Do Autocrats Respond to Citizen Demands? Petitions and Housing Construction in the GDR*

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January 10, 2023

Abstract

Citizens in authoritarian regimes frequently communicate grievances to the government. While there is some evidence that governments respond to such petitions, little is known about the nature of this responsiveness: can petitions yield tangible improvements to citizens' livelihoods? To answer this question, we assemble a novel panel of housing-related petitions to the government of the German Democratic Republic (GDR) and all housing constructed between 1945–1989. Exploiting the timing of the largest housing program in 1971, we employ a difference-in-differences design to show that construction was targeted at regions with higher rates of petitioning. We then use a variance decomposition method to benchmark the importance of petitions against objective indicators of housing need. Our results suggest that petitions allow citizens to meaningfully influence the allocation of public resources. The paper contributes to nascent scholarship on responsiveness in non-democratic regimes and shows that responsiveness leads to tangible improvements in citizens' livelihoods.

*We thank Feyaad Allie, Lisa Blaydes, Martin Dimitrov, Anna Grzymala-Busse, Haemin Jee, Nic Lyon, Hunter Rendleman, Theo Serlin, Georgiy Syunyaev, Sarah Thompson, Yuhua Wang, Yiqing Xu, and Daniel Ziblatt for helpful comments. We thank Cathrin Mohr for information on the housing construction data. We thank Jens Gieseke, Andreas Lichter, Max Loeffler, and Sebastian Siegloch for generously sharing data with us. We would also like to thank Markus Konrad as well as Patrick Munene and his team at Hewani Data, who helped us digitize some of our original data sources. Hans Lueders gratefully acknowledges financial support from The Europe Center at Stanford, the Center for Philanthropy and Civil Society at Stanford, Stanford's Graduate Research Opportunity Fund, the Freeman Spogli Institute at Stanford, and the Shultz Fellowship for Economy Policy.

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1 Introduction

Classic models of governance suggest that the absence of electoral constraints leaves autocrats with limited incentives to respond to citizen demands (Powell 2004; Shmuel 2020). Yet, the lack of competitive elections does not imply that autocrats provide citizens with no means to influence policymaking. Many authoritarian regimes offer their citizens alternative, non-electoral pathways to voice their demands, such as the Chinese “Mayor’s mailbox” or “letters-and-visits” (*xinfang*) systems (Distelhorst and Hou 2017; Tsai and Xu 2018), or the petition systems in socialist Bulgaria and Saddam Hussein’s Iraq (Dimitrov 2014b; Walter 2018). These channels enable citizens to express demands and grievances while simultaneously allowing officials to collect information about popular sentiments toward the regime (Dimitrov 2014b). Prior work has demonstrated that autocratic officials frequently respond to demands made through these channels, or that they change their behavior in accordance with citizen preferences (Malesky and Schuler 2010; Chen, Pan and Xu 2016; Su and Meng 2016; Lueders 2022). However, less is known about the nature of such responsiveness: is responsiveness to citizen demands performative and simply acknowledges citizens’ grievances (Ding 2020), or does it entail meaningful material improvements for citizens’ livelihoods?

We study this question in the context of the German Democratic Republic (GDR). Ex ante we should expect this case to be particularly unlikely to yield evidence of meaningful government responsiveness. The combination of explicit military support from the Soviet Union (Thomson 2017) and political institutions that minimized political contestation (Karklings 1986; Lueders 2022) helped inoculate the socialist East German government against direct popular pressure. Nevertheless, our paper presents robust evidence of meaningful responsiveness to citizen demands.

Our analysis constitutes a key next step in a line of research that has already demonstrated that petitions often receive direct responses from the government (Tsai 2007; Truex 2016; Lueders 2022). Building on this work, we propose that authoritarian governments

respond to citizen demands in a meaningful way to underpin political survival. Such substantive responsiveness contributes to high public support, which is vital in preventing public unrest. Moreover, many authoritarian regimes rely on citizens to voluntarily share their grievances through petition or other complaint systems. Citizens, however, are unlikely to participate in such systems if there is no chance of success.

To examine whether petitions result in tangible improvements in citizens' livelihoods, we focus on responsiveness in the context of housing policy, which was the most salient social policy issue in the GDR (Schmidt 2013). We construct an annual, county-level panel on all housing units (or *flats*) built by the state between 1945 and 1989 and combine this data with an original panel of housing-related petitions to the central government between 1963 and 1971. While all petitions were guaranteed a written response, our two data sets allow us to directly link popular demands to tangible policy outcomes.

Empirically, we make use of the fact that the GDR launched a major housing construction program in 1971. Following uprisings in Czechoslovakia and Poland, the socialist governments of Eastern Europe shifted political attention to their citizens' sub-par living conditions. The housing program was the cornerstone of the GDR's attempt to raise living standards. It marked a sharp shift in the country's housing policy and resulted in the construction of an additional 1.6 million flats. Using a difference-in-differences design, we show that the housing program was more expansive in counties with more petitioning prior to the program. Importantly, this result holds after accounting for the quality of the existing housing stock, which may likewise affect the submission of housing-related petitions. We take this result as evidence that petitions had a direct effect on housing provision in the GDR.

In a second contribution, we assess the relative importance of petitions vis-à-vis a number of "objective" indicators of housing need and other variables that could drive housing construction. Using a variance decomposition approach (Lindeman, Merenda and Gold 1980; Grömping 2006), we show that, aside from population density and the pre-existing housing supply, petitions have the highest explanatory power of all predictors we assess. In particu-

lar, petitions are a more important predictor of future construction than several demographic indicators, such as population size or birth and death rates. What is more, petitions matter more than a composite index of the quality of existing housing. These results demonstrate that, beyond mere statistical significance, petitions are a substantively important driver of government activity and spending in autocracies.

Our research is most closely related to the contribution of [Mohr \(2021\)](#), who is the first to use the GDR housing construction data. Using a difference-in-differences design, [Mohr \(2021\)](#) shows that the GDR regime responded to mass unrest during the 1953 People’s Uprising by increasing housing construction (along with other “carrots”) and military presence (along with other “sticks”). We build on this important result in several ways. [Mohr \(2021\)](#) asks how autocratic regimes respond to opposition as expressed in public protests. We extend this work by analyzing how autocratic governments respond to the demands expressed by citizens through state-sanctioned channels, namely petitions.

Importantly, we note that petitions and protests are distinct forms of political behavior. A direct empirical way to show this is through the correlation between both measures. We do so in Appendix section [A.2](#), where we find that the correlation is close to zero (see Figure [A.7](#)). The lack of an association between the two aligns with conceptual distinctions between both. By engaging in illegal anti-regime protests, citizens move outside the regime’s institutional framework, threatening political instability in exchange for concessions. By contrast, citizens write petitions within the regime’s institutional framework, often employing explicitly pro-regime language to express their requests ([Staadts 1996](#)). While prior work on autocratic stability has largely focused on how the regime responds to threats to political stability such as protests ([Acemoglu and Robinson 2006](#); [Mohr 2021](#)), we draw attention to how the regime responds to the demands of ordinary citizens expressed through legal channels. Finally, we build on [Mohr \(2021\)](#) by quantifying the magnitude of the effect of petitions on housing and by comparing the effect size to other determinants of housing construction.

To our knowledge, we are the first to present evidence on how citizen demands can inform

the allocation of public resources in a closed autocracy. In doing so, we join a burgeoning literature that shows that accountability and responsiveness are possible in non-democracies (Tsai 2007; Chen, Pan and Xu 2016; Truex 2016; Distelhorst and Hou 2017). In particular, we build on closely related recent work by Lueders (2022) who studies electoral cycles in responsiveness to petitions in the GDR, but does not provide evidence on how petitions affect aggregate-level resource allocation.

That citizen demands can inform government actions even in one of the least democratic regimes is significant because it challenges conventional models of autocratic governance. Extant theorizing often argues that the main beneficiary of autocratic rule are the elite members of the regime’s “winning coalition” (Bueno de Mesquita et al. 2003). Ordinary citizens, by contrast, are often conceptualized as relatively passive individuals whose compliance is bought with clientelistic goods (Magaloni 2006; Stokes et al. 2013; Diaz-Cayeros, Estévez and Magaloni 2016) or forced through repression (Acemoglu and Robinson 2006; Svobik 2012). According to these models, policymaking and the allocation of public resources should be unrelated to citizen demands. Our results are at odds with this idea.

2 Responsiveness and authoritarian stability

2.1 Autocratic petition systems

Many dictatorships offer their citizens avenues to express their grievances directly to the government. The Bulgarian (Dimitrov 2014b) and Iraqi regimes (Walter 2018), for instance, encouraged citizens to write petitions or complaints¹ to the authorities. Today’s communist China similarly allows its citizen to ask questions or voice concerns through the “Mayor’s mailbox” or “letters and visits (*xinfang*)” systems (Luehrmann 2003; Chen, Pan and Xu 2016; Distelhorst and Hou 2017; Tsai and Xu 2018). These petition systems are valuable

¹Throughout the paper, we use the terms “petitions” and “complaints” interchangeably. They both refer to channels that allowed citizens to share their demands and grievances with the government.

sources of information for authoritarian regimes. They offer dictators a “barometer of public opinion” (Dimitrov 2014b) that sheds light on the public mood toward the government and allows the regime to identify and resolve public grievances before they result in mass mobilization against the regime (Dimitrov 2014a).

Petitioning is a distinct form of political behavior and needs to be distinguished from anti-regime protests. While both are ways for ordinary citizens to voice their demands, they are conceptually distinct regarding their legality, type of demands, and participants. In fact, in the case of the GDR, the correlation between the petitions we study and popular participation in anti-regime protests is close to zero (see Figure A.7).

Petitioners move within the official authoritarian institutional framework. They use the petition channel to express their grievances and concerns to the regime in the hopes of achieving an improvement in their living conditions. Autocratic regimes who want to learn about citizens’ grievances often actively encourage the writing of petitions and rarely sanction such behavior. By contrast, due to the illegality of anti-regime protests, protesters move outside the regime’s official legal framework. Taking to the streets is thus associated with higher costs and involves an open confrontation with the autocratic government. Because of the illegality of protests and the dangers that open anti-regime mobilization can pose to the government, protesting is discouraged and protesters face severe repercussions.

Moreover, the demands expressed in petitions and protests are different. Anti-regime protesters call for systemic political change. Such demands are largely absent in petitions; the vast majority of petitions are about everyday citizen grievances, not political change (Lueders 2022).

Lastly, different types of citizens participate in petitions and protests. Writing a petition typically means that petitioners accept the legitimacy of the government; it is implausible that citizens who oppose the regime participate in a regime-sanctioned activity and voluntarily share information with the government. As a consequence, the strongest regime opponents are the least likely to write petitions (Dimitrov 2014a) but the first to mobilize

against the autocratic regime (Kuran 1991).

Authoritarian complaint systems are similar to constituency service in democracies. Like 311 calls in New York and San Francisco (Christensen and Ejdemyr 2020) or “FixMyStreet” requests in the United Kingdom (Dipoppa and Grossman 2020), they provide public officials with information about citizens’ everyday grievances and permit them to improve service provision (Staadts 1996; Gorgulu, Sharafutdinova and Steinbuks 2020).

Yet, conventional models of authoritarian governance suggest that unlike their democratic counterparts, autocratic regimes should have few, if any, incentives to respond to and resolve the demands expressed in petitions. First and foremost, past scholarship suggests that electoral incentives are only a secondary motivation for autocratic regimes to respond (Distelhorst and Hou 2017). In democracies, contested elections create an “electoral connection” between citizens and incumbents and incentivize incumbents to respond to their citizens (Mayhew 1987; Cain, Ferejohn and Fiorina 2013). Elections in non-democracies, by contrast, are less competitive: dictators and their ruling parties routinely win by large margins, while the opposition — if legal at all — is systematically disadvantaged at all stages of the electoral process (Schedler 2006). While contested elections can incentivize some degree of responsiveness in non-democracies (Lust-Okar 2006), prior research argues that electoral factors are less important drivers of authoritarian responsiveness (Powell 2004; Shmuel 2020). One recent study that has challenged the notion that uncontested elections come with no government responsiveness is Lueders (2022). This work is particularly relevant to our argument, as Lueders (2022) shows that petitions in the GDR were answered more quickly prior to elections. While this paper informs our analysis, Lueders (2022) does not examine whether petitions lead to changes in government resource allocation. We build on this result by providing new evidence on how petitions induce the government to provide a key social good — housing.

In addition, past theorizing about autocratic survival centers on the importance of the regime’s “winning coalition” (Bueno de Mesquita et al. 2003). Seeking to maximize their

own returns to office, leaders only share resources with those individuals whose support is required to stay in power. In autocracies, these individuals typically come from a narrow set of elites. According to these models, then, the rational dictator should focus their efforts on responding to the preferences of elites, largely ignoring the preferences of ordinary citizens.

For these reasons, extant theories typically limit the role of citizens to passive individuals whose compliance is bought with clientelistic goods (Magaloni 2006; Stokes et al. 2013; Diaz-Cayeros, Estévez and Magaloni 2016) or forced through repression (Acemoglu and Robinson 2006; Svolik 2012). Little work discusses how popular compliance and support can be obtained through a direct response to citizen preferences and demands.

2.2 Why do autocrats respond to citizen demands?

In short, past work implies that autocratic governments should remain largely unresponsive to citizen demands. By contrast, we propose that even the most authoritarian leaders have strong incentives to respond to their citizens' demands in a meaningful way.

Most notably, such responsiveness can raise popular support for the regime and thus inoculate autocratic rule against threats arising from the population. Petitions can improve regime support by allowing petitioners to interact in a positive and successful way with the government (Truex 2017). Responsiveness can also signal competence, which improves confidence in the regime's ability to deliver a comfortable standard of living in the future (Gorgulu, Sharafutdinova and Steinbuks 2020).²

Government responsiveness can take two forms. On one hand, it can be a simple acknowledgment of the grievances or concerns expressed in a petition. Ding (2020, pp. 5-6) calls such responsiveness "performative governance," that is, "the state's theatrical deployment

²We note that responsiveness differs from clientelistic politics (Magaloni 2006; Stokes et al. 2013) because it does not involve a quid-pro-quo; a vote for the regime is not a precondition for responsiveness. Responsiveness also differs from co-optation. While the goal of co-optation is to turn individuals into stakeholders of the regime (Gandhi 2008), a successful petition does not make regime survival more important for citizens' well-being.

of visual, verbal, and gestural symbols to foster an impression of good governance before an audience of citizens.” Such a strategy can improve citizen satisfaction especially when citizen demands exceed government capacity.

On the other hand, autocratic officials can directly address and resolve the issue. Such “tangible responsiveness” raises support by delivering on citizens’ expectations of the government (Gorgulu, Sharafutdinova and Steinbuks 2020) and producing material improvements in citizens’ livelihoods (Cho, Lee and Song 2019; Guriev and Treisman 2020).

A second reason why autocratic governments should have strong incentives to respond to petitions in a meaningful way is that such responsiveness is a precondition for citizens’ continued participation in the petition system. Petition systems provide dictators with invaluable information about citizen grievances and the popular mood (Dimitrov 2014b). Alternatives such as government surveillance are often unable to collect the same information (Popplewell 1992; Pfaff 2001). Yet, petitions lose their information-gathering function if only few citizens are willing to share their concerns with the government. One way to motivate citizens to write petitions, then, is to resolve some demands and thus keep the chances of success sufficiently high.

In sum, we propose that authoritarian regimes have strong incentives to address popular grievances expressed in petitions, and that such responsiveness should yield tangible improvements in petitioners’ lives. The remainder of the paper supports this expectation in the context of the former German Democratic Republic (GDR).

3 Petitions and housing policy in the GDR

Before describing the data and the empirical strategy, we provide background information on the GDR’s petition system. Since we analyze responsiveness in the context of housing provision, we also present an overview of public housing policy in the GDR. We describe the largest-scale effort to alleviate post-WWII housing shortages, the 1971 housing program.

3.1 Petitions

The German Democratic Republic was a socialist one-party regime established in the former Soviet Occupation Zone in East Germany after World War II. Its rule was, in part, founded on an implicit social bargain between the government and its citizens, whereby the government provided citizens with socio-economic progress in exchange for popular acquiescence (Dale 2005). The government relied on expansive public welfare programs to meet its side of the bargain and keep popular support high. For example, employment guarantees made involuntary unemployment virtually unknown, while many basic consumption goods and services including rent, healthcare, and childcare were heavily subsidized (Schmidt 2013).

One channel for the regime to monitor public sentiment and gather information about public needs was the petition (*Eingaben*) system. The GDR's petition law guaranteed each citizen's right to submit petitions to all branches and levels of government. East Germans used this right extensively: historians estimate that between half (Class, Kohler and Krawietz 2018) and one million (Mühlberg 2004) petitions were written every year to all branches of the central and local governments. This corresponds to an average of 81 petitions per 1,000 adults. The vast majority of petitions came from ordinary citizens.

Petitions contained invaluable information about popular grievances, such as supply shortages or the performance of local officials (Mühlberg 2004). This information was aggregated by county and informed political decisions at all levels of government (Stadt 1996). To demonstrate the breadth of topics covered in petitions, Table 1 reports the distribution of topics included in petitions to the GDR's State Council (*Staatsrat*), the country's main executive body, in 1971. Petitions about housing quality and housing construction were the most frequent, with close to half of all petitions complaining about poor housing conditions, requesting renovations, or asking for a different flat, among many others. The share of housing petitions was equally high in other years. It was above 40 percent before the start of the housing program (e.g., 42.8 percent in 1965 and 48.4 percent in 1966) and ranged from

Table 1: Petition contents in 1971

Petition topic	Number of petitions	Share of total
Total petitions	63,888	100.00%
Housing quality and construction	27,185	42.55%
Domestic affairs	8,208	12.85%
Legal questions	6,086	9.53%
Criticism of local authorities	6,065	9.49%
Economic issues and finance	4,384	6.86%
Labor and social insurance	4,359	6.82%
Emigration to West Germany	2,783	4.36%
Education, health care, and culture	2,477	3.88%
Trade and supply	2,341	3.66%

Notes: The table shows the relative frequency of topics in the petitions submitted to the GDR State Council in 1971. The data is sourced from the German Federal Archives in Berlin (Archival signature: BArch DA 5/14386(“Eingaben - EDV Erfassung nach Bezirken und Sachgebieten. Band 5: 1971” / “Petitions - Electronic records by district and topic. Volume 5: 1971”)).

38.5 percent (1984) to 67 percent (1979) afterwards. The high salience of housing-related concerns underscores the importance of public housing construction as a proxy for responsiveness to citizen demands in the GDR. Besides housing, petitions covered a multitude of other everyday grievances ranging from legal questions to economic issues to the provision of consumption goods.³

There is no evidence that citizens were punished for submitting petitions. On the contrary, as [Dimitrov \(2017\)](#) argues, the absence of repercussions was a precondition for the petition system to work: citizens only submit petitions if the expected costs are low, and the probability of success is nonzero. Criticism of the socialist system was rare; any criticism was usually restricted to individual grievances or perceptions of unfair treatment by bureaucrats ([Schmidt 2008](#)). Only a very small number of petitioners sought a direct confrontation with the authorities, usually in combination with a demand for an exit visa. Until the last years of the GDR, however, such petitions were infrequent ([Lueders 2020](#)).

³Data compiled from detailed county-level petition statistics in Bundesarchiv BArch DA 5/14386 (“Eingaben - EDV Erfassung nach Bezirken und Sachgebieten. Band 5: 1971” / “Petitions - Electronic records by district and topic. Volume 5: 1971”).

3.2 Housing policy and the 1971 housing program

As described in the previous section, the lack of housing was a major grievance among GDR citizens. The government’s most prominent effort to address housing shortages was the 1971 housing program, which was implemented after decades of lagging construction. Due to large-scale destruction in World War II, the GDR faced severe housing shortages during the first decades of its existence (Tesch 2001). The majority of the available housing was controlled and distributed by the state — private construction was relatively rare, and had to be approved by the state (Rink 2020). While the central government recognized the need to alleviate the apparent housing shortages, new construction was not sufficiently prioritized at first. Rather, internal economic goals and Soviet demands for reparations necessitated a focus on industrial development (Bradford and Rueschemeyer 1988). Often, housing construction prior to 1971 was merely a by-product of new industrial developments that required accommodation for workers. After 25 years of lagging construction, about 600,000 citizens were registered as seeking accommodation in 1971, and the wait for a flat could be up to ten years (Rink 2020).

Leading up to 1971, political elites became increasingly aware that the continued housing shortage could threaten social and economic stability. The popular uprising during the “Prague Spring” in 1968 and the Polish worker strikes in December 1970 were widely interpreted as signals of popular dissatisfaction with poor standards of living. In response, the socialist governments across Central and Eastern Europe set new targets to raise their citizens’ living standards (Staritz 1996).

The shift in the GDR’s political priorities was accelerated by a leadership change in early 1971, when Erich Honecker succeeded Walter Ulbricht as the secretary-general of the ruling SED party (Schmidt 2008). Ulbricht’s policies had emphasized economic development, especially in heavy industry. In contrast, Honecker’s stated goal was to emphasize social policy and raise living standards. Housing was quickly identified as main source of popular

grievances. Consequently, the cornerstone of the GDR's new social policy was the 1971 *Wohnungsbauprogramm* (housing program).⁴

The program stipulated that about three million flats were to be constructed or renovated until 1990. The emphasis of the program was on the construction of new apartment buildings. Only after 1985 did the government's attention shift somewhat toward the renovation of the existing housing stock. Most commonly, new construction took the form of prefab housing blocks in large satellite settlements "auf der grünen Wiese" (on the green meadow) (Buck 2004, p. 358) outside of urban centers (Malycha 2011). As such, the housing program resulted in the creation of entire new neighborhoods, such as the Marzahn and Grünau districts in Berlin and Leipzig, respectively, which soon offered homes for tens of thousands of citizens (Schildt 2010).

Retrospective evaluations of the program indicate that the sudden shift in attention after 1971 did, to a degree, alleviate shortages. However, the one-sided focus on new construction resulted in the deterioration of the existing housing stock in inner cities. As a result, Tesch (2001) concludes that, while "the nominal goals of the program were fulfilled, the housing question remained a social problem."

Planning and implementation of the housing program and the new housing construction were controlled by the central government (Sammartino 2018), while local governments were mainly responsible for the assignment of citizens to the new housing units once these units had been built (Hinrichs 1992). The Ministry of Construction played a central role at all stages of the program. Apartment buildings and the surrounding neighborhoods were designed by the Ministry-run German Construction Academy (*Deutsche Bauakademie*). Moreover, the Ministry and other central government agencies devised the five-year plans that detailed the number of flats to be constructed in each jurisdiction. As the Ministry over-

⁴The program was introduced during the VIIIth party congress in June 1971. The start of the program is sometimes dated to 1973, when it was formally announced. However, planning and construction began already in late 1971 (Steiner 2007), which is why we use 1971. This coding decision is consistent with relevant literature on the program (see e.g. Tesch 2001; Sammartino 2018)

saw the state-owned construction enterprises, it further decided about the allocation of the necessary resources to realize the plans (Tesch 2001). The centralized organization of the program allowed the GDR regime to directly address citizen demands through housing construction. This allows us to leverage the 1971 housing program as a unique opportunity to study whether and how autocrats respond to citizen demands.

4 Data

To examine whether the GDR government was responsive to citizen demands and built more housing in places with more housing petitions, we construct a comprehensive county-level data set that includes annual housing construction and petitions to the central government. We present summary statistics in sections A.1 and A.3 in the appendix.

4.1 Petitions to the central government

Our main independent variable is petitions to the *Staatsrat* (State Council), the GDR’s main executive body. We focus on petitions to the central government because it was the central government who decided where the new housing units and apartment buildings were to be built (see above). East Germans submitted an average of 70,000 petitions to the *State Council* every year. Most of these petitions were forwarded to the responsible agencies and are thus no longer available. Consequently, we are unable to examine the text and content of individual petitions.⁵ Instead, we obtained summary statistics about the content and volume of petitions by county and year from declassified internal reports.

To measure baseline demand for housing prior to the housing program, we use the annual number of housing petitions submitted up until 1971 (averaged over the years 1963 to 1971), scaled by county population in 1969 (we obtained population data from Class 2017).

⁵While local archives may have some physical versions of these petitions, a systematic collection of petition contents from a large number of municipal archives is beyond the scope of our study.

Throughout our empirical analysis, we focus on petitions that specifically relate to housing. We do not use petitions on other issues. We note that this data is not available for the years 1967 – 1970. However, because we average over multiple years for the period prior to the implementation of the housing program, this missingness is likely inconsequential for our results. In the appendix, we verify that excluding a subset of years from the petition data has a negligible impact on the calculation of county-level means (see figure A.9 in the appendix). To ensure that housing petitions do not merely reflect the quality and availability of the housing stock itself, we use a simple regression residualization procedure to focus on variation in petitions that cannot be explained by differences in the pre-existing housing stock (see section 5). In figure A.4 in the appendix, we present the spatial distribution of the original petitions measure, as well as the residualized petition treatment.

4.2 Housing construction

Our main outcome is county-level annual public housing construction, measured between 1962 and 1989. The first and, to our knowledge, only paper to use this data is [Mohr \(2021\)](#), who we follow in all major coding decisions. We source this data from the 1995 German Housing Census (*Gebäude- und Wohnungszählung*), which was conducted by the German Federal Statistical Office (*Statistisches Bundesamt*). The census records every flat that existed in 1994 in the territory of the former GDR. In the language of the census, a flat is a set of rooms with a separate entrance. Therefore, a flat can be thought of as a residential unit and may refer to a single-family house or a flat in a multi-unit building. Importantly, the housing census contains information on whether a flat was privately owned in 1990, just after German reunification. For our analysis, we only consider flats that were owned by the state or by organizations affiliated with the state in 1990.

Based on the recorded construction years, we calculated the annual number of flats

Figure 1: Housing construction in the GDR over time

Note: The figure shows trends in average flat construction per 1,000 capita, separately for counties with below- and above-median per capita petitions prior to 1972. The pre-1972 petition rates are based on residualized average petitions per capita in 1963, 1964, 1965, 1966, and 1971. We average annual flat construction over two-year periods (see x-axis). The dotted vertical line indicates the start of the housing program. Our measure of housing construction only considers housing constructed by the state.

that were constructed in all 219 counties.⁶⁷ We normalized construction by county-level population in 1969, resulting in per-capita flat construction per county and year, which forms our main outcome. The housing census also includes additional information on the

⁶The construction date is truncated at 1933. For flats constructed prior to 1933, we do not know the exact year of construction. For the flats in question, we impute 1910 as the year of construction. In figure A.13, we show that our results are robust to using different years to impute the missing construction years.

⁷While our construction outcome is very similar to the one used by [Mohr \(2021\)](#), [Mohr \(2021\)](#) uses municipality-level rather than county-level aggregations of annual construction. In addition, and in contrast to [Mohr \(2021\)](#), we specifically analyze construction after the 1971 housing program as our main outcome variable.

amenities of flats and the year a flat was constructed. In figure 1, we present descriptive information on average housing construction rates over time, separately for counties that submitted higher or lower relative amounts of petitions before the housing program. Prior to the 1971 housing program, annual average construction rates hovered around 2.5–3.5 new flats per 1,000 inhabitants — after 1971, construction increased significantly, mainly in counties with many housing petitions.

The housing construction data has two key advantages. First, it is a more objective measure of construction than official government figures. Given the prevalent discontent with housing, the government may have exaggerated construction activity in areas where more petitions were submitted — a potential threat to inference that our data circumvents (see e.g. Wallace 2016, for a discussion of the manipulation of official statistics in autocracies). In addition, the data mitigates the problem that responsiveness may be “performative” rather than tangible (Ding 2020). While all petitions in the GDR were guaranteed a response, our measure allows us to more directly observe responsiveness that actually improves citizens’ livelihoods. At the same time, our outcome describes a policy instrument that comes with substantial costs for the regime, as reflected in the enormous efforts undertaken to implement the housing program’s ambitious goals.

Before moving on, we discuss two drawbacks of the data. First, it is derived from data on the existing housing stock in 1994, four years after the GDR ceased to exist. Therefore, we cannot capture buildings that were constructed prior to 1990 but torn down before the housing census was conducted. While fine-grained data on housing demolitions is unfortunately unavailable, we believe that this problem is likely minor, as there is no evidence of large-scale demolition of the existing housing stock right after reunification (Kholodilin 2020). Second, the housing census does not contain information on renovation dates. While the 1971 housing program called for both new construction and renovations, the 1994 housing census only records information on construction years but not on renovation activity. Since the housing program primarily focused on new construction (Malycha 2011), we believe that

the unobserved renovations only constitute a minor component of responsiveness.

5 Empirical strategy

Our main question is whether the GDR regime was responsive to housing petitions. We operationalize ‘responsiveness’ to petitions as public housing construction under the 1971 housing program.

To test whether the number of new housing units built per capita was higher in locations where the volume of housing-related petitions was higher prior to 1971, we implement a difference-in-differences (DID) model. Our main specification takes the following form:

$$Y_{it} = \beta_0 T_i + \beta_1 P_{it} + \tau(P_{it} \times T_i) + \varepsilon_{it}$$

where Y_{it} is the total number of flats built by the state in county i in year t , scaled by the pre-treatment county population size in 1969. Our binary treatment variable is T_i , which we define based on the average number of housing petitions submitted per capita in a given county between 1963 and 1971.⁸ We dichotomize this variable using a median split. We chose to dichotomize our treatment variable to (i) reduce the statistical leverage of outliers and (ii) avoid parametric assumptions about the relationship between treatment and outcome. However, we note that our main results are robust to using a continuous measure of petitions as the treatment variable, as well as to treatment definition that is based on a mean split (see section A.5 in the appendix). The indicator variable P_{it} indicates the time period after the start of the program, such that $P_{it} = 1$ for county i when $t > 1971$. For our main specification, we aggregate our data within two-year intervals to reduce statistical noise. All of our results are robust to using the original annual data instead (see section A.8 in

⁸We only use petitions submitted prior to the housing program in this step to ensure that we do not pick up variation that stems from the reverse causal channel, i.e. the effect that the housing construction program might have had on the rate of petitions after 1971.

the appendix). As additional robustness checks, we estimate model specifications including county and/or period fixed effects. The key parameter of interest is $\hat{\tau}$, the difference-in-differences estimate for the effect of petitions on housing construction.

To track the evolution of the treatment effect over time, we also estimate a leads and lags specification (see figure 2). Here, we estimate the interaction between the binary treatment and each period indicator separately. As is standard practice in leads and lags regression analyses, we leave out the interaction for the last pre-treatment period (1970/1971), which serves as the baseline for all estimated treatment effects in this analysis.

A potential concern about the definition of our treatment variable is that both housing petitions and housing construction could be driven by the underlying quality of the housing stock. Citizens in areas where the quality of the pre-1971 housing stock is lower might be more likely to submit complaints. At the same time, the regime might prioritize such regions in the implementation of the housing program. To address this concern, we only leverage variation in petitions that is orthogonal to objective indicators of housing quality. Specifically, we regressed housing petitions (per capita) in county i on (i) the total number of flats per capita, (ii) the share of flats with modern heating, (iii) the share of flats with a kitchen, (iv) the share of flats with in-unit toilets, and (v) the average age of flats in the same county. We performed this step separately for each year. The residuals from these models constitute our measure of petitions ‘net’ of housing quality. For all our analyses, we use this residualized measure of housing petitions to define T_i . We examine the cross-sectional predictors of T_i in Figure A.8 in the SI.

Because we use panel data in a difference-in-differences setup, we account for time-invariant determinants of housing construction by design. We leverage the increase in housing construction after 1971 and test whether this increase was stronger in places where citizens submitted more housing-related petitions prior to 1971. Our key identifying assumption is that counties with different levels of housing petitions would have experienced a similar increase in housing construction after 1971 if the number of petitions submitted prior to 1971

in the two groups had been the same.

We provide two pieces of evidence in support of this assumption. First, we follow standard practice and demonstrate that housing construction in high- vs. low-petition counties evolved in parallel prior to the reform (see figure 2). Second, we re-estimate our main specification but now consider a placebo treatment: the number of petitions on topics other than housing and construction. Again, we scale this variable by population size and dichotomize it using a median split. We present the results in table A.3. Across a variety of model specifications, we find small, statistically insignificant point estimates for the effect of non-housing petitions on housing construction. This demonstrates that the regime did not respond to petitions or underlying grievances generally, but specifically to citizen demands related to housing. The fact that we do not find results for the placebo treatment provides strong evidence that our findings are not driven by other, unobserved factors that are correlated with petition volume at the county level.

6 Results

6.1 Responsiveness to petitions

In figure 1, we showed that housing construction trends were largely similar in counties with higher and lower amounts of petitions until 1971, but diverged significantly afterwards. Our main regression results in table 2 confirm this observation. Using a standard multi-period difference-in-differences specification, we show that the GDR government constructed significantly more flats in counties with above-median petitions after the housing program began. Depending on the specification, the magnitude of the effect is between 0.88 and 1.12 additional flats per 1,000 capita and period. This corresponds to an increase by between 0.22 and 0.28 standard deviations in housing construction. We note that these results are robust to using a continuous measure of petitions as the treatment variable (see section A.5 in the appendix).

Table 2: Effect of petitions on flat construction

	DV: annual flat construction, per 1,000 capita					
	(1)	(2)	(3)	(4)	(5)	(6)
Petitions * post 1971	0.985*** (0.304)	1.028*** (0.313)	1.124*** (0.334)	0.879*** (0.296)	0.920*** (0.306)	0.969*** (0.324)
County FE	No	Yes	Yes	No	Yes	Yes
Period FE	No	Yes	No	No	Yes	No
Period * district FE	No	No	Yes	No	No	Yes
Sample	Full	Full	Full	95%	95%	95%
DV mean	3.754	3.754	3.754	3.71	3.71	3.71
DV SD	4.062	4.062	4.062	4.034	4.034	4.034
R ²	0.016	0.584	0.612	0.012	0.593	0.621
N	3,217	3,217	3,217	3,068	3,068	3,068

Notes: The table contains results from six models, where the DV is annual flat construction per 1,000 capita, averaged over two-year periods. Counties are defined as treated if the number of residualized petitions over the period of 1963–1971 in a given county is greater than the median number of residualized petitions in the same time period. We use residualized petitions to ensure that petitions do not simply measure the quality of the housing stock. Models without county and period fixed effects contain lower order terms, i.e. an indicator for the period after 1971 and the treatment indicator. Models where the sample is marked as ‘95%’ excludes counties that were in the top 5% of cumulative housing construction after 1971. The sample includes all years between 1960 and 1989. Our measure of housing construction only considers housing constructed by the state. Standard errors are clustered by county. ***p < .01; **p < .05; *p < .1

To shed more light on the effect size, we can compare relative differences in housing construction before and after the start of the housing program. Prior to the program, areas with more petitions received about 2.7% more new housing than areas with fewer petitions. After the program start, per-capita housing construction in counties with more petitions was 31% greater than in counties with fewer petitions. Accordingly, the relative gap in housing construction between counties with high and low petitioning increased by 28.3 percentage points after 1971.

Construction in regions with lower rates of petitioning trailed construction in regions with more petitions by at least three years, on average. Under the housing program, regions with more petitions saw cumulative construction of about 50 flats per 1,000 capita until 1981, and about 75 flats per 1,000 capita in 1985. As we show in figure A.2 in the appendix,

in regions where fewer petitions were submitted, 50 additional flats per 1,000 capita were reached only in 1984, while the 75 flats per 1,000 capita mark was never reached during the existence of the GDR.

Figure 2: Effect of petitions on housing construction

Note: Leads and lags estimates of the effect of pre-1972 petitions on housing construction. See section 5 for more information on the model specification. The DV is annual flat construction per 1,000 capita, averaged over two-year periods. Counties are defined as treated if the number of residualized petitions over the period of 1963–1971 in a given county is greater than the median number of residualized petitions in the same time period. We use residualized petitions to ensure that petitions do not simply measure the quality of the housing stock. The sample includes all years between 1960 and 1989. Coefficients are differences relative to the last pre-treatment period, [1970, 1971]. Our measure of housing construction only considers housing constructed by the state. Standard errors are clustered by county.

In addition to the main specifications in table 2, we also estimate a leads and lags specification with period-specific coefficients. The results are shown in figure 2. The coefficients in this figure can be interpreted as differences relative to the last two-year period (the average of 1970 and 1971) prior to the start of the housing program. Before 1972, we find that petitions are not associated with differences in housing construction. After the start of the housing program, petitions led to significantly higher levels of housing construction. This effect is strongest immediately after the housing program began.

6.2 Robustness

In addition to the main results, we conducted seven robustness checks to verify that our results are not driven by the choice of specification, sample, operationalization of the petition treatment, or temporal aggregation of housing construction.

First, we employ a placebo specification to demonstrate that housing construction was not merely a response to general petition volume, but rather a response specifically to housing-related petitions (see also section 5). To show this, we re-estimate the main specification in table 2 using petitions not related to housing as the main explanatory variable. The results are presented in table A.3 in the appendix. We find no effect of non-housing petitions on housing construction.

Second, we show that our main results are robust to alternative specifications, in which we (i) flexibly control for district-specific trends and (ii) exclude counties with extremely high rates of construction after 1971. The relevant models that include district-specific trends are models 3 and 6 in table 2. Generally, the sign and significance of the relevant coefficients is the same as in the base models without district-specific trends. In addition, we remove the top 5% counties with the highest per-capita amount of construction after 1971 in models 4–6 in table 2. Again, the sign, significance, and magnitude is almost unchanged, indicating that our results are not driven by these outlier counties.

Third, we demonstrate that alternative definitions of the petition treatment, including a continuous measure, do not alter our substantive conclusions. We present these results in figures A.10 and A.11 in the appendix, where we re-estimate the main specifications and leads and lags specifications using six alternative treatment definitions. First, we use petitions in 1971 rather than the average number of petitions between 1963–1971 as the basis of the treatment. Second, we estimate alternative specifications that use a binary treatment based on mean split rather than median split, as well as a continuous version of the petition treatment. Across the resulting six methods of defining the treatment, the results mirror

our findings in table 2 and figure 2.

Fourth, we verify that our findings are not driven by any single region of the country. To show this, we re-estimate the main specification, one-by-one excluding one of the fifteen administrative districts (*Bezirke*), the administrative unit between a county and the country. We present the results in figure A.12 in the appendix. We find that successively dropping individual districts from the sample does not alter our results, indicating that our findings are not driven by any specific district.

Fifth, we verify that our results are not sensitive to the imputed construction year for buildings with unknown construction years. As discussed previously, construction years are missing for buildings built prior to 1933. In our main specification, we impute 1910 as the construction year. In figure A.13 in the appendix, we show that results are similar when we instead impute 1890, 1900, 1920, or 1932 as construction years.

Sixth, we re-estimate the main specification in table 2 using annual data. While the results in the paper are derived from two-year averages (see e.g. figure 1 for a visual representation), we can run the same models using the original, annually observed data. We present the results in table A.2, which corresponds to table 2. Comparing the two-year aggregates with annual data, we find that coefficients for both the main and interaction effects are extremely similar in magnitude, sign, and significance.

Seventh, we show that our difference-in-differences results are consistent with an alternative, correlational approach to estimate the relationship between petitions and housing construction. In doing so, we use additional data on petitions submitted after 1971. In figure A.6 in the appendix, we present year-by-year scatter plots and correlations between petitions and construction. For all years after 1971, we observe that county-level petitions are positively correlated with housing construction, with correlation coefficients ranging from 0.14 to 0.36. As suggested by our difference-in-differences results, correlations during the 1960s are all very close to zero.

6.3 Relative importance of petitions

So far, we have established a statistically significant relationship between petitions and government housing construction. To assess the magnitude of this effect, we now quantify the relative importance of petitions as a predictor of housing construction relative to other covariates.

Assessing the relative importance of correlated covariates is not straightforward. This is because the increase in explained variance (R^2) before and after the inclusion of a given variable depends on the order in which covariates are added to the model. The decomposition of the overall R^2 into relative contributions by specific predictors thus constitutes a statistical challenge. To overcome this issue, we use the *LMG* metric named after Lindeman, Merenda and Gold (1980) and implemented by Grömping (2006).⁹

In a nutshell, this computational approach overcomes the statistical issue outlined above by averaging over sequential improvements in R^2 across all possible orderings of covariates. More formally, consider the setting where we have a total of p covariates $x_1, \dots, x_p$ that enter the model in order $r = (r_1, \dots, r_p)$. Let $S_k(r)$ denote the set of variables that enter the model before variable x_k in the order r . Then the sequential improvement in R^2 that can be attributed to x_k for the variable ordering r can be calculated as follows:

$$\text{seq}R^2(\{x_k\}|S_k(r)) = R^2(\{x_k\} \cup S_k(r)) - R^2(S_k(r))$$

The LMG approach generalizes this intuition by averaging over all possible covariate permutations (more than 40,000 in our case). The relative importance of a covariate x_k is given by the sequential increase in R^2 after adding this covariate, averaged over all possible

⁹We follow the notation, terminology, and derivation by Grömping (2006) throughout this section.

variable orderings.

$$\text{LMG}(x_k) = \frac{1}{p!} \sum_r \text{seq} R^2(\{x_k\}|r)$$

To align this analysis with our difference-in-differences specifications, we use the change in average annual housing construction per-capita before and after 1971 as the outcome variable. Our predictor of interest is housing petitions, which we benchmark against eight other covariates that capture objective indicators of housing need and strategic considerations that may drive government spending in autocracies. We measure demographic need for housing on the basis of (1) population size, (2) births, and (3) deaths. We measure the supply of housing prior to the 1971 construction program using (4) the total stock of housing in 1945. Next, we consider the possibility that the regime targeted its construction efforts to those regions in which the quality of the existing housing stock was lowest. Following this logic, we (5) construct a composite measure of housing quality using information on i) the share of flats with modern heating, ii) the share of flats with a kitchen, iii) the share of flats with in-unit toilets, and iv) the average age of all flats. This measure was created using Principal Component Analysis. Beyond objective measures of housing demand and supply, strategic concerns about regime survival may drive housing construction in authoritarian regimes. Autocratic regimes may, for example, redistribute more towards cities, which pose a greater threat to regime stability (Wallace 2013). To measure whether the GDR preferentially allocated new housing construction to strategically and economically vital regions, we include (6) urbanization (population density) and (7) a county-level binary indicator for the local presence of critical industries in the analysis.¹⁰ Finally, we include (8) the average annual

¹⁰We identified all counties with at least one “critical industry”: state-owned enterprises (“combines”) in either of three sectors: mechanical engineering, electrical engineering, or the chemical industry. The data come from an internal industry census (BArch DE 2/30554.) This measure identifies all places that the GDR deemed important for they hosted the industries that produced the heavy machinery, electronics, and chemical products that were central in the GDR’s export-driven revenue strategy (Boot 1987).

housing construction prior to 1971 as a regressor to adjust for temporal autocorrelation.

Figure 3: Relative explanatory power by predictor

Note: The Figure visualizes the LMG R^2 decomposition into individual contributions by each covariate. For a given covariate, the LMG metric is defined as the average increase in R^2 after the inclusion of the variable into the model, averaged over all possible covariate permutations. We provide a more formal discussion of the metric and definitions for each covariate in section 6.3.

Figure 3 presents the results. We find that objective indicators of the housing supply – the stock of housing in 1945 as well as public housing construction between 1945 and 1971 – are the strongest predictors of change in construction after 1971. Next, in line with prior research on the ‘urban bias’ of autocratic regimes (Wallace 2013), we find that the GDR’s housing program targeted cities, which arguably posed a greater threat to overthrow the regime.¹¹ This is consistent with the argument that the regime sought to placate urban residents through the allocation of public spending – i.e., the construction of new flats.

Most importantly, we observe that citizen demands expressed through petitions are a substantively important predictor of housing construction. Aside from population density

¹¹The coefficient for our measure of urbanization – population density – is positive and significantly different from zero at $\alpha = 0.05$.

and the pre-existing housing supply, petitions have the highest relative explanatory power of all covariates we assess. Crucially, petitions are more predictive of housing construction than objective indicators of housing need (population size, births, deaths). These findings suggest that petitions were a central determinant of government activity in the GDR. While falling short of democratic accountability, petition systems are not merely window dressing for autocratic regimes, but can instead induce a substantive government response.

7 Discussion

Can petitions in autocracies yield tangible improvements in citizens' livelihoods? In this paper, we present a new panel on housing-related petitions as well as comprehensive data on housing construction in the former German Democratic Republic. Using a difference-in-differences design, we show that the government responds to petitions by increasing housing construction. Further, we employ a variance decomposition approach and show that petitions are a substantively meaningful predictor of housing construction. Taken together, our results highlight (i) that petitions produce tangible government responses and (ii) that the substantive importance of petitions is sizable, particularly when compared to objective demographic indicators and housing quality.

These results can inform our understanding of other authoritarian regimes more broadly. The GDR's institutions and explicit backing from the Soviet Union came with a low need to respond to citizen demands in a substantive way. The fact that we find evidence of tangible responsiveness even in such a setting suggests that other, more competitive autocracies may face similar if not stronger incentives to address citizen concerns. Our paper identifies one channel through which such responsiveness can occur: petitions. Similar systems exist in numerous other autocratic regimes, ranging from Bulgaria ([Dimitrov 2014b](#)) to China ([Distelhorst and Hou 2017](#)) to Iraq ([Walter 2018](#)). These petition systems offer a variety of autocrats ways to link policy-making or service delivery to citizen demands. As long as

autocratic governments use these channels to learn about the public mood (Dimitrov 2014b; Tsai and Xu 2018), we expect autocrats to resolve at least some issues expressed in them. It is unlikely that citizens will continue expressing their demands openly if the chance of success is zero.

Yet, the precise extent and nature of responsiveness may depend on several factors that warrant further investigation. One such factor is state capacity. The GDR’s extensive bureaucracy may have made it easier for the regime to use service delivery strategically. While the existence of petitions in regimes with weaker state capacity (e.g., Iraq, Walter 2018) suggests that state capacity is not a precondition for such systems, it is possible that strong governments may be more effective at responding to citizen demands. A second factor is the size of the regime’s winning coalition (Bueno de Mesquita et al. 2003). Membership in the GDR’s ruling party exceeded two million (Malycha and Winters 2009). While it is unclear whether party membership reflected true regime support or opportunistic considerations, it is possible that larger winning coalitions make the provision of public goods and services more likely (Bueno de Mesquita et al. 2003). Lastly, our focus is on housing provision because the provision of public housing was one of the most important public policy challenges. Petitions in other regimes might prioritize different goods or services.

Our results have several implications for scholarship on autocracies. Expanding on prior research on autocratic responsiveness, we offer an analysis of the long-term consequences of responsiveness. We provide evidence of almost two decades of social policymaking in the GDR and show that responsiveness can yield lasting material improvements in the livelihoods of citizens, even in contexts that give citizens little direct influence in politics. This finding calls for a re-appraisal of conventional models of authoritarian governance. These models typically link resource allocation decisions to the preferences of the elite members of the regime’s “winning coalition” (Bueno de Mesquita et al. 2003) while discounting the influence that ordinary citizens can have on the allocation of resources. Our findings thus identify a promising new research agenda that explores the consequences of responsiveness for citizens’

material well-being across regime types.

Authoritarian responsiveness points to an alternative way for dictators to stay in power: delivering on the demands of their citizens. This implies that autocratic survival is not solely dependent on the management of opposition, but also on the dictator’s ability to meet their citizens’ expectations. One of the main reasons for the longevity of the East German socialist regime was its ability to deliver a good standard of living to its citizens (Dale 2005). A key precondition for such a survival strategy is competence (Huntington 1968; Lueders 2022). We describe an autocracy whose centralized bureaucracy was very capable of identifying areas with high housing demand, and of delivering on these demands.

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A Supporting information (Online Only)

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A.1 Housing construction trends

Figure A.1: Annual housing construction in the GDR, 1960–1989

Note: The figure shows the total number of flats constructed annually by the GDR government between 1960 and 1989. The dotted vertical line indicates the start of the housing program.

Figure A.2: Cumulative housing construction after 1971

Note: The figure shows the cumulative per capita number of flats constructed by the GDR government after 1971. We show cumulative trends separately for counties with above- and below-median rates of housing petitions. The dotted vertical lines indicate a total of 50 and 75 flats per capita, corresponding to the discussion in the results section.

Figure A.3: Trends in housing construction

Note: The figure shows trends in average flat construction per 1,000 capita, for counties with above-median per capita petitions prior to 1972, and for counties with below-median per capita petitions prior to 1972. The pre-1972 petition rates are based on residualized average petitions per capita in between year y and 1971, where y varies by row. Each column corresponds to a different way of splitting the sample into counties with a greater or smaller rate of petitions. We average flat construction over two-year periods (see x-axis). The dotted vertical line indicates the start of the housing program. Our measure of housing construction only considers housing constructed by the state, and excludes private housing.

Figure A.4: Spatial distribution of housing petitions submitted between 1963–1971

(a) The figure shows the mean of annual housing-related petitions submitted to the state council per 1,000 inhabitants, averaged over the period 1963–1971.

(b) The figure shows the our main treatment variable, a binary indicator for whether a given county submitted a below- or above-median amount of petitions between 1963–1971. We note that it is not directly based on the left-hand side figure, since we residualize petitions before conducting the median split, as outlined in section 5.

Figure A.5: Spatial distribution of housing construction after 1971

(a) Per-capita number of flats constructed between 1972 and 1990, by county. For a description of the data, see section 3.2 in the manuscript. Our measure of housing construction only considers housing constructed by the state.

(b) Percentage increase in flat construction, comparing flats constructed between 1945 and 1971 (prior to housing program) and 1972 and 1990 (during the housing program). Our measure of housing construction only considers housing constructed by the state.

Figure A.6: Bivariate correlation between housing petitions and construction over time

Note: The figure shows the bivariate correlation between housing petitions and the number of flats constructed at the county level. Each panel also shows the bivariate pearson correlation coefficient and a linear regression fit line.

A.2 Distinction between protests and petitions

Figure A.7: Bivariate correlation between 1953 protest and housing petitions

Note: The figure shows the bivariate correlation between housing petitions and 1953 protests at the county level. The x-axis shows the share of municipalities in a given county that experienced protests in 1953. As [Crabtree, Darmofal and Kern \(2015\)](#), we obtained this data from [Kowalczyk \(2003\)](#). Each observation on the plot corresponds to one county-year. We excluded city counties (e.g. Berlin) that only contain a single municipality.

A.3 Descriptive statistics

Table A.1: Summary statistics

Variable	Mean	Median	SD	Min	Max	N	Description
Population in 1,000s	78.32	61.08	91.42	19.04	1083.86	218	County population in 1969
Stock of flats per 1,000 capita	262.22	260.79	72.42	21.69	651.62	216	Number of flats per 1,000 inhabitants prior to the housing program in 1971.
Increase in flats per 1,000 capita, 1972-1989 (absolute)	69.76	55.13	62.02	0.00	458.53	219	Absolute increase in flats constructed by the government between 1972–1989 compared to 1945–1971, scaled by county population.
Increase in flats per 1,000 capita, 1972-1989 (rel. to baseline)	141.12	134.38	64.54	22.82	556.41	216	Relative increase in flats constructed by the government between 1972–1989 compared to 1945–1971, in percent.
Avg. petitions per 1,000 capita, 1963-1971	1.54	1.49	0.41	0.59	3.03	217	Mean of annual housing-related petitions to the state council, averaged over the period 1963–1971.
Avg. petitions per 1,000 capita, 1963-1971 (residualized)	0.01	-0.03	0.38	-0.94	1.60	215	The same as the above variable, after residualizing (see section 5 for more information).

Notes: The table presents summary statistics for housing construction, petitions, and the moderators we discuss. For more summary statistics on trends in housing construction, see also figures 1, A.2, A.1 and A.3. Our measure of housing construction only considers housing constructed by the state, and excludes private housing. There were a total of 219 counties in the GDR. In cases where the number of observations is lower, this is due to missing data.

A.3.1 Predictors of residualized petition treatment

Figure A.8: Predictors of residualized petitions

Note: The figure shows coefficient estimates from a cross-sectional OLS model. The outcome variable is our main treatment variable, i.e. the residualized, dichotimized measure of housing petitions (see section 5). We regress this variable on a variety of covariates as indicated on the y-axis. All covariates were standardized prior to the analysis. Horizontal bars indicate 95% confidence intervals.

A.4 Simulating the effects of missing data

As stated in the paper, we do not have data on petitions in the years 1967–1970. We now implement a simulation procedure to estimate whether this missing data issue would lead to measurement error in our main explanatory variable, the average of petitions for all available years between 1963–1971. Specifically, we repeat the following procedure 1,000 times: we start out with our full dataset on petitions for 16 years between 1963 and 1989. We calculate the mean level of petitions per capita in each county. We then repeat this calculation but now randomly remove data for 4 out of the 16 years in our sample. We again calculate the county-level mean based on data for 12 years. Finally, we calculate the correlation between the data based on 12 vs. 16 years. The distribution of the bivariate correlation coefficients resulting from this analysis is shown in the histogram in figure A.9.

Figure A.9: Simulation for missing data on petitions

Note: The figure shows the results from a simulation where we investigate to what extent missing data on petitions for the years 1967 – 1970 is an issue for our analysis. See above for a detailed description of the procedure.

A.5 Alternative treatment definitions

In this section, we present results using alternative definitions of the petition treatment. We use a total of six definitions, which are based on two ways of defining the petition time frame, and three different ways to code the treatment. For the time frame, we use either the average (residualized) number of petitions per capita over the period of 1963–1971, or the just the average residualized per capita petitions submitted in 1971. For the treatment coding, we use either the raw version, i.e. a continuous measure of petitions, a binary version based on a mean split, and a binary version based on a median split. The main results presented in the paper are based on the 1963–1971 time frame using a median split.

Figure A.10: Main results for alternative treatment definitions

Note: Estimates of the effect of pre-1972 petitions on housing construction. The specifications are the same as presented in table 2, but using alternative treatment definitions. See also section 5 for more information on the specification. The DV is annual flat construction per 1,000 capita, averaged over two-year periods. The treatment varies according to the number of years that we use to measure petitions and whether the treatment is binary or not. We use residualized petitions to ensure that petitions do not simply measure the quality of the housing stock. The sample includes all years between 1960 and 1989. Standard errors are clustered by county.

Figure A.11: Leads and lags results for alternative treatment definitions

Note: Leads and lags estimates of the effect of pre-1972 petitions on housing construction. See section 5 for more information on the specification. The DV is annual flat construction per 1,000 capita, averaged over two-year periods. The treatment varies according to the number of years that we use to measure petitions and whether the treatment is binary or not. We use residualized petitions to ensure that petitions do not simply measure the quality of the housing stock. The sample includes all years between 1960 and 1989. Coefficients are differences relative to the last pre-treatment period, [1970, 1971]. Standard errors are clustered by county.

A.6 Dropping districts one-by-one

In this additional analysis, we re-estimate the main model fifteen times, where each specification uses a sample that excludes one of the fifteen GDR administrative districts, the administrative unit between the country and counties. We do this for three ways of estimating the main model, which are indicated on the right-hand side labels of figure A.12.

Figure A.12: Main results, excluding each administrative district one-by-one

Note: The figure shows results from successively excluding each of the 15 administrative districts from the main specification. The specifications used in each successive panels correspond to models 1, 2, and 3 in table 2.

A.7 Alternative ways to impute construction years

As described in section 3.2, our data does not have information on construction years for buildings built prior to 1933. For the main specifications in the paper, we impute 1910 as the year of construction. We now show results from the main specifications (see table 2), using alternative imputed construction years. We impute the following years: 1890, 1900, 1910, 1920, as well as 1932, which is the upper bound for the construction years. We present the results below.

Figure A.13: Main results, using different years to impute missing construction years

Note: The figure shows results from using different years to impute construction years for buildings built prior to 1933. Column are different model specifications, while row correspond to different treatment definitions. The y-axis is is the year we impute. The main results are in the paper are based on using 1910 as the imputed construction year.

A.8 Results using annual data

As discussed in the paper, our main results derive from a panel where annual construction is averaged over two-year periods. The following tables contain the same specifications as presented in table 2, using annual data instead of data aggregated to two-year periods.

Table A.2: Effect of petitions on flat construction, annual data

	DV: annual flat construction, per 1,000 capita					
	(1)	(2)	(3)	(4)	(5)	(6)
Petitions * post 1971	0.920*** (0.294)	0.961*** (0.303)	1.101*** (0.325)	0.855*** (0.288)	0.895*** (0.298)	1.031*** (0.320)
County FE	No	Yes	Yes	No	Yes	Yes
Period FE	No	Yes	No	No	Yes	No
Period * district FE	No	No	Yes	No	No	Yes
Sample	Full	Full	Full	95%	95%	95%
DV mean	3.761	3.761	3.761	3.743	3.743	3.743
DV SD	4.372	4.372	4.372	4.358	4.358	4.358
R ²	0.016	0.497	0.527	0.015	0.498	0.528
N	6,109	6,109	6,109	6,080	6,080	6,080

Notes: The table contains results from six models, where the DV is annual flat construction per 1,000 capita. Counties are defined as treated if the number of residualized petitions over the period of 1963–1971 in a given county is greater than the median number of residualized petitions in the same time period. We use residualized petitions to ensure that petitions do not simply measure the quality of the housing stock. Models without county and period fixed effects contain lower order terms, i.e. an indicator for the period after 1971 and the treatment indicator. Models where the sample is marked as ‘95%’ excludes counties that were in the top 5% of cumulative housing construction after 1971. The sample includes all years between 1960 and 1989. Standard errors are clustered by county. ***p < .01; **p < .05; *p < .1

A.9 Placebo results using petitions not related to housing

Table A.3: Effect of non-housing petitions on flat construction

	DV: annual flat construction, per 1,000 capita					
	(1)	(2)	(3)	(4)	(5)	(6)
Non-housing petitions * post 1971	0.438 (0.310)	0.465 (0.318)	0.172 (0.313)	0.344 (0.301)	0.370 (0.310)	0.128 (0.317)
County FE	No	Yes	Yes	No	Yes	Yes
Period FE	No	Yes	No	No	Yes	No
Period * district FE	No	No	Yes	No	No	Yes
Sample	Full	Full	Full	95%	95%	95%
DV mean	3.754	3.754	3.754	3.71	3.71	3.71
DV SD	4.062	4.062	4.062	4.034	4.034	4.034
R ²	0.012	0.581	0.608	0.013	0.59	0.618
N	3,217	3,217	3,217	3,068	3,068	3,068

Notes: The table contains results from six models, where the DV is annual flat construction per 1,000 capita, averaged over two-year periods. Counties are defined as treated if the number of non-housing petitions over the period of 1963–1971 in a given county is greater than the median number of petitions in the same time period. Models without county and period fixed effects contain lower order terms, i.e. an indicator for the period after 1971 and the treatment indicator. Models where the sample is marked as ‘95%’ excludes counties that were in the top 5% of cumulative housing construction after 1971. The sample includes all years between 1960 and 1989. Our measure of housing construction only considers housing constructed by the state. Standard errors are clustered by county. ***p < .01; **p < .05; *p < .1