovish post-war foreign policy attitudes. The empirical results are mixed, depending on the context. Some studies (e.g., Acemoglu et al. 2022; De Juan et al. 2024) show that wartime destruction induces the rise of right-wing hawkish governments, while others (e.g., Althaus et al. 2012; Tellez 2019; Blair and Horowitz 2024) suggest that wartime violence induces more dovish attitudes. Our findings are also consistent with Voth (2021) and Ochsner and Roesel (2024), who document historical memories' persistence, and in line with Harada et al. (2024), documenting the persistent impact of Tokyo air-raid bombing on community-level social capital.

Our work innovates from the existing literature in several ways. First, we differ from existing literature by identifying the separate effects of targeting civilians and soldiers on post-WWII voting behavior. Second, by exploiting the unique Japanese political environment where pro-militaristic constitutional reform has been a salient political issue throughout the post-WW2 period, we investigate the degree to which morale and martyr effects persist or attenuate over generations, finding some attenuation but strong persistence.

3 Background: One Hundred Years of Militarism in Japanese Politics

A major advantage of working with Japanese data to understand the impact of slaughter and devastation on voting is that national security issues have been central in Japanese politics for the past one hundred years. Sections 3.1 and 3.2 provide a brief overview of Japanese politics in the pre- and post-war periods to give the reader an understanding of the salience of militarism in Japanese elections. We explain the reasons for and impact of the 1994 electoral reform on the LDP in Section 3.3.

3.1 *Militarism and Voting Before World War II*

The first election after the passage of the 1925 Universal Male Suffrage Act, which granted the vote to adult men, centered on national defense issues. Giichi Tanaka, a former army general, became president of the *Rikken Seiyukai* or "Friends of the Constitution Party" in 1925 and espoused pro-military, imperialist attitudes. Tanaka advocated "popularizing national defense" and finding a way for Japan to "break free from its insular position, become a continental state, and confidently extend its national power" (Duus, ed 1988 [pp.94 and 275]). The *Seiyukai* won the 1928 general election on a platform of strong opposition to arms control.

The significance of this outcome and why Japanese voters cared so much about arms control can best be understood by considering the impact of a completely unexpected event that effectively reversed the election outcome. Shortly after Tanaka became prime minister, a junior Japanese army officer, acting without authorization, orchestrated the assassination of the Manchurian warlord Zuolin Zhang. Tanaka wanted to court-martial the assassins, but army leaders blocked his efforts. His failure to punish the assassins ultimately led to an imperial rebuke, forcing him and his cabinet to resign in 1929. The collapse of the Tanaka government paved the way for the dovish *Rikken Minseito* ("Constitutional People's Party") to briefly gain power and sign the London Naval Treaty in 1930, severely limiting Japan's ability to build destroyers and submarines.

Although the *Seiyukai* would return to power in 1932 and abrogate the terms of the treaty in 1937, Japan's destroyer and submarine fleet ended up being smaller than it otherwise would have been, which produced devastating consequences. Without enough destroyers, Japanese shipping had little protection against U.S. submarines, and the lack of Japanese submarines meant that Japan could not easily attack U.S. aircraft

carriers. Since U.S. submarines and carrier-based aircraft would end up sinking 79 percent of Japanese ship tonnage, the impact of the pacifist's brief stint in government would have important effects on the Japanese military (Joint Army-Navy Assessment Committee, 1947).[2] Thus, the 1928 election was not only *perceived* by voters to be crucial in determining Japan's national defense capability, the emperor's decision to reverse the outcome may have changed the course of the war.

3.2 *Militarism and the Liberal Democratic Party*

When the U.S. occupation ended in 1952, the U.S. imposed on Japan a constitution whose Article 9 renounced war and prohibited Japan from maintaining armed forces or using force to resolve disputes. This article caused the former "Friends of the Constitution" to become avid opponents. Former *Seiyukai* Diet member Ichiro Hatoyama, along with other *Seiyukai* members and high-ranking officials in the pre-1945 government, formed the Liberal Democratic Party in 1955 in order to implement constitutional reform. A central plank of the party platform was amending the constitution by allowing Japan to remilitarize. One of the LDP's first Prime Ministers, Nobusuke Kishi, summarized the LDP position by saying that if Japan were to regain its status as a "respectable member of the community of nations, it would first have to revise its constitution and rearm. If Japan is alone in renouncing war..., it will not be able to prevent others from invading its land. If, on the other hand, Japan can defend itself, there would be no further need to keep United States garrison forces in Japan" (Samuels, 2001). Although the LDP faced fierce opposition from the Japan Socialist Party (JSP) and the Japan Communist Party (JCP), who advocated upholding the pacifist constitution, it has remained true to its earlier positions. For example, Japan's longest-serving Prime Minister, Shinzo Abe, stressed the centrality of constitutional reform in LDP thinking in 2017 by saying, "The Liberals and Democrats who formed the LDP wanted to create our own constitution, and the merger of the two parties was done to achieve the two-thirds majority in both houses that was needed for revision. Revising the constitution was the symbol of our regained independence. It was for this that the Liberal Democratic Party was founded (Council on Foreign Relations, n.d.)."

The salience of the LDP's pro-military position probably peaked in 1960, when massive protests erupted following LDP Kishi's signing of a revised U.S.-Japan Security Treaty. The new treaty enabled the U.S. *and*

[2]Data on Japanese shipping tonnage sunk by attack type is from https://www.ibiblio.org/hyperwar/Japan/IJN/JANAC-Losses/JANAC-Losses-2.html.

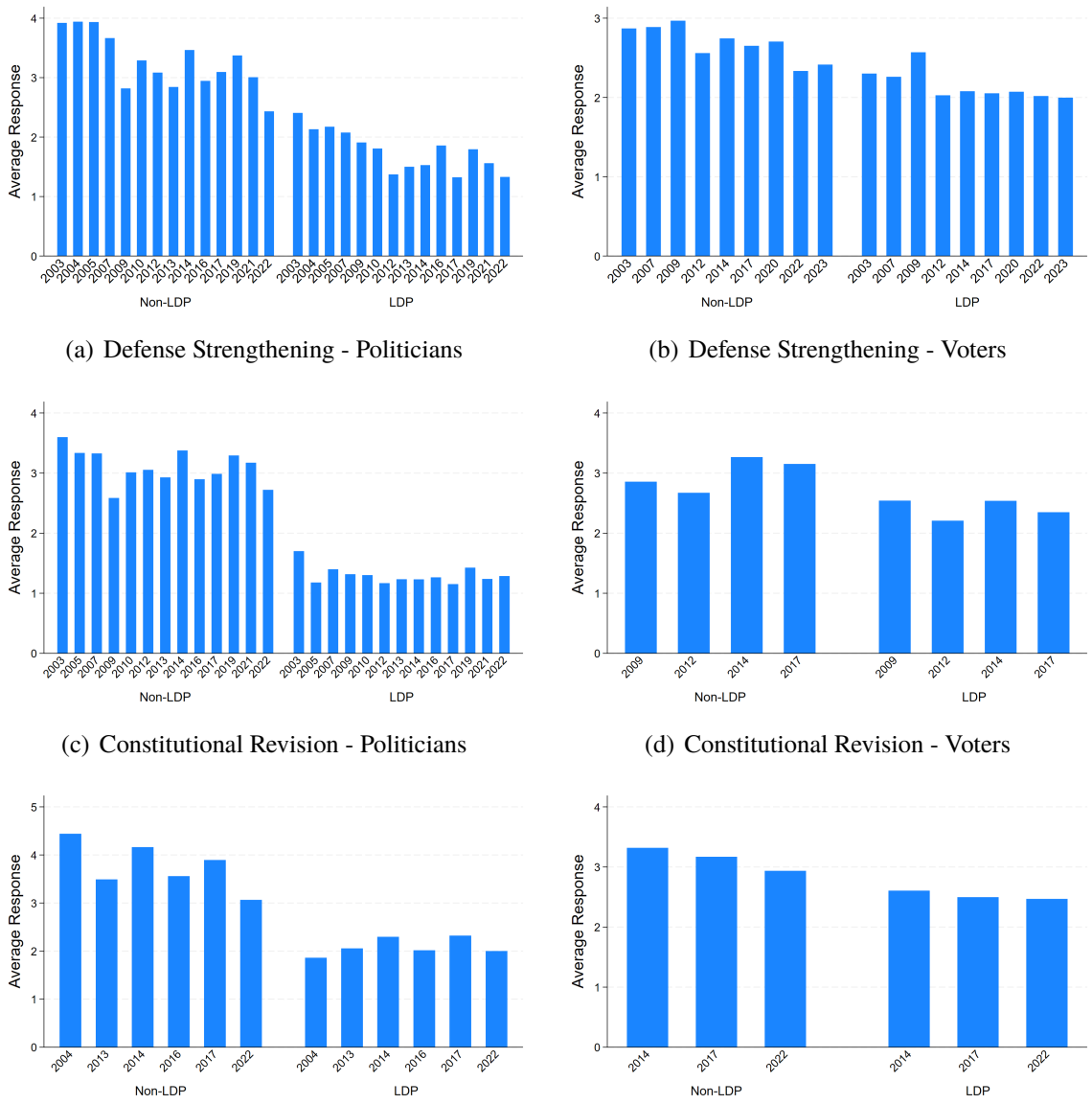
Japan to maintain military forces in Japan, which could be used to attack third countries and contained an article stating that the U.S. and Japan should "maintain and develop, subject to their constitutional provisions, their capacities to resist armed attack," which many Japanese saw as a violation of Article 9. In the ensuing protests, hundreds of thousands of people took to the streets, forcing President Eisenhower to cancel his trip to Japan. Despite the unrest, the LDP scored its biggest electoral success in this election, winning over 60 percent of the vote and ushering in what the Japanese call the "1955 System": the one-party dominance of the LDP, which maintained control of the lower house of the Diet until 1993. However, a constitutional amendment remained impossible as it required two-thirds of the vote in both the lower and upper houses, and left-wing parties prevented the LDP from achieving this supermajority. This situation made constitutional amendment a salient difference between the LDP and other parties throughout our sample period: a fact that enables us to use the LDP vote share as a measure of voters' pro-military attitudes.

Survey evidence suggests that LDP members and those who vote for them tend to hold more pro-military views. LDP members consistently favor constitutional revision—only 2 percent of LDP politicians support leaving the constitution unchanged (Ogi 2023). This support has been remarkably stable. For example, in Figure 1, we show that between 2003 and 2022, surveys of LDP politicians reveal that they have been, on average, far more in support of statements like "Japan should strengthen its Self-Defense Force," "Japan should amend its constitution," and "the Prime Minister should visit Yasukuni Shrine" (a shrine to the spirits of the war dead and war criminals). Moreover, as one can see from these plots, these views show no signs of attenuating.

As best we can measure it, supporters of the LDP tend to be more supportive of the LDP's pro-military stance than supporters of other parties. Figure 2 presents the results of a nationally representative survey of 2,421 people that was conducted in 1965 (Japan Defense Agency 1965), the earliest year in which we could find a representative survey of attitudes towards military spending. The results show differences between LDP supporters and supporters of opposition parties. Among LDP supporters, 21.2% believed the SDF budget was too small, compared to only 11.6% of non-LDP supporters.[3] Similarly, while 38.9% of supporters of opposition parties thought the SDF budget was too large, only 15.6% of LDP supporters shared this view. These results show that LDP supporters were more likely to favor increasing spending on the SDF and oppose decreasing military expenditures.

[3]The question asked was "Do you think the current budget for the Self-Defense Forces is too large, too small, or just right when viewed in terms of citizens' standard of living? A general impression is fine."

Figure 1: LDP Politicians' and Supporters' Positions on Key Military and Nationalist Issues



(a) Defense Strengthening - Politicians

(b) Defense Strengthening - Voters

(c) Constitutional Revision - Politicians

(d) Constitutional Revision - Voters

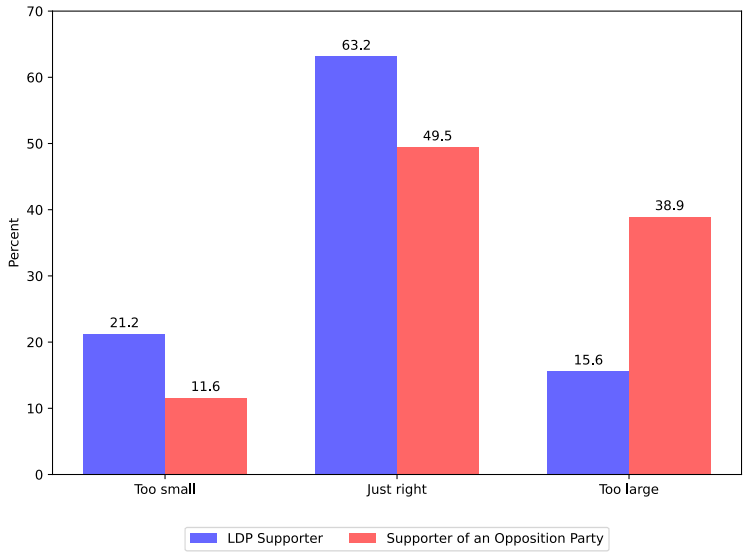
(e) Yasukuni Shrine Visits - Politicians

(f) Yasukuni Shrine Visits - Voters

Note: This figure shows how LDP and non-LDP politicians (left figures) and supporters (right figures) differ in their positions on issues related to the military. Responses are coded on a 5-point scale where 1 indicates strong agreement and 5 indicates strong objection to: (a) strengthening Japan's self-defense forces, (b) constitutional revision, and (c) prime ministerial visits to Yasukuni Shrine. Source: University of Tokyo-Asahi Survey (https://www.masaki.j.u-tokyo.ac.jp/utas/utasindex_en.html)

More recent data from the Todai-Asahi surveys reported in figure 1 also reveals that on average LDP supporters tend to have more pro-military views than supporters of opposition parties (although the differences do not appear as stark as those of the politicians). One possible reason for the more balanced survey results is that the survey was conducted by the most left-wing major newspaper in Japan, the *Asahi Shimbun*, and right-wing Japanese may not have felt comfortable truthfully reporting their views on such a controversial issue. Nevertheless, the same survey reveals that voters are also aware of the pro-military stance of the LDP. While 75.4% of surveyed voters surveyed in 2023 thought that the LDP is in favor of the idea of strengthening the Self-Defence Force (SDF), the corresponding numbers for voters supporting the LDP's main opposition parties, the Constitutional Democratic Party and the Japan Innovation Party, were only 22.75% and 46.79%, respectively. Thus, it appears that Japanese voters share the views of the parties they vote for and also understand the parties' positions on national defense issues.

Figure 2: LDP Supporters' and Opponents' Views of Defense Expenditures (1965)



Notes: Figure reports the results of a nationally representative survey of 2,421 people that was conducted in 1965 (Japan Defense Agency 1965)

3.3 *The 1994 Electoral Reform: A Natural Experiment*

One of the major liabilities of being the dominant political party is that Japanese voters withhold support for the LDP following major economic downturns. Figure 3 shows the share of votes for the LDP and the

JSP for the first 76 years of the LDP's existence.[4] As the plot makes clear, the LDP's two worst electoral defeats followed massive financial crises: the 1993 election following the bursting of stock and land price bubbles and the 2009 election following the global financial crisis. In both of these cases, voters appear to have punished the ruling party for Japan's poor economic performance: variation that we think is exogenous in the sense that these LDP defeats were not related to LDP policy on rearmament.

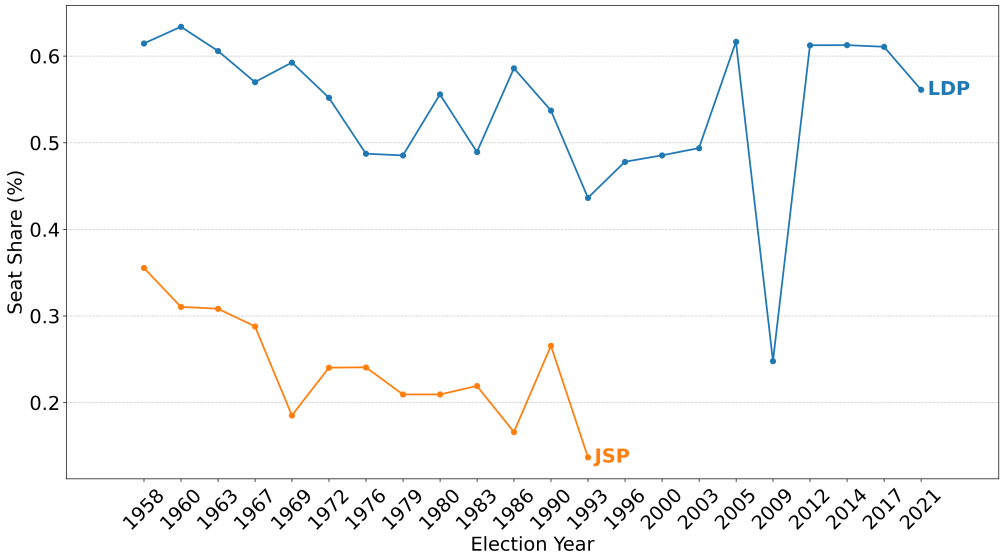
The 1993 defeat constitutes a natural experiment because it enabled opposing parties to form a coalition government with enough votes to pass a major electoral reform in 1994, which was designed to end LDP dominance. Before 1994, elections were all based on proportional representation in multi-member districts. In these elections, if a district could send n politicians to the Diet, then the n candidates with the highest vote shares would be elected regardless of party. The reform introduced a mix of proportional representation and single-member constituencies (PRCs and SRCs). In the new system, each voter casts two ballots: one for a party and one for a single candidate in their constituency. While the party's vote share, now aggregated across many districts, still determined the number of party members elected in the PRC elections, the party chose which people would enter the Diet, thereby eliminating the problem of candidates from the same party running against each other. The SMCs resulted in elections similar to those in the US, with the winner being the candidate who achieved a plurality of the vote. In the post-reform period, we measure LDP support using PRC voting because these elections reflect support for the party and have little to do with individual candidates. However, we include results for the SRCs in the appendix.

The reform weakened the LDP because small parties that previously could not have won any seats in a district now had the chance to obtain Diet members if they could win enough votes across many districts. This new math undermined the LDP's ability to dominate elections and forced it into an odd set of coalition governments. In 1994, the LDP briefly formed a coalition government with its archrival, the Japan Socialist Party. The Socialist Party soon disbanded, forcing the LDP to form a coalition with the pacifist *Komeito* or "Clean Government Party" (CGP) that has survived to this day.

The alliance ultimately undermined the LDP rearmament objectives. Prime Minister Abe tried to revise the constitution in 2016, hoping that his LDP-CGP coalition, which had achieved the desired supermajority in the Diet, could revise Article 9. The CGP balked at the idea and foiled his plan, making the inability of the LDP to effectuate actual reform very public. We treat the weakened LDP induced by the post-bubble

[4]The JSP dissolved itself after the 1993 election.

Figure 3: Seat Share of LDP and JSP (1958-2021)



Note: This figure shows the seat share of the LDP and the JSP in every election. Data source: Mizusaki and Mori (2021)

electoral reform as a natural experiment that enables us to examine how an exogenous change in the ability of the LDP to amend the constitution affects the propensity of pro-military and pacifist voter support.

4 Data

We bring several novel datasets to understand the impact of slaughter and devastation on voting behavior. The first is a dataset covering almost 100 years of Japanese election results to measure voting behavior before and after a city's citizens, soldiers, or structures were killed or destroyed. Second, we build a dataset covering WWII military and civilian deaths that is more disaggregated than any previously used before, which lets us link wartime deaths with electoral outcomes at the city and county level. [5]

4.1 *Unit of Observation*

Much of our data comes at the municipality, which divides Japan's land area into around 3,000 geographic units that vary to some degree across years. We aggregate these to the 300 largest cities because the urban death and destruction, which we take from Davis and Weinstein (2002), is only reported for the 300 largest

[5] See Appendix A.1.1 for definitions and details.

Japanese cities in 1940.[6] The details of our aggregation procedure and how we build consistent city definitions across time are discussed in Appendix A.1.1.

4.2 *The LDP Vote Share*

We measure the strength of the "pro-military" vote by computing the LDP vote share in each city using data for every election after the party's formation in 1955. We obtain data on voting at the party-city level and the number of eligible voters from Mizusaki and Mori (2021). In cities belonging to multiple electoral districts or having multiple candidates from the same party, party-level vote shares are aggregated to the city level.[7] We provide detailed summary statistics on LDP vote shares in Table 1. One of the facts that jumps out from this table is the enormous regional disparity in LDP support. Among cities in the top decile of LDP support, close to 70 percent of people vote for the LDP. Cities in the bottom decile have less than half this level of LDP support.[8]

In the post-reform period, we focus on the LDP's vote shares in the PRCs because the voting procedures in these constituencies, which account for about 62 percent of lower-house Diet members, are closest to those in the pre-reform period. The primary difference is that the boundaries of the election districts were altered with the reform. In Appendix A.2, we also report results for the SRCs as a robustness check. However, these vote shares are more difficult to interpret and compare across time due to alleged vote-trading in SMC elections. The problem arises because the CGP, which has difficulty winning seats in single-member constituencies, instructs its voters to vote for LDP candidates in these elections in exchange for powerful cabinet positions in the coalition government. Thus, some pacifist people vote for the LDP in SRCs and against them in the PRCs, making the SRC results harder to interpret.

[6]This encompasses approximately all cities with a population of over 30,000 in 1925 and all those with significant bomb damage. These municipalities account for 60 percent of the Japanese population. We dropped Okinawa because it was not returned to Japan until 1972 and, therefore, lacked voting data for much of our sample.

[7]We aggregate all *ku* (wards) in the cities that have them (i.e., *seirei shitei toshi*) to ensure alignment with other datasets on casualties and demographics.

[8]We obtain data on pre-WWII elections from Kawato and Kawato (1997) and build a dataset of municipality-level election outcome using a correspondence table between electoral districts and cities from https://lab.ndl.go.jp/dl/book/1445520?page=35 (In Japanese, last accessed on December 13, 2024).

Table 1: Summary Statistics

	Mean	SD	p10	p25	p50	p75	p90
LDP Vote Share (1958-1993)	0.514	0.162	0.297	0.409	0.519	0.632	0.723
LDP Vote Share (1996-2021, PRC)	0.341	0.070	0.251	0.294	0.340	0.386	0.430
LDP Vote Share (1958-2021, PRC)	0.443	0.158	0.261	0.327	0.412	0.554	0.676
LDP Vote Share (1996-2021, SMC)	0.486	0.140	0.316	0.403	0.485	0.576	0.666
LDP Vote Share (1958-2021, SMC)	0.503	0.154	0.304	0.406	0.503	0.610	0.705
LDP Vote Share (1996-2021, Weighted)	0.432	0.106	0.300	0.366	0.431	0.500	0.567
LDP Vote Share (1958-2021, Weighted)	0.481	0.148	0.299	0.385	0.473	0.579	0.679
Per-Capita Building Destruction	0.019	0.038	0.000	0.000	0.000	0.011	0.084
Per-Capita Bombing Deaths	0.002	0.013	0.000	0.000	0.000	0.001	0.005
Draft-Cohort Gender Ratio	1.143	0.084	1.040	1.098	1.146	1.199	1.239
Draft-Ineligible-Cohort Gender Ratio	0.957	0.057	0.896	0.925	0.951	0.982	1.016
Seiyukai's Vote Share in 1928	0.521	0.125	0.395	0.461	0.520	0.592	0.660
Per-Capita Earmarked Expenditures	1.511	3.742	0.029	0.042	0.073	0.256	5.952
Contemporaneous Gender Ratio	1.068	0.055	0.997	1.037	1.069	1.104	1.134

Note: This table presents summary statistics for our key variables. LDP Vote Share variables show the fraction of votes received by the Liberal Democratic Party, with PRC indicating proportional representation elections, SMC indicating single-member district elections, and Weighted indicating the weighted average of PRC and SMC results, where weights are calculated by the ratio of seats from PRC and SMC. Per-Capita Building Destruction measures the number of buildings destroyed during WWII air raids divided by the 1940 city population. Per-Capita Bombing Deaths measures confirmed civilian deaths and missing persons from air raids divided by the 1940 city population. Draft-Cohort Gender Ratio is the ratio of women to men aged 20-44 in 1950 (i.e., the gender ratio of people the military could have conscripted during WWII). The Draft-Ineligible-Cohort Gender Ratio is the ratio of females to males of those aged 10-19 and 45-54 in 1950. *Seiyukai*'s Vote Share in 1928 is the fraction of votes received by the pro-military *Rikken Seiyukai* party in the 1928 election. Per-Capita Earmarked Expenditures are earmarked expenditures in each city. The contemporaneous gender ratio refers to the gender ratio in a specific year. The statistics are calculated using data from the 300 largest Japanese cities as of 1940. p10, p25, p50, p75, and p90 represent the 10th, 25th, 50th (median), 75th, and 90th percentiles respectively.

4.3 *The Causes and Measurement of Military Fatalities*

The Imperial Japanese Army (IJA) formed infantry regiments by recruiting men based on the city or county from which they lived.[9] Asai and Kambayashi (2023) argue that the allocation of regiments to battlefields was exogenously determined in the sense that the survival probability of a regiment was not influenced by the future voting in the regiment's hometown. The exogeneity arises from several sources. One source is that the IJA often didn't know which islands would be attacked, so soldiers in regiments sent to major battlefields, e.g., the Philippines, Iwo Jima, and Okinawa, had close to 100 percent death rates, while those in regiments stationed on other *potential* battlefields, e.g., Korea, Taiwan, Indonesia, and the Japanese mainland saw little

[9] A full list of the more than 400 IJA regiments, including details on the city in which they were founded and brief histories, can be found https://en.wikipedia.org/wiki/List_of_Japanese_infantry_divisions.

to no fighting. As Asai and Kambayashi (2023) convincingly argue, there is no evidence that the IJA took a regiment's hometown into consideration when deciding which regiment would be sent where. Deployments were based on training, experience, and battle fatigue. Similarly, America's battle plans were not based on the hometowns of the regiments defending each island but rather on the importance of the islands themselves.

A second, and probably more important, source of the exogenous death rates in Japanese regiments was the U.S. policy of "unrestricted submarine warfare" announced on December 7, 1941, and later "Operation Starvation" which jointly resulted in the sinking of 81 percent of Japan's ship tonnage (Davis and Weinstein, 2008). These operations used U.S. submarine and air attacks to sever the food and military supply lines for Japanese troops on Pacific islands and thereby avoid having to dislodge Japanese soldiers through battles. The policies were extremely successful. U.S. submarines accounted for 55 percent of the Japanese shipping that America sank (Joint Army-Navy Assessment Committee, 1947). Since American submariners rarely rescued the passengers of torpedoed ships, often entire regiments were eliminated during transport to and from the battlefield. Similarly, although Japan's small submarine fleet had some notable successes against American aircraft carriers—for example, sinking the Yorktown and Wasp and nearly sinking the Saratoga—U.S. carriers operated relatively freely in the Pacific. Overall, American carrier-based aircraft accounted for another 24 percent of Japanese shipping losses. The destruction of Japan's merchant marine helps explain how American forces could kill close to two million Japanese soldiers, while only losing 100,000 U.S. soldiers.[10] Indeed, Yoshida (2017) finds that 60 percent of all Japanese military deaths were caused by starvation and disease, typically arising when the U.S. sank ships supplying Japanese troops on islands without adequate local sources of food. We think it is plausible to assume that the varied and large starvation and troop transport death rates created exogenous variation in our regression specifications because it would be hard to explain these rates using variables linked to postwar voting behavior.

The independence of hometown death rates and other variables likely to affect postwar voting behavior can be illustrated by a few cases. The 230th Infantry Regiment from Gifu City was on transport ships to Guadalcanal that were sunk, killing most of its soldiers. By contrast, the story of the 50th Independent Mixed Brigade on the Woleai Atoll in the Carolinas is one of a unit that survived its trip to the battlefield. The brigade had originally been comprised of soldiers from the small town of Fukuyama in Hiroshima prefecture who had been drafted into the 141st regiment; deaths in that regiment and others caused it to be merged

[10] Of the 2.3 million Japanese soldiers who died, approximately 1.9 million died outside of China (Hirota, 1992).

into a mixed brigade of 6,426 soldiers. These troops were mostly stationed on Falalap, a 2.3-acre island. Fortunately for them, an American invasion force never arrived; unfortunately for them, their supply ships stopped coming two months after the implementation of Operation Starvation, resulting in three-quarters of them starving to death (Yoshida, 2017). The hometowns affected by battle deaths also varied based on decisions unrelated to the soldiers themselves. For example, the 145th regiment from Kagoshima was sent to Iwo Jima, and only 162 of its 2,727 soldiers survived. A luckier regiment was the 24th from Fukuoka, which was stationed in Taiwan and, therefore, saw no combat and could eat local food. Similarly, the 307th regiment, which harked from the small town of Hirosaki in remote Aomori prefecture, trained for a historic fight to the death to defend the Japanese mainland that never happened. These stories, and many more like them, demonstrate that any other variable likely to explain postwar voting behavior is uncorrelated with which hometowns had their regiments sent to islands with better local food supplies.

Figure 4: Recruitment Rate by Birth Cohort



Note: Percentage of men who served in the Imperial Japanese Army from Watanabe (2022).

Because data on soldier death rates at the city level is unavailable, we infer it from census data. Asai and Kambayashi (2023) use prefectural variation in gender ratios for draft-aged cohorts in their paper as a proxy for soldier death rates. However, Kimura (2023) [pp. 17-19] shows that Japanese regiments were often organized based either on finer geographic categories, i.e., either the city ("*shi*") or the county ("*gun*") in which they lived.[11] We therefore construct the city-level gender ratio data of the draft-cohort using the 1950

[11]For example, he writes, "the rise in the number of divisions led to extremely complex recruitment catchments, and even people from the same prefecture often ended up enlisting in different regiments if they lived in different cities or

Population Census.

One critical element in this approach is identifying which cohorts of men belong to the "draft cohort," i.e., the men most likely to serve in the IJA. In principle, Japanese men between 17 and 40 could be drafted (Watanabe, 2022). At the same time, boys as young as 14 could "volunteer," a category that sometimes included people pressured to enlist, especially as the war drew to a close. Figure 4 taken from Watanabe (2022), shows the fraction of each birth cohort that served in the IJA at any time. We see a substantial uptick in the rate of service for the 1906 to 1910 birth cohort, reflecting people who would have been 35-39 years old in 1945. We also see that 45 percent of Japanese males born between 1916 and 1920 (i.e., 21-25 years old in 1945) also served in the military. Finally, we have some sense of the youngest soldiers from this picture. 4.6 percent of males born between 1926 and 1930 served, which suggests a lower bound of military service of around 15 years old in 1945.

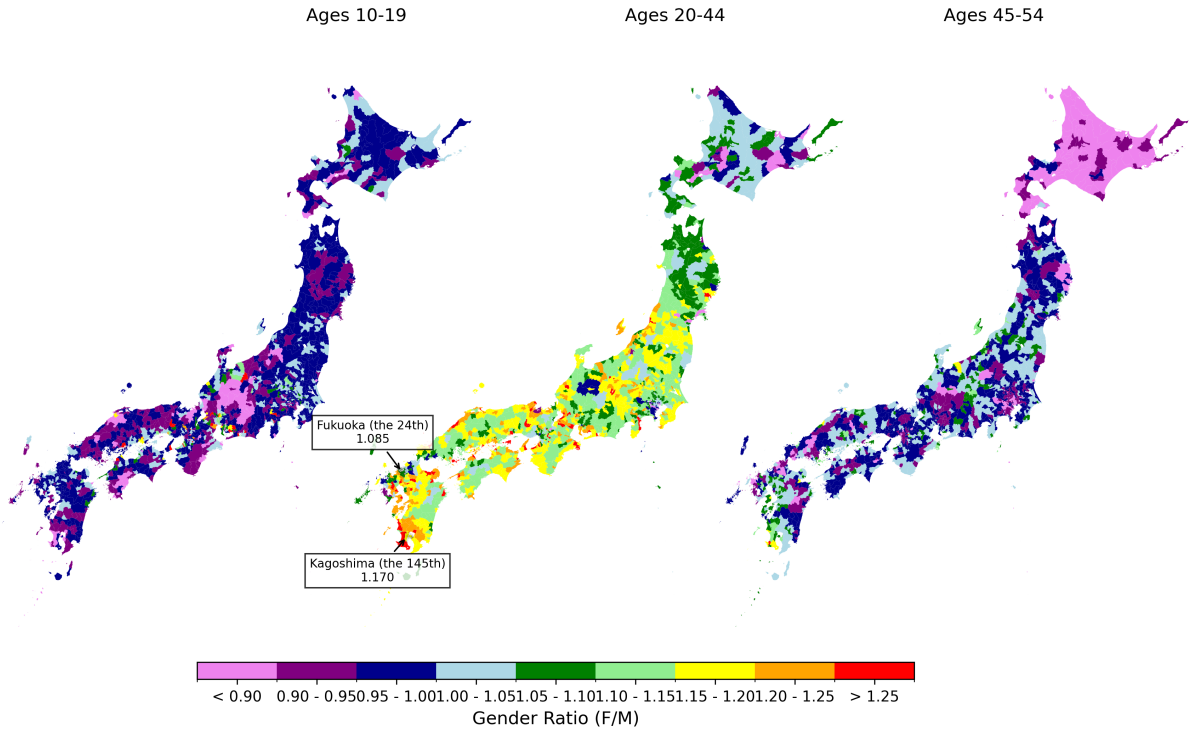
Given that 2.3 million Japanese soldiers died during WWII and that the 1940 cohort of males aged 10-35 was 16.2 million, the war caused the gender ratio of this cohort to shift significantly (Statistics Bureau of Japan 1940). Moreover, the enormous variation in which regiments were decimated meant that these deaths were extremely unevenly distributed across Japan. Since there was no 1945 census, we use the ratio of women to men in the cohort of individuals aged 20 to 44 in 1950, who would have been aged 15 to 39 during the war, as a proxy for soldier casualty rates (Statistics Bureau of Japan 1950). Figure 5 shows a color-coded gender ratio across different age groups at the city and county level for three age cohorts. The left and right maps show the female-to-male ratios in cohorts whose members were just younger or older than the soldier generation, i.e., Japanese aged 10-19 and 45-54 in 1950. These cohorts tend to have female-to-male gender ratios that are less than 0.95, reflecting the natural phenomenon that there naturally are 94.3 female babies born for every 100 male babies (Hesketh and Xing 2006). In contrast, the gender ratios for the draft cohort typically are above 1.1, reflecting the heavy loss of young men during the war. More important for our purposes is the tremendous variation in this ratio across cities and counties. 5.34 percent of all cities and counties have more than 125 women for every 100 men, while at the lower tail, 1.81 percent of cities and counties have fewer than 90 women for every man. In addition, there appears to be virtually no geographic pattern in which cities and counties suffered high casualty rates and which did not.[12]

counties."

[12]We see lower female-to-male ratios for all ages in northern Japan and Hokkaido. Kumagaya (1960) argues that this pattern arose because a combination of cold climate and harsh agricultural working conditions resulted in higher

Although we don't have detailed death rates by regiment, the gender ratios shown in Figrue 5 seem broadly consistent with the fates of several regiments we discussed earlier. The 145th regiment was decimated in Iwo Jima. Not surprisingly, we see that Kagoshima, the hometown of many of these draftees, had one of the highest female-to-male ratios in 1950. At the other extreme, Fukuoka, home to the soldiers of the 24th regiment who spent the war in Taiwan, had a much lower gender ratio. These patterns give us some confidence that our gender ratio measure is capturing military deaths.

Figure 5: Gender Ratios by Age



Note: Female-to-male gender ratios by age cohort in 1950 from (Statistics Bureau of Japan (1950)) for 1,218 cities (*shi*) and counties (*gun*).

4.4 *Air Raid Casualties and Destroyed Buildings (Civilian Casualties)*

We obtained our data on air raid deaths and building destruction from Davis and Weinstein (2002), who used Japanese sources to quantify the number of people who died and the fraction of buildings destroyed as a result of U.S. "area bombing" of Japanese cities. We define "Per-Capita Bombing Deaths" as the sum of the

female death rates. We, therefore, include the gender ratio in non-draft cohorts in 1950 and the gender ratio in 1930 to control for regional variation in female mortality.

number of confirmed civilian deaths following a bombing raid and the number of people who went missing on the day of the raid and were never found, divided by the 1940 population of the city. We add the missing to the dead because firestorms often result in bodies being burned beyond recognition or being vaporized. Additionally, we also observe the number of buildings destroyed per capita as a measure of the impact of destruction on the city's population.

As Davis and Weinstein (2002) note, the U.S. area bombing campaigns generated clear, large, and highly variable impacts on Japanese cities. In terms of aggregate magnitudes, the bombing killed 300,000 people and destroyed half of all buildings in the 66 targeted cities. One of the most important characteristics of the bombing is that it generated enormous exogenous variation in urban destruction that is likely to be orthogonal to other variables that might explain postwar political voting behavior.

One reason for the exogeneity is that weather played an important role in urban devastation and death rates. For example, on March 9, 1945, 279 B-29s dropped 1.6 kilotons of incendiaries on Tokyo, killing approximately 100,000 people: the highest number of one-day wartime deaths in the history of the world. However, four days later, 274 B-29s dropped 1.7 kilotons on Japan's second-largest city, Osaka, but only killed around 8,000 people and destroyed half as many buildings. The principal difference in the levels of destruction on the two raids was that there had been little rain before the Tokyo raid and strong winds on the day of it. The weather also mattered for atomic bomb victims. The skies over Japan's 7th-largest city, Kitakyushu, were cloudy on August 9, 1945, so the second atomic bomb was dropped on Nagasaki, Japan's 12th-largest city, instead. However, weather again played a role in the relative destruction of Hiroshima and Nagasaki. Clear skies over Hiroshima enabled the bombers to drop the bomb in the center of the city, but cloud cover over Nagasaki meant that the bomber missed its target by two miles (Takeda and Yamagishi 2024). As a result, the Nagasaki bomb killed only about a quarter as many people as the Hiroshima one, despite being 40 percent more destructive. Other idiosyncrasies, like geography, also played a role. Sapporo, Japan's 14th largest city, wasn't bombed because it was out of range of U.S. bombers. Similarly, Japan's 9th largest city, Fukuoka, was not bombed heavily because it was located at the extreme Western range of Saipan-based B-29s. Kyoto, Japan's fifth largest city, was spared for a different idiosyncratic reason: its cultural value. The exogenous nature of destruction extended to mid-sized cities as well. For example, Niigata, Japan's 28th largest city, was preserved as a possible target for the third atomic bomb, but the war ended before the U.S. could drop it. Since this type of variation is likely orthogonal to variables used to explain postwar voting, we

assume it can be considered exogenous.

Variation in civilian deaths per capita is correlated with building destruction per capita, but the correlation is only 0.42, indicating that there is independent variation in civilian deaths and destruction. Part of the reason is that civilian casualties were typically higher if the residents did not expect a devastating raid, as happened in the first raid on Tokyo and in Hiroshima and Nagasaki. In addition, high wind speeds on bombing days accelerated the speed at which the fires engulfed the city and typically increased casualty rates. Similarly, groundwater levels made it difficult to build underground air raid shelters in cities like Kofu.[13]

Table 1 reveals that there is substantial skewness in the distribution of building destruction and air-raid deaths. The average number of buildings destroyed per person was only 2 per hundred people, but the thirty cities in the top decile of destruction lost more than 8.5 buildings for every one hundred residents. Civilian deaths were even more skewed, with most cities experiencing few casualties as a share of their total population, and eleven cities having more than one percent of their population killed in air raids. At the upper tail, the atomic bombs dropped on Hiroshima and Nagasaki killed 20 and 8 percent of the citizens, respectively.

5 Empirical Results

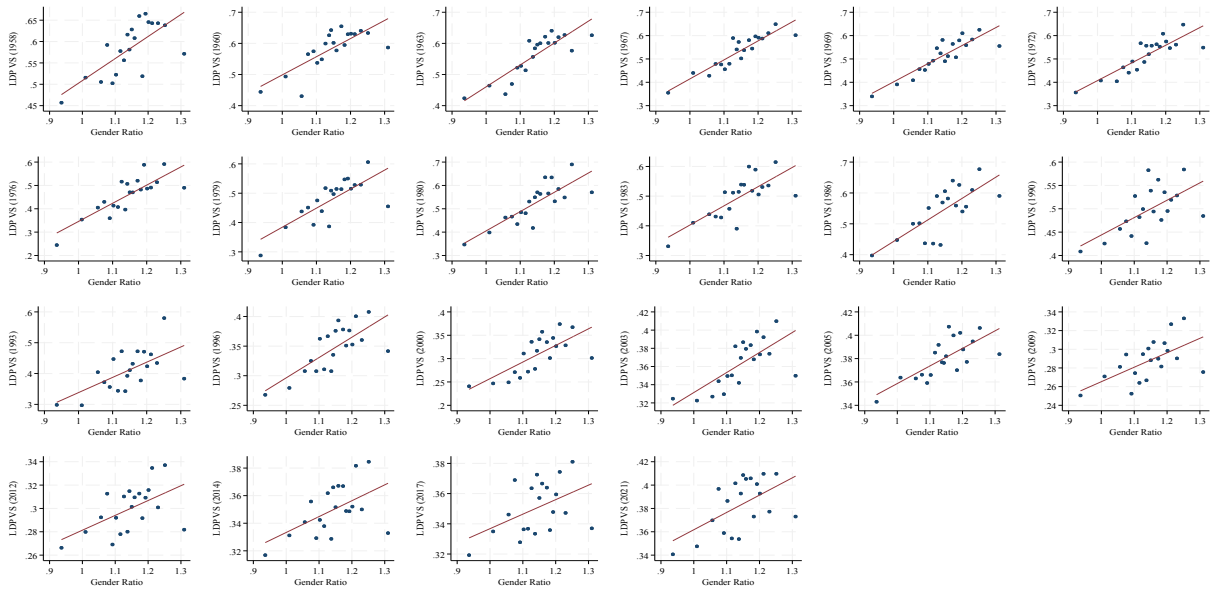
In Section 5.1 we provide a graphical analysis of the data. Section 5.2 introduces our regression specification, and Section 5.3 presents our main regression results. We find both morale bombing effects and martyrs effect, both of which persist even today. Section 5.4 illustrates the effect size of war damage using a counterfactual prediction for the 1960 election, where the LDP was closest to the supermajority to change the Article 9. Section 5.5 provides a few additional results for robustness.

5.1 *Data Preview*

The Martyr Effect Many of our main results are visible in bin-scatter plots of the data. Before presenting our regression results, we plot the relationship between the LDP vote share in each year and the draft-cohort female-to-male ratio in 1950, our proxy for battlefield casualties, in Figure 6. There is a clear upward-sloping

[13] It was difficult to build underground air raid shelters in cities like Kofu with high groundwater levels. See https://www.soumu.go.jp/main_sosiki/daijinkanbou/sensai/situation/state/kanto_24.html. The use of building destruction as a measure of war destruction is consistent with prior studies (e.g., Davis and Weinstein 2002; Bosker et al. 2007; Takeda and Yamagishi 2024). See Section 5.5.2 for an analysis using the death and missing per capita.

Figure 6: LDP Share and Gender Ratio (Draft Cohort as of 1950)



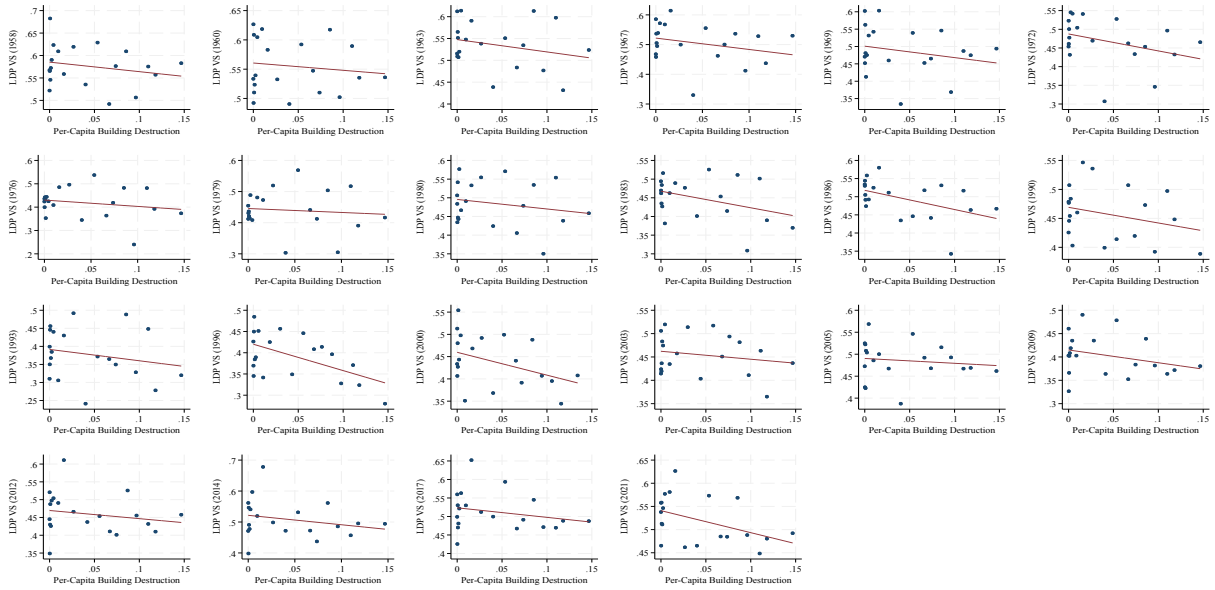
Note: This figure presents a bin-scatter plot of the LDP vote share (vertical axis) against the female-to-male ratio of people in the draft cohort (horizontal axis) for each election year. We use the LDP vote share in the proportional-representation constituencies after the 1994 electoral reform to be consistent with the earlier results. Each dot represents a bin scatter of cities, and we plot the fitted line.

relationship between military deaths and pro-military voting. Although security issues were particularly salient in 1960, we see an upward-sloping pattern in all years. Figure 6 is, therefore, suggestive of the *martyr effect:* cities with high shares of military deaths voted more strongly for the party that sought to revise the constitution to legalize Japan's rearming. However, it is also clear that the slope of the line fell sharply after the electoral reform forced the LDP into coalitions with the pacifist Clean Government Party in 1996. The lower slope is consistent with the inability of the LDP to govern without being part of a pacifist coalition undermined their attractiveness to pro-military voters.

The Morale Effect We see a negative relationship between the LDP vote share in 1960 and per capita building destruction. Figure 7 presents bin-scatter plots of the LDP vote share against the building destruction per capita for every general election between 1958 and 2021. Once again, the 1960 election is not an outlier, indicating that cities that suffered more building destruction consistently supported more pacifist parties. This result echoes the survey findings of the U.S. Army's Morale Division, which found weak contemporaneous morale effects from devastating cities (USSBS: Morale Division 1947a,b), but provides us with different

information.[14] The Morale Division surveys correlated people's memories of when they began to believe the war was lost with bombing experience. Our results indicate that the experience of wartime urban destruction is correlated with increased support for pacifist parties even 75 years after the end of the war. Overall, the data suggests that the killing of soldiers engenders a strong martyr effect in which the surviving family and friends vote for greater military support and a weak morale effect in which those who lived through wartime destruction voted against rearmament.

Figure 7: LDP Share and Per-Capita Building Destruction Excluding Zero Destruction



Note: This figure presents a bin-scatter plot of the LDP vote share (vertical axis) against per-capita building destruction (horizontal axis) for each election year. We use the LDP vote share in the proportional-representation constituencies after the 1994 electoral reform to be consistent with the earlier results. Each dot represents a bin scatter of cities, and we plot the fitted line.

[14]The U.S. Army's Morale Division tried to assess the impact of area bombing on morale in Japan and Germany by using a survey of 3,150 Japanese and 3,711 Germans conducted in late 1945 and found that devastation slightly diminished morale during the war. The levels of Japanese and German morale at the end of WWII were not particularly different than U.S. levels at the end of the Vietnam War. For example, 29 percent of German respondents reported not wanting to give up when the surrender announcement was made [Table 8], and 26 percent of Japanese respondents believed Japan could win until the imperial announcement on the last day of the war. Similarly, U.S. support for the Vietnam War fell from 61 percent in 1965 to only 32 percent in 1969, one year after U.S. forces were battered in the Tet Offensive (Gallup (1972)).

5.2 *Regression specification*

While suggestive, these plots are not necessarily compelling because there may be omitted variables correlated with urban destruction and military casualties. For example, northern rural prefectures like Hokkaido benefit from farm subsidies that may be associated with a lack of bombing. Similarly, soldiers in pro-military households might have been more willing to sacrifice themselves for the country. For example, Giichi Tanaka, a pro-military, *Seiyukai* Prime Minister before the war, stated, "I believe that national education must instill military ideology. It is necessary for the military and local communities to maintain constant contact, in order to instill military ideology in local youth, and to adopt methods that align military education with national education as much as possible." (Kouketsu 2009, p76). It is therefore plausible that in regions where *Seiyukai* support was particularly strong, young men were imbued with "military ideology" and tended to fight to the death and vote for pro-military parties like the *Seiyukai*.

A different issue with focusing on individual elections is that voters in particular elections are influenced by idiosyncratic factors such as scandals, economic performance, and candidate personalities. This was particularly relevant before the 1994 electoral reform because voters in those elections often had to vote for two or more candidates from the same party. In these cases, LDP candidates typically could not distinguish themselves from their opponents based on policy and needed to find other means (e.g., promising earmarked fund) to win over voters. This idiosyncratic variation may make it difficult to see average patterns in the data, which motivates us to pool our data across different elections.

In order to reduce idiosyncratic noise and omitted variable biases and to understand the economic and statistical significance of our findings, we estimate the following equation:

$$\text{Vote}_{it} = \alpha_t + \beta_{Mt}\text{Military}_i + \beta_{Dt}\text{Destruction}_i + \mathbf{Z_i}\gamma + \epsilon_{it} \tag{1}$$

where Vote_{it} is the LDP Vote share in city i in year t; Military_i is the female-to-male gender ratio in the draft-cohort in 1950 in city i; Destruction_i is the per capita building destruction in city i; α_t is the year fixed effects; $\mathbf{Z_i}$ is a vector of controls for city i; ϵ_{it} is the error term; and Greek letters denote parameters to be estimated. Our coefficients of interest are β_{Mt} and β_{Dt}, which tell us how military deaths and urban destruction affect voting behavior in each election year t. In our main specifications, we impose $\beta_{Mt} = \beta_M$ and $\beta_{Dt} = \beta_D$ to capture the average effects of military deaths and urban destruction on voting.

We employ a number of controls ($\mathbf{Z_i}$) to lessen the likelihood of an omitted variable bias. We include the *Seiyukai* vote share in the 1928 election as a control variable, which captures the city's pre-existing pro-military voting behavior. By conditioning on the pre-war political preferences, our identification strategy is essentially a difference-in-difference specification. We control for the gender ratio in the city in 1930 to address the possibility that any pre-existing gender imbalances are associated with electoral outcomes. We also control for contemporaneous gender ratio to address the possibility that women may have different voting behavior than men. We also include the per capita earmarked expenditures (*kokko shishutsukin*) to the city to control for the possibility that the LDP might garner the support of veterans' families by channeling earmarked expenditures to these locations.[15] Earmarked funds are a principal mechanism used to obtain votes in a municipality by delivering benefits to the locale (c.f., Catalinac et al. 2020). Finally, we also include prefecture fixed effects and the longitude and latitude of each city to flexibly account for any prefecture-specific policies and other spatial autocorrelation in voting behavior (c.f., Conley and Kelly 2025). As a result, we identify effects based on differences in devastation and military deaths across cities within prefectures.

5.3 *Main Results*

We estimate equation (1) to assess the statistical significance of the martyr and morale effects and to understand their persistence over time. Figures 8 and 9 plot β_{Mt} and β_{Dt} for each post-WWII election in Japan. The data reveal a significant martyr effect in every postwar Japanese election. Although the magnitude of the coefficient falls by a factor of three after the electoral reform, Japanese voters who hail from cities that suffered high (exogenous) battle deaths continue to vote more for the LDP even today. For all elections in the pre-reform period, 1958-1993, there is no indication of an attenuation of the martyr effect, indicating that it persisted largely unchanged for almost fifty years after the end of the Second World War. The formation of a coalition between the pro-military LDP and pro-pacifist CGP seems to have dramatically reduced the magnitude of the martyr effect. This change likely reflects the diminished appeal of the LDP to cities that had experienced high wartime death rates arising from the LDP's inability to govern without placating pacifists. After an initial decline following the coalition in 1996, the martyr effect appears to have settled into a new,

[15]Examples of earmarked expenditures include infrastructure projects (e.g., road construction, schools, hospitals, etc.), special subsidies for agriculture, forestry, and fisheries, and elderly care facilities.

lower level all the way through 2021. The fact that there is no secular decline in the coefficient magnitude within electoral regimes (i.e., 1958-1993 or 1996-2021) except for the first few elections of the second period, suggesting that the views people acquired from the city's collective experience of wartime deaths seem to have been passed on to younger residents of these cities.

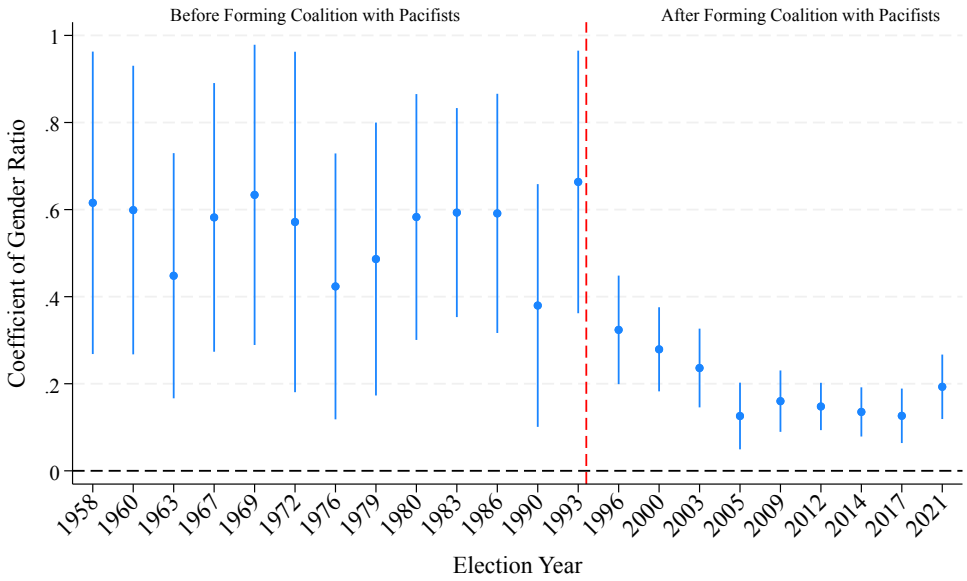
The morale effect, the tendency of voters in cities that experienced more building destruction to vote less for the LDP, is only precisely estimated in twelve elections, but it consistently has a negative sign.[16] As with the martyr effect, there is no tendency for the magnitude or significance of this effect to diminish over time. If anything, the opposite seems to be true. While we estimate the effect to be significant in only one election before 1983, it remains significant in virtually every election thereafter. The formation of the LDP-CGP coalition appears to have had the opposite effect on residents of cities that were devastated in war. The LDP became more palatable to these voters, perhaps because it was seen as less likely to accomplish constitutional revision. As before, we do not see any secular shifts within each election regime, suggesting that wartime devastation appears to have a similarly persistent effect on future generations.

We next estimate average martyr and morale effects across elections within an electoral system and across systems. Table 2 presents the regression results for the pooled version of equation (1) in which we set $\beta_{Mt} = \beta_M$ and $\beta_{Dt} = \beta_D$ in order to identify the average affect of military deaths and urban destruction on voting. Columns 1 and 2 pool all elections in the pre-reform period. When we pool the data within an election regime, the coefficients significantly differ from zero in all periods, indicating that the martyr and morale effects have been present on average. The results for the post-electoral reform period, reported in columns 3 and 4, are qualitatively similar, but the magnitudes of the martyr and morale effects are 28 to 40 percent as large. Thus, these pooled results paint a similar picture to the individual election results we saw earlier, but they enable us to estimate the martyr and morale effects more precisely.

The fact that the coefficient estimates on military deaths and urban destruction do not change when we add the control variables ($\mathbf{Z_i}$) gives us some confidence that our death and destruction variables are exogenous. This confidence comes from the fact that the error term in columns 1 and 3 is given by ($\mathbf{Z_i}\gamma + \epsilon_{it}$), where $\mathbf{Z_i}$ is a set of plausible omitted variables. The failure of these variables to affect our estimates of β_M and β_D much implies that they constitute orthogonal variation, which is consistent with our assumption of exogenous variation.

[16] We also provide results for different single-member and proportional-representative constituencies in the Appendix. They are similar to the weighted results we present here.

Figure 8: Persistence of the Impact of 1950 Draft-Cohort Gender Ratio on the LDP Vote Share

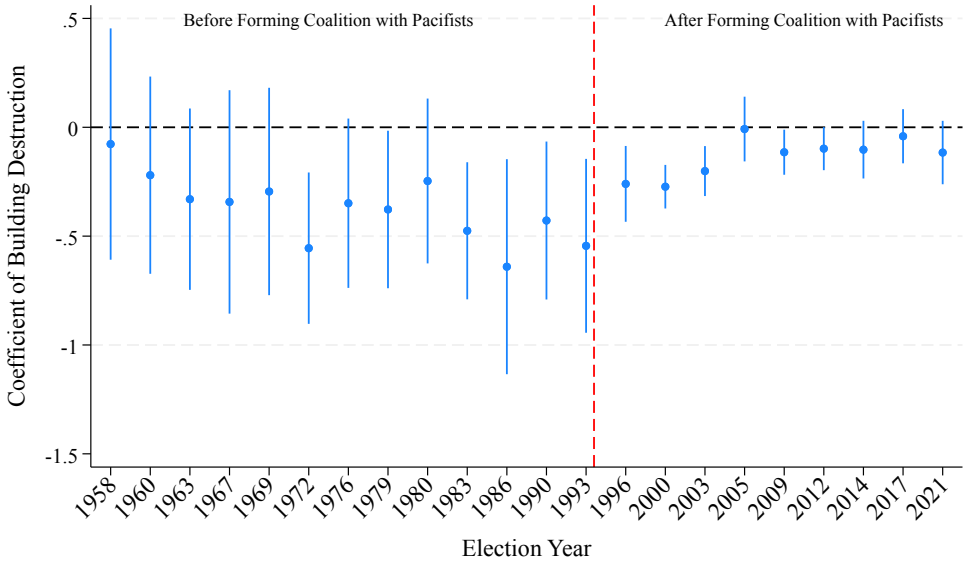


Note: The vertical axis shows the coefficient and standard error of β_{Mt}, the coefficient on draft-cohort gender ratio when estimating equation (1) clustered at the prefecture level. The red vertical line marks the 1994 electoral reform. The dependent variable is the LDP Vote Share, i.e., the fraction of votes received by the Liberal Democratic Party in PRC elections. We also control for the per-capita building destruction, the *Seiyukai* Vote Share, the gender ratio in 1930, per capita earmarked expenditures, prefecture fixed effects, longitude and latitude, and the contemporaneous gender ratio. See Table 1 for variable definitions.

One threat to identification is that perhaps soldiers from more pro-military cities were less likely to surrender and had a higher propensity to get killed in combat. Column 2 introduces, along with other control variables, a control for the city's 1928 *Seiyukai* vote share, which captures voting for the relatively pro-military *Seiyukai* party before WWII. Interestingly, a city's past pro-military voting behavior is neither a statistically nor economically significant determinant of postwar voting behavior. This result implies that postwar Japanese politics was not driven by prewar support or opposition to the military but rather by wartime death and destruction. Finally, we also see that neither the coefficient on military deaths nor civilian destruction shifts significantly across columns 1 and 2 or columns 3 and 4. This result is consistent with the notion that these are driven by exogenous variation uncorrelated with obvious omitted variables.

What is surprising in columns 1 and 2 is the large economic magnitude of the martyr effect. Our estimates imply that the LDP vote share in a city in the ninetieth percentile of military deaths votes is, on average, 10.7 percentage points higher than a city in the tenth percentile, making it a potent force for understanding LDP support in cities with high military death rates. In contrast, the LDP vote share in cities that were in the top

Figure 9: Persistence of the Impact of Per-Capita Building Destruction on the LDP Vote Share



Note: The vertical axis shows the coefficient and standard error of β_{Dt}, the coefficient on per capita building destruction when estimating equation (1) clustered at the prefecture level. The red vertical line marks the 1994 electoral reform. The dependent variable is the LDP Vote Share, i.e., the fraction of votes received by the Liberal Democratic Party in PRC elections. We also control for the draft-cohort gender ratio, the *Seiyukai* Vote Share, the gender ratio in 1930, per-capita earmarked expenditures, prefecture fixed effects, longitude and latitude, and the contemporaneous gender ratio. See Table 1 for variable definitions.

ninetieth percentile of urban destruction voted 3.6 percentage points less for the LDP. These results imply that urban destruction effectively instilled pacifist, anti-LDP sentiments in the Japanese electorate. The next subsection illustraets the magnitude of such morale bombing effect by a simple counterfactual analysis.

5.4 *The Impact of Bombing on Article 9 Revision*

We can use these results to conduct a simple counterfactual exercise to understand whether the effect of urban bombing on Japanese voter behavior is sufficiently large to explain why Japan has not revised its constitution and rearmed despite decades of LDP rule. We assume that the parameters we estimated in Table 2 column 2 are structural in the sense that they would not be different had the course of WWII been different. While this is a strong assumption, we impose it to give us an understanding of the magnitudes of the effects we identify. This assumption enables us to recompute electoral outcomes under an alternative bombing strategy.

We consider a case in which the U.S. had limited itself to targeting soldiers by implementing unrestricted submarine warfare, engaging in all battles that happened in the Pacific, implementing Operation Starvation,

Table 2: Pooled Regression Results

	(1) 1958-1993	(2) 1958-1993	(3) 1996-2021	(4) 1996-2021	(5) 1958-2021	(6) 1958-2021
Draft-Cohort Gender Ratio	0.525***	0.477***	0.152***	0.160***	0.373***	0.313***
	(0.096)	(0.108)	(0.033)	(0.032)	(0.068)	(0.073)
Per-Capita Building Destruction	-0.419***	-0.416***	-0.176***	-0.162***	-0.320***	-0.331***
	(0.138)	(0.141)	(0.050)	(0.052)	(0.098)	(0.098)
Seiyukai Vote Share in 1928		0.039		0.054		0.045
		(0.079)		(0.032)		(0.057)
Gender Ratio (1930)		0.093		0.058		0.082
		(0.102)		(0.046)		(0.072)
Per-Capita Earmarked Expenditures		-0.002		-0.033		-0.002
		(0.001)		(0.046)		(0.002)
Contemporaneous Gender Ratio		0.191		0.000		0.291***
		(0.138)		(0.080)		(0.100)
N	3,900	3,900	2,700	2,700	6,600	6,600
Year FE	✓	✓	✓	✓	✓	✓
Prefecture FE	✓	✓	✓	✓	✓	✓
Latitude and Longitude		✓		✓		✓
R^2	.36	.36	.6	.6	.53	.54

Note: The table shows the estimated coefficients and clustered standard errors (in parentheses) from estimating equation (1). We pool the data across all elections within the time period given in the second row. The dependent variable is the LDP vote share, i.e., the fraction of votes received by the Liberal Democratic Party. The LDP vote share since 1996 are calculated using the PRC election results. See Table 1 for variable definitions. We cluster standard errors at the prefecture level. Asterisks indicate significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

etc., but refraining from bombing civilian targets. While it is hard to know if Japan would have surrendered without the bombing, American unrestricted submarine warfare coupled with "Operation Starvation" produced mass starvation among Japan's soldiers and civilians, which probably would have caused the Japanese to surrender before November 1945 even if the U.S. had not dropped the atomic bombs (United States Strategic Bombing Survey, 1946) [p. 26]. It is not unreasonable to conjecture that Japan probably would not have been able to continue fighting through the ensuing winter without imported food or oil, even without the firebombing.

We focus on the outcome of the 1960 election because of the salience of the constitutional issue in that election and construct a counterfactual LDP vote share in each district under the assumption that the building destruction in the district was zero. We then transfer the increase in the LDP vote share to each LDP candidate in the district in proportion to the candidate's share of LDP votes. Thus, if the LDP was running

two candidates in a district and one candidate won 60 percent of the LDP votes, we assume that 60 percent of the increase in LDP votes in a no-bombing counterfactual would go to that candidate. Similarly, we subtract the same number of votes from the opposition candidates in proportion to the ability of those candidates to obtain votes. We then recompute the total vote tallies for every candidate in each district and note the winner of the election.

The results from this exercise indicate that had America not bombed Japanese cities, the lower house could have endorsed Japanese rearmament. In the 1960 election, the LDP won 296 out of 467 seats in the lower house of the Diet. This gave the LDP only 63.4 percent of the votes, just shy of the two-thirds they needed to amend the constitution. However, we estimate that if the U.S. had not bombed Japanese cities, the LDP would have won an additional 17 seats for a total of 313 seats, taking their vote share to 67.0 percent, which is just enough to satisfy the supermajority. However, this understates LDP support in the Lower House because Kiyose Ichiro, a right-wing politician, had temporarily declared himself an independent when he became the Speaker of the House of Representatives and almost surely would have voted with the LDP on constitutional revision. Similarly, Sosuke Uno, who initially ran as an independent but joined the LDP five days after winning in 1960, would also have voted for constitutional reform. If we add these politicians to the LDP total, the pro-revision fraction of Diet members would have been 315 or 67.5 percent.

We explore the sensitivity of our counterfactual results to the coefficient estimated in Table 2 by using a clustered bootstrap procedure. We cluster observations at the prefecture level, resample these clusters with replacement, and re-estimate the martyrs and morale effects (Column 2 of Table 2) in each bootstrap sample. Using the resulting coefficients, we simulate the counterfactual seats that the LDP would have won and repeat this process 1000 times. This approach accounts for prefecture-level dependencies and provides a distribution of possible outcomes. Our simulations show that in 78.4 percent of cases, the LDP would have secured more than two-thirds of the seats, enabling constitutional amendments.

The firebombing of Japan's biggest cities drives much of this counterfactual outcome. For example, we estimate that six seats that would have switched without the firebombing were in Osaka, Japan's second largest city, which lost one building for every fourteen residents. Our point estimates indicated that election outcomes would have differed in many hard-hit cities like Tokyo, Nagoya, Kobe, and Hiroshima. Similarly, we estimate that Kagoshima, home to the 145th regiment that died on Iwo Jima, voted socialist in 1960 because of the devastating firebombing raids that destroyed one building for every nine people in their hometown.

5.5 *Robustness Exercises*

5.5.1 *Do Other Cohorts Vote Like the Draft Cohort?*

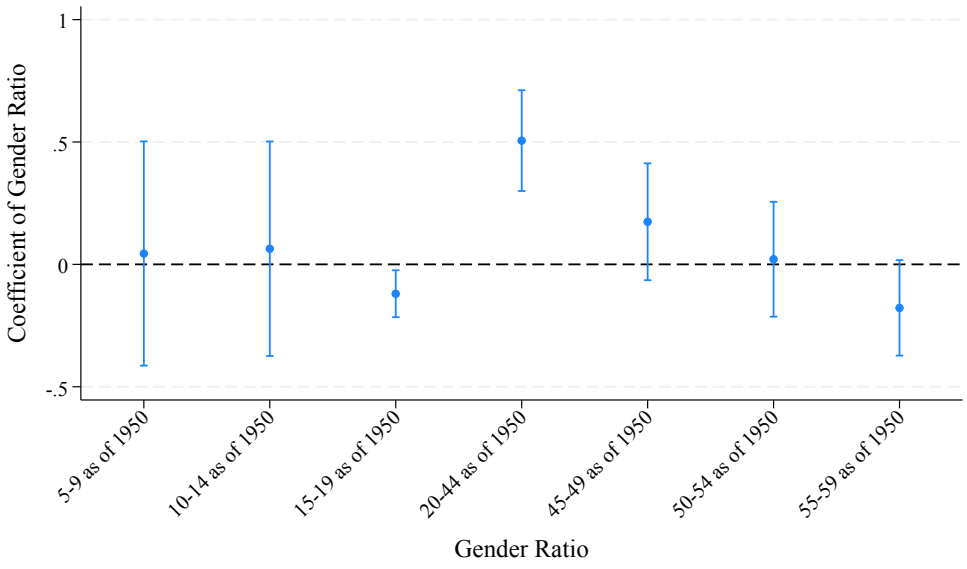
One possible alternative explanation is that the pro-military voting behavior of women in the draft cohort represents a generational shift and has nothing to do with the loss of men in the war. For example, it could be the case that older and younger generations of women differ in their pacifist feelings, so what we think is variation due to membership in the draft cohort of people actually reflects the voting behavior of women over the age of 20 in 1950. We address this possible threat to identification by rerunning our specification given in column 2 of Table 2 and adding six alternative measures as controls: the gender ratios of people aged 5-9, 10-14, 15-19, 45-49, 50-54, and 55-59 in 1950. Thus, if older women tend to be more pro-military, we would expect the coefficient on the female-to-male ratio of people aged 45-49 to be as anti-LDP as that in the draft cohort. We report the results in Figure 10, which plots the coefficients from each of these specifications. The results indicate that gender ratios have no predictive power for voting in any cohorts except the draft cohort. In other words, our result is driven by the voting behavior of cities that experienced more military deaths.

5.5.2 *The Impact of Civilian Deaths*

Thus far, we have been arguing that military deaths generate a martyr effect that promotes pro-military voting, while urban destruction raises support for pacifism. The difference in the two results may reflect the possibility that knowing someone who was killed in war might produce a different effect on the survivors than simply having one's city reduced to rubble. In particular, it could be the case that killing the people in a city might also create a martyr effect, while destroying the structures only affects morale.

It is difficult to precisely measure the impact of killing civilians on pro-military voting in part because there were not many cases in which large fractions of a city's population were killed by bombing. Only two cities suffered civilian death rates in excess of two percent: Hiroshima, where 21 percent of the residents were killed, and Nagasaki, where 9 percent were killed. Even in Tokyo, which had the highest number of civilian casualties, the fraction of the city's population that was killed was only 1.4 percent. As we can see in Table 1, about 90 percent of the cities in our sample had bombing death rates of less than 0.5 percent, meaning that, unlike military death rates, we do not have a lot of variation in this variable to exploit. Moreover, as numerous studies have documented (c.f., Davis and Weinstein 2002; Bosker et al. 2007; Takeda and Yamagishi 2024),

Figure 10: Regression Coefficients of Gender Ratio of Different Cohorts



Note: The vertical axis shows the coefficients and standard errors of various gender ratios included along with the draft-cohort gender ratio when estimating equation (1) clustered at the prefecture level. The dependent variable is the LDP Vote Share, i.e., the fraction of votes received by the Liberal Democratic Party in PRC elections. We also control for the per-capita building destruction, the *Seiyukai* Vote Share, the gender ratio in 1930, per capita earmarked expenditures, prefecture fixed effects, longitude and latitude, and the contemporaneous gender ratio. See Table 1 for variable definitions.

Table 3: Robustness to including Deaths and Missing Persons as a Civilian Casualty Measure

	(1)	(2)	(3)	(4)	(5)	(6)
	1958-1993	1958-1993	1996-2021	1996-2021	1958-2021	1958-2021
Draft-Cohort Gender Ratio	0.526***	0.477***	0.153***	0.161***	0.373***	0.314***
	(0.096)	(0.108)	(0.033)	(0.032)	(0.068)	(0.073)
Per-Capita Building Destruction	-0.449***	-0.454***	-0.189***	-0.178***	-0.343***	-0.361***
	(0.128)	(0.128)	(0.048)	(0.048)	(0.090)	(0.085)
Per-Capita Bombing Deaths	0.203	0.252	0.087	0.114	0.155	0.201
	(0.298)	(0.317)	(0.133)	(0.137)	(0.229)	(0.253)
Seiyukai Vote Share in 1928		0.040		0.054		0.046
		(0.078)		(0.032)		(0.057)
Gender Ratio (1930)		0.092		0.058		0.081
		(0.101)		(0.046)		(0.072)
Per-Capita Earmarked Expenditures		-0.002		-0.036		-0.002
		(0.001)		(0.047)		(0.002)
Contemporaneous Gender Ratio		0.194		0.000		0.293***
		(0.136)		(0.080)		(0.099)
N	3,900	3,900	2,700	2,700	6,600	6,600
Year FE	✓	✓	✓	✓	✓	✓
Prefecture FE	✓	✓	✓	✓	✓	✓
Latitude and Longitude		✓		✓		✓
R^2	.36	.36	.6	.6	.53	.54

Note: The table shows the estimated coefficients and clustered standard errors (in parentheses) from estimating equation (1). We pool the data across all elections within the time period given in the second row. The dependent variable is the LDP Vote Share, i.e., the fraction of votes received by the Liberal Democratic Party. The LDP vote share since 1996 are calculated using the PRC election results. See Table 1 for variable definitions. We cluster standard errors at the prefecture level. Asterisks indicate significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

there is substantial measurement error in this variable due to people dying from bomb-related injuries in later years and whether people who went missing on the day of a raid were dead or just joined the vast number of homeless people created by the bombing.

Nevertheless, we control for civilian deaths per capita in Table 3, which presents results that control for deaths per capita due to urban bombing. The coefficient on per-capita bombing deaths is positive but imprecisely measured. Nevertheless, the results let us draw two important conclusions. First, we cannot reject the hypothesis that killing civilians generates a positive martyr effect like killing soldiers. Second, the fact that the coefficient on per-capita death has the opposite sign of the per-capita building destruction also tells us something about the impact of killing civilians on pro-military attitudes. If the trauma of an attack

on a civilian target determined the magnitude of the morale effect, one should expect a much larger effect from killing one in ten people in a city than from destroying one building for every ten people. The fact that the coefficient on per-capita building destruction has the opposite sign of the per-capita death indicates that killing civilians does not have the same impact on morale that destroying buildings does. The positive coefficient on per-capita death is consistent with the notion that killing civilians also produces some martyr effect that offsets the morale effect.

5.5.3 *Veterans Benefits vs. Militarism*

Another potential threat to identification is that families of deceased veterans may not care about constitutional revision but instead support the LDP because it favors generous transfers to veterans and their families. If this is the case, even if veterans and their families do not care about the military, they may vote for the LDP simply to receive greater benefits. Since these transfers are administered by the central government, they do not constitute (place-based) earmarked expenditures, which we control for in our main analysis.

However, we think that there are several reasons to believe that our results are not driven by these concerns. First, while Japan's political parties sometimes disagree over the distribution and amount of benefits, the LDP's opponents, such as the JSP or JCP, do not typically support lower benefit rates than the LDP. Indeed, the JSP and JCP have, at times, supported greater benefits than those offered by the LDP, especially to the enlisted personnel who account for the vast majority of veterans (Shinbun Akahata 2001; Akazawa 2012). The parties do differ in the language used to describe benefits. Akazawa (2012) notes that the LDP's opponents often support calling the benefits "social security relief." In contrast, the LDP and the main lobby group for veterans' families, the Bereaved Families Association, have opposed using this term because it "disregards the essence of the pension system" and causes misunderstandings." It therefore advocates calling them "military pensions," which embodies the idea that veterans made special contributions to the nation and their benefits should not be lumped together with other social insurance schemes. The JCP and JSP are loath to use this terminology precisely because they do not want to institute policies that might appear to glorify Japan's military. In sum, although all Japanese political parties support generous veterans' benefits, they differ in whether they want to explicitly reward people for their *military* sacrifices, which highlights the distinction across parties that we analyze in this paper.

We can also examine econometrically the hypothesis that all we are capturing is preferences over veterans'

benefits. The JCP has criticized the LDP for not providing veterans' benefits sufficiently generously, especially to the numerous families of former enlisted personnel (Shinbun Akahata 2001). Since the JCP ran candidates in all electoral districts from 1958 to 2003, we can compute its vote shares in all electoral districts (Nakakita 2021). Moreover, its left-wing orientation and small size mean that marginal JCP voters are likely drawn from other leftwing parties. Thus, if veterans' families were seeking greater benefits, one would expect to see increased support for the JCP. However, if veterans' families are hoping to obtain not just money, but *military* pensions, rearmament, or constitutional revision, then the JCP would be a bad choice for them.

Table 4: Military Deaths and the Japan Communist Party Vote Share

	(1)	(2)
	1958-1993	1958-1993
Draft-Cohort Gender Ratio	-0.088***	-0.090***
	(0.033)	(0.033)
Per-Capita Building Destruction	0.154***	0.156***
	(0.031)	(0.030)
Seiyukai Vote Share in 1928	-0.068***	-0.064**
	(0.024)	(0.025)
Gender Ratio (1930)	-0.065	-0.060
	(0.067)	(0.069)
Per-Capita Earmarked Expenditures	0.001***	0.001**
	(0.000)	(0.000)
Contemporaneous Gender Ratio	0.050	0.045
	(0.046)	(0.044)
N	3,900	3,900
Year FE	✓	✓
Prefecture FE	✓	✓
Latitude and Longitude		✓
R^2	.55	.55

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table shows the estimated coefficients and clustered standard errors (in parentheses) from estimating equation (1). We pool the data across all elections within the time period given in the second row. The dependent variable is the Japan Communist Party Vote Share, i.e., the fraction of votes received by the Japan Communist Party. The Japan Communist Party vote share since 1996 are calculated using the PRC election results. See Table 1 for variable definitions. We cluster standard errors at the prefecture level. Asterisks indicate significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

We examine how military casualties affect JCP voting in Table 4, in which we replace the LDP vote share

with the JCP vote share. We find that military casualties are associated with lower support rates for the JCP, which means that veterans' families choose to vote against their financial self-interest. This is consistent with the martyr effect: the JCP is less popular in locations with more military deaths because the JCP has a strong anti-military outlook. Higher per-capita building destruction leads to greater JCP support, which is consistent with the morale effect because the JCP would look more attractive to anti-military voters. Overall, our results on the JCP vote share are consistent with the interpretation that our results are not driven by veterans' desire to obtain more benefits, but by the pro-military stance of the LDP.

6 Conclusion

While combatants in wars often focus on immediate military objectives, our paper provides insight into the long-run political impact of wartime actions. Using multiple unique natural experiments that generated exogenous variation in civilian destruction and military casualties, we find that the urban devastation arising from bombing an enemy into submission causes a morale effect that gives rise to long-term pacifist voting behavior. The killing of Japanese soldiers through battle and starvation produced a martyr effect that yielded long-term pro-military voting behavior. These results help explain why wars sometimes induce pacifist responses in some people and militarist responses in others. In other words, what people learn from war depends on their experience of war. Moreover, we have uncovered that although these effects have diminished, these effects are quite persistent and still observed even today, more than 70 years after the war ended.

Our results also highlight the importance of considering what it means to "win the peace." As Japan was bombed into submission, few considered the possibility that Japan might become one of the United States's most important allies and that the pacifist tendencies induced by the bombing might undermine Japan's willingness to take on more of its defense burden eighty years later. Similarly, few considered that the large-scale killing of Japanese soldiers through starvation might bolster the country's right-wing political leanings. This paper suggests that, in many ways, the political situation in many countries is still profoundly shaped by the Second World War.

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Appendix

A.1 Data Construction

A.1.1 *Geographic Boundaries*

Our analysis is conducted at various levels of regional aggregation, depending on the variables we construct. At the most aggregated level, Japan's geography can be divided into 47 "prefectures" or *ken* in Japanese. However, we often work with more disaggregated data when building our dataset. For much of our analysis, we work with data at the "municipality" (*shi-ku-cho-son*) level, in which Japan was divided into 3,284 municipalities in 1980.[17] The number of municipalities varies across time, but this number gives some sense of the level of aggregation at the midpoint of our sample. We aggregate these data in various ways to make them suitable for our analysis. The centers of the largest cities are divided into wards (*ku*), which we aggregate to form the data for the largest Japanese cities like Tokyo and Osaka. This results in our definition of Tokyo having an area approximately equal to that of New York City. We combine our definitions of the largest Japanese cities with those of the official set of cities (*shi*) to form our city database. Japanese cities, therefore, constitute more densely populated regions. We also merge "towns" (*cho*) and "villages" (*son*) into (rural) "counties" (*gun*), which yields a database in which Japan's land mass is divided into 646 cities and 571 counties (in 1980).

One issue with municipality data is that their definitions frequently change, so we need to construct a consistent set of municipality boundaries. We follow Eckert et al. (2020)'s procedure to standardize all data to 1980 municipality boundaries. The process involves three steps:

1. We denote the set of municipalities in 1980 by I and the set of municipalities in some other year by J. We then overlay the maps of municipalities in years I and J and compute the area of municipality $j \in J$ that falls within the boundary of municipality $i \in I$ and denote this by A_{ij}.

2. We define w_{ij} to be the fraction of municipality j in year J's set of municipalities that overlaps with municipality i:
$$w_{ij} \equiv \frac{A_{ij}}{A_j}$$
where A_j is the total area of municipality j.

3. Our estimate of the 1980 value of any variable X_i from a dataset based different municipal boundaries in year J is given by
$$X_i = \sum_{j \in J} w_{ij} X_j.$$

A.1.2 *Details on the Construction of Other Variables*

Civilian Death and Destruction Data We follow Davis and Weinstein (2002) in that our regression results are based entirely on the data of Japan's 300 largest cities in 1940. Since the U.S. Air Force did not area bomb small cities and rural regions, this sample covers virtually all civilian death and destruction. All of our data on civilian death and destruction comes from this paper. We exclude cities in Okinawa, as the region was under U.S. occupation during the early postwar period, making it difficult to measure attitudes toward military action using LDP vote share.

LDP Vote Share We obtain LDP vote share for all postwar lower house elections since the LDP's formation, except for 2024, from Mizusaki and Mori (2021). These data include votes for each candidate, party affiliation, and the number of eligible voters (all people over the age of 19 before 2016 and over the age of 17 thereafter) at the municipality level. In some elections, a single municipality contains multiple electoral districts or candidates from the same party. In these cases, we aggregate vote counts across districts to construct municipality-level vote shares and then aggregate across municipalities to obtain city data.

***Seiyukai* Vote Share** We obtain pre-war voting results at the electoral district level from Kawato and Kawato (1997). We aggregate these to the city level using a correspondence table between electoral districts and cities https://lab.ndl.go.jp/dl/book/1445520?page=35

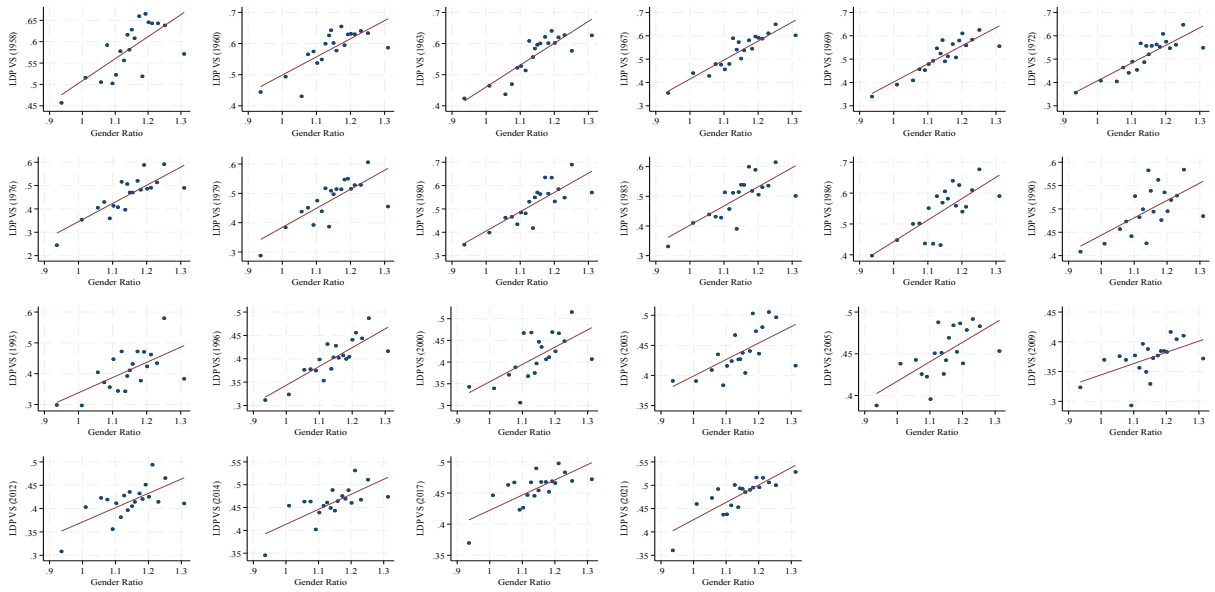
[17] See https://uub.jp/upd/transition.html for more details on the definitions of municipalities.

Gender Ratio Population by gender are reported at the municipality level based on census data reported in Murayama and Watanabe (2007) for 1930, Statistics Bureau of Japan (1940) for 1940, Statistics Bureau of Japan (1950) for 1950, and from 1960 onwards, we use the quinquennial census data from Sinfonica (2005). We compute the gender ratio in municipality j for age cohort k as the ratio of the number of women in cohort k divided by the number of men in cohort k.

Earmarked Expenditures In order to control for the impact of pork-barrel politics, we control for earmarked expenditures directed to each locality (*kokko shishutsukin*). These are expenditures by the central government to municipalities that are not based on nationally mandated formulas. Examples of earmarked expenditures include infrastructure projects (e.g., road construction, schools, hospitals, etc.), special subsidies for agriculture, forestry, and fisheries, and elderly care facilities. Earmarked expenditures are a principal mechanism used to obtain votes in a municipality by delivering special benefits to the locale. (c.f., Catalinac et al. 2020). To obtain the amount of discretionary intergovernmental expenditures at the city level, we digitized the 1960 and 1970 Local Public Finance Statistics Yearbooks. For later years, we use the Nikkei Needs FinancialQuest database.

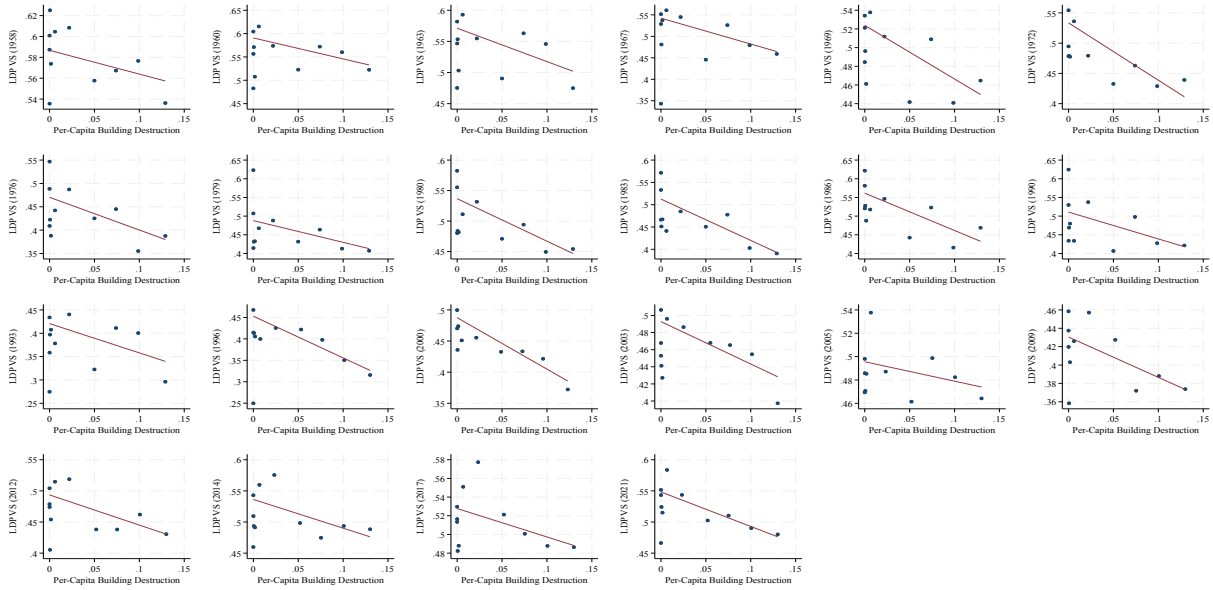
A.2 Additional Results

Figure A.1: LDP Vote Share vs the Gender Ratio of the Draft Cohort in 1950



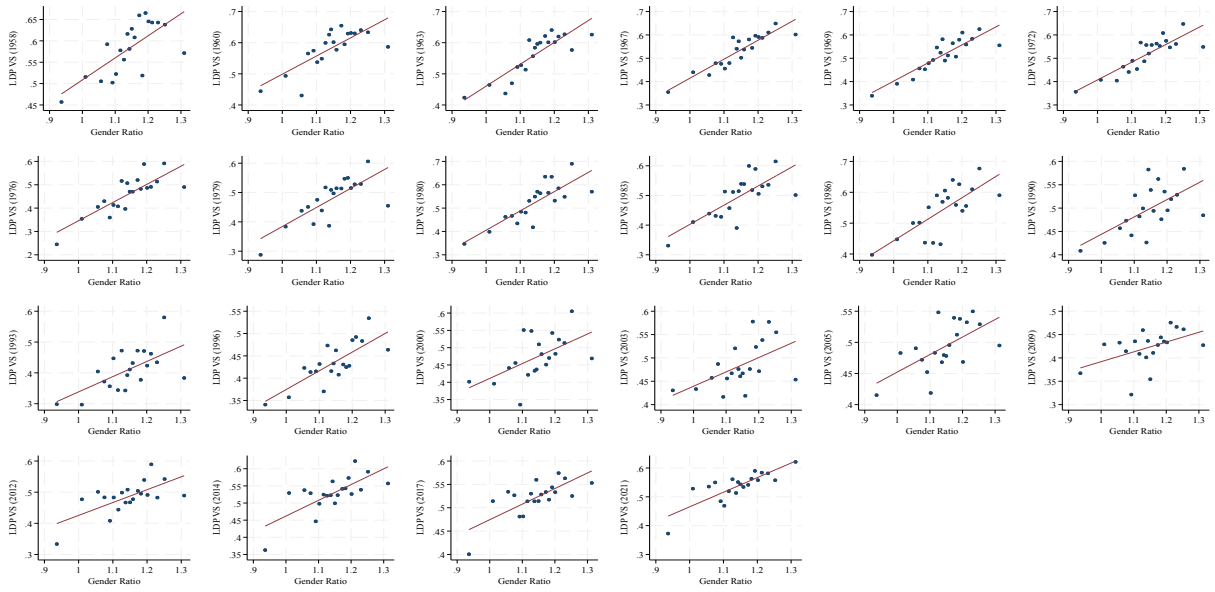
Note: This figure presents a bin-scatter plot of the LDP vote share computed as a weighted average of PRC and SMC elections (vertical axis) against the female-to-male ratio of people in the draft cohort (horizontal axis) for each election year after 1994. The weights correspond to the share of Diet members elected in each type of election. Each dot represents a bin scatter of cities, and we plot the fitted line.

Figure A.2: LDP Share and Per-Capita Building Destruction (Weighted)



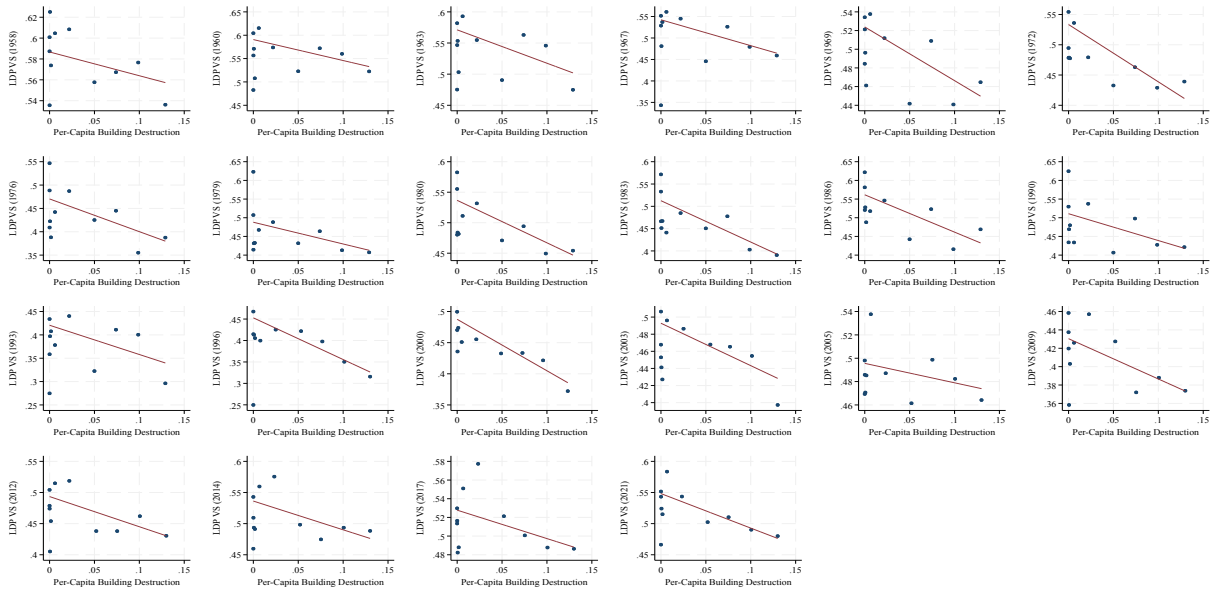
Note: This figure presents a bin-scatter plot of the LDP vote share computed as a weighted average of PRC and SMC elections (vertical axis) against the per capita building destruction (horizontal axis) for each election year after 1994. The weights correspond to the share of Diet members elected in each type of election. Each dot represents a bin scatter of cities, and we plot the fitted line.

Figure A.3: LDP Share (SMC) and Gender Ratio (Draft Cohort as of 1950)



Note: This figure presents a bin-scatter plot of the LDP vote share in SMC elections (vertical axis) against the female-to-male ratio of people in the draft cohort (horizontal axis) for each election year after 1994. Each dot represents a bin scatter of cities, and we plot the fitted line.

Figure A.4: LDP Share and Per-Capita Building Destruction (SMC)



Note: This figure presents a bin-scatter plot of the LDP vote share in SMC elections (vertical axis) against the per capita building destruction (horizontal axis) for each election year after 1994. Each dot represents a bin scatter of cities, and we plot the fitted line.

Table A.1: Pooled Regression Results (Weighted)

	(1)	(2)	(3)	(4)	(5)	(6)
	1958-1993	1958-1993	1996-2021	1996-2021	1958-2021	1958-2021
Draft-Cohort Gender Ratio	0.525***	0.477***	0.262***	0.287***	0.417***	0.369***
	(0.096)	(0.108)	(0.066)	(0.070)	(0.076)	(0.084)
Per-Capita Building Destruction	-0.419***	-0.416***	-0.253**	-0.210*	-0.351***	-0.354***
	(0.138)	(0.141)	(0.096)	(0.112)	(0.113)	(0.114)
Seiyukai Vote Share in 1928		0.039		0.112**		0.069
		(0.079)		(0.054)		(0.063)
Gender Ratio (1930)		0.093		0.148*		0.118
		(0.102)		(0.082)		(0.081)
Per-Capita Earmarked Expenditures		-0.002		-0.088		-0.003
		(0.001)		(0.093)		(0.002)
Contemporaneous Gender Ratio		0.191		-0.084		0.248**
		(0.138)		(0.141)		(0.103)
N	3,900	3,900	2,700	2,700	6,600	6,600
Year FE	✓	✓	✓	✓	✓	✓
Prefecture FE	✓	✓	✓	✓	✓	✓
Latitude and Longitude		✓		✓		✓
R^2	.36	.36	.36	.38	.37	.38

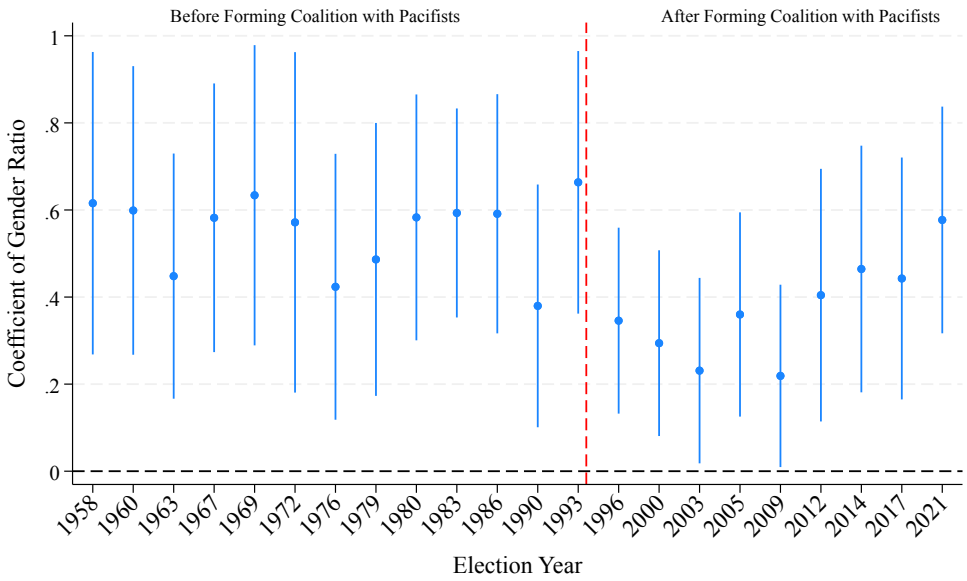
Note: The table shows the estimated coefficients and clustered standard errors (in parentheses) from estimating equation (1). We pool the data across all elections within the time period given in the second row. The dependent variable is the LDP vote share computed as a weighted average of PRC and SMC elections. The weights correspond to the share of Diet members elected in each type of election. See Table 1 for variable definitions. We cluster standard errors at the prefecture level but cannot cluster at the city level because city definitions change over time. Asterisks indicate significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.2: Pooled Regression Results (SMC)

	(1)	(2)	(3)	(4)	(5)	(6)
	1958-1993	1958-1993	1996-2021	1996-2021	1958-2021	1958-2021
Draft-Cohort Gender Ratio	0.525***	0.477***	0.330***	0.358***	0.446***	0.399***
	(0.096)	(0.108)	(0.092)	(0.097)	(0.083)	(0.095)
Per-Capita Building Destruction	-0.419***	-0.416***	-0.370***	-0.306**	-0.401***	-0.397***
	(0.138)	(0.141)	(0.129)	(0.151)	(0.121)	(0.124)
Seiyukai Vote Share in 1928		0.039		0.181***		0.096
		(0.079)		(0.064)		(0.067)
Gender Ratio (1930)		0.093		0.198*		0.136
		(0.102)		(0.107)		(0.088)
Per-Capita Earmarked Expenditures		-0.002		-0.146		-0.003*
		(0.001)		(0.126)		(0.002)
Contemporaneous Gender Ratio		0.191		-0.138		0.231*
		(0.138)		(0.185)		(0.118)
N	3,900	3,900	2,652	2,652	6,552	6,552
Year FE	✓	✓	✓	✓	✓	✓
Prefecture FE	✓	✓	✓	✓	✓	✓
Latitude and Longitude		✓		✓		✓
R^2	.36	.36	.34	.36	.31	.32

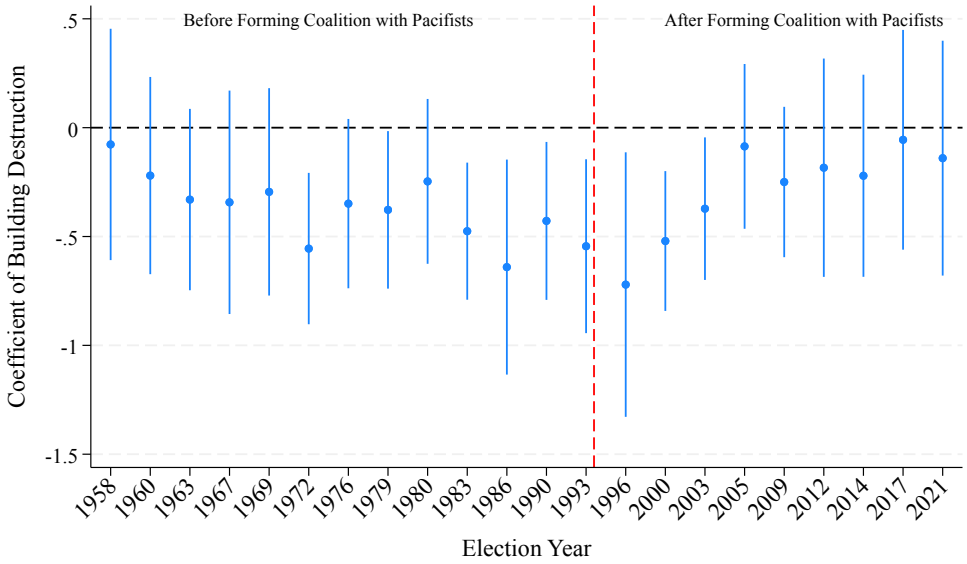
Note: The table shows the estimated coefficients and clustered standard errors (in parentheses) from estimating equation (1). We pool the data across all elections within the time period given in the second row. The dependent variable is the LDP Vote Share, i.e., the fraction of votes received by the Liberal Democratic Party in SMC elections. See Table 1 for variable definitions. We cluster standard errors at the prefecture level but cannot cluster at the city level because city definitions change over time. Asterisks indicate significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure A.5: Persistence of the Impact of 1950 Draft-Cohort Gender Ratio on the LDP Vote Share (SMC)



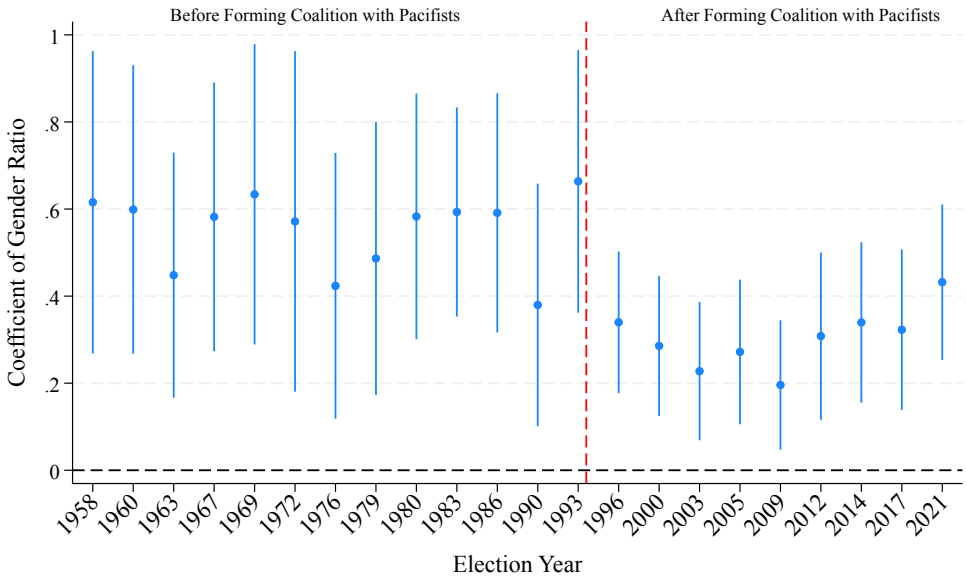
Note: The vertical axis shows the coefficient and standard error of β_{Mt}, the coefficient on draft-cohort gender ratio when estimating equation (1) clustered at the prefecture level. The red vertical line marks the 1994 electoral reform. The dependent variable is the LDP Vote Share in SMC elections. We also control for the per-capita building destruction, the *Seiyukai* Vote Share, the gender ratio in 1930, per capita earmarked transfers, prefecture fixed effects, longitude and latitude, and the contemporaneous gender ratio. See Table 1 for variable definitions.

Figure A.6: Persistence of the Impact of Per-Capita Building Destruction on the LDP Vote Share (SMC)



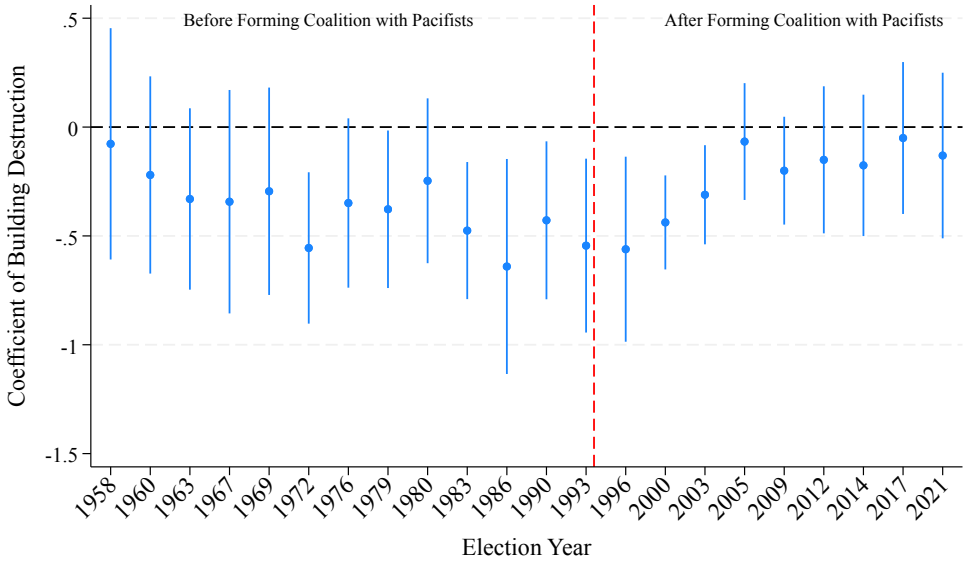
Note: The vertical axis shows the coefficient and standard error of β_{Dt}, the coefficient on per capita building destruction when estimating equation (1) clustered at the prefecture level. The red vertical line marks the 1994 electoral reform. The dependent variable is the LDP Vote Share in SMC elections. We also control for the draft-cohort gender ratio, the *Seiyukai* Vote Share, the gender ratio in 1930, per-capita earmarked expenditures, prefecture fixed effects, longitude and latitude, and the contemporaneous gender ratio. See Table 1 for variable definitions.

Figure A.7: Persistence of the Impact of 1950 Draft-Cohort Gender Ratio on the LDP Vote Share (Weighted)



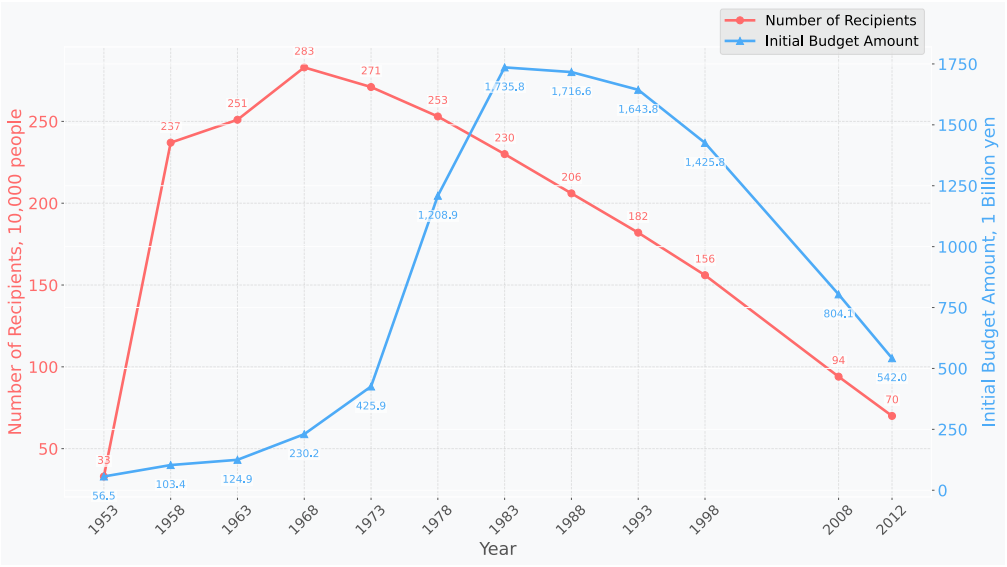
Note: The vertical axis shows the coefficient and standard error of β_{Mt}, the coefficient on draft-cohort gender ratio when estimating equation (1) clustered at the prefecture level. The red vertical line marks the 1994 electoral reform. The dependent variable is the LDP vote share computed as a weighted average of PRC and SMC elections. The weights correspond to the share of Diet members elected in each type of election. We also control for the per-capita building destruction, the *Seiyukai* Vote Share, the gender ratio in 1930, per-capita earmarked expenditures, prefecture fixed effects, longitude and latitude, and the contemporaneous gender ratio. See Table 1 for variable definitions.

Figure A.8: Persistence of the Impact of Per-Capita Building Destruction on the LDP Vote Share (Weighted)



Note: The vertical axis shows the coefficient and standard error of β_{Mt}, the coefficient on per-capita building destruction when estimating equation (1) clustered at the prefecture level. The red vertical line marks the 1994 electoral reform. The dependent variable is the LDP vote share computed as a weighted average of PRC and SMC elections. The weights correspond to the share of Diet members elected in each type of election. We also control for the per-capita building destruction, the *Seiyukai* Vote Share, the gender ratio in 1930, per-capita earmarked expenditures, prefecture fixed effects, longitude and latitude, and the contemporaneous gender ratio. See Table 1 for variable definitions.

Figure A.9: Military Pensions Time Trends



Note: This figure shows the time trends of the total amount and recipient count of military pensions. Source: https://www.soumu.go.jp/main_content/000175196.pdf#:~:text=237%20251%20282%20283%20271,253%20230%20206%20182%20156