The Social Costs of Patronage Ties: Lessons from the 2008 Sichuan Earthquake

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Abstract

This paper examines the social influence of patronage ties — the political connections within government bureaucracies. I provide empirical evidence that these connections create social vulnerabilities that magnify the impact of negative shocks. The study is situated in the context of the devastating 2008 Sichuan earthquake, which offers an opportunity to bring to light vulnerabilities that remain invisible in most states of the world. Using an original dataset that covers 1,065 buildings in the quake-affected area, I find that buildings constructed when the county officials had the same hometown as their prefectural leaders are 13 percentage points (83 percent) more likely to collapse relative to the no-connection benchmark. I find suggestive evidence that the poorer building quality likely reflects the lack of building code enforcement by connected officials. Aggregated damage statistics at the county level suggest that one additional year of having a connected official is associated with an 8 percent increase in mortality and a 3 percent increase in direct economic loss from the earthquake. These findings add to the long-standing debate whether patronage (and corruption more broadly) is socially detrimental by highlighting a massive yet latent social cost resulting from the patron-client relationships between government officials.

Keywords: Bureaucracy; Corruption; Social Tie; Vulnerability; Natural Disaster; China

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1 Introduction

There exists a long-standing debate on the social influence of patronage ties — the political connections within bureaucratic organizations. [1] On the one hand, these informal connections can mitigate agency problems within the organization by facilitating the use of "soft information", which can improve bureaucratic performance. [2] On the other hand, patronage networks may encourage favoritism that undermines accountability and entrenches rent-seeking behaviors. [3] Empirical evaluation of the social effect of patronage is challenging because, by definition, we do not directly observe the favor-trading or soft information transfers that are enabled by these ties. Furthermore, linking patronage ties to social outcomes is complicated by the fact that the consequences may have latent impacts that, while emerging only much later, can lead to very high social costs in some states of the world. That is, patronage (and misgovernance more broadly) may create social vulnerabilities, with the effects appearing only as a result of much later exogenous shocks.

This paper aims to empirically identify social vulnerabilities — reflecting a massive yet latent social cost — resulting from patronage networks. I overcome the empirical challenges by examining damages by natural disasters, which offers an opportunity to bring to light vulnerabilities that are undetectable in most states of the world. [4] The study is situated in the context of the 2008 Sichuan earthquake, one of the most devastating catastrophes in modern history. By associating building-level variation in earthquake damage with the political connections of past county officials when the buildings were constructed, I provide evidence that personal connections within government bureaucracies create social vulnerabilities that lead to greater damage from negative shocks.

The earthquake occurred in Sichuan, China on May 12, 2008, killing a total of 87,587 people, making it the third deadliest earthquake of the 21st century, and the 18th of all time. [5] Most of the deaths resulted from the collapse of buildings. [6] In the earthquake's aftermath,

[1] These informal connections are commonly observed in governments and other bureaucratic organizations worldwide (Grindle, 2012). Recent empirical studies have found that such ties play a central role in the allocation of public offices and other resources in various settings (see, for example, Shih (2012), Jia et al. (2015), Xu (2018), Barbosa and Ferreira (2019), Colonnelli et al. (2020), and Jiang and Zhang (2020)). Therefore, understanding the social influence of practices associated with these ties are particularly pertinent to the promotion of better governance and social welfare.

[2] For recent examples, see Dewan and Squintani (2016) for a theoretical account, and Jiang (2018), Toral (2019), and Voth and Xu (2019) for empirical accounts of the potential benefits.

[3] See, for example, Stokes (2005).

[4] As Warren Buffett once said, *"It's only when the tide goes out that you learn who's been swimming naked."*

[5] Source: U.S. Geological Survey

[6] For example, according to official records, 3004 out of the 3091 deaths in Dujiangyan City were caused by building collapse.

there appeared many anecdotal accounts of substandard construction that possibly amplified the death rate. One salient example is the observably unequal damages among identically located buildings. A photo published in *New York Times* shows a primary school being completely destroyed whereas two buildings standing directly next to the school survived fairly well (Yardley, 2008). Post-earthquake reconnaissance surveys also reveal that most of the buildings that collapsed featured a lack of reinforcing materials in their columns and had very little seismic resistance, ductility, or redundancy (Miyamoto and Gilani, 2008; He et al., 2011a,b). The state was involved in the construction of most of these poorly constructed buildings; therefore, their fragility is often attributed — either explicitly or implicitly — to the disregard of the relevant building codes by local governments. [7] Yet, there is no systematic evidence to substantiate this link. [8]

The unequal damage to buildings in the earthquake offers a unique opportunity to bring to light the latent vulnerabilities resulting from patronage ties. The effects are ambiguous ex-ante. These ties may reduce social vulnerability — thus minimizing the damage — if the transfer of soft information provides local officials with stronger incentives to comply. Alternatively, they may be detrimental if favoritism or collusion protects officials from being investigated for misgovernance or corruption.

To investigate this question empirically, I construct an original dataset at the building level, with which I am able to associate vulnerability (revealed by damage levels) with past patronage networks based on a building's year of construction. The sample consists of 1,065 buildings in the quake-affected area, constructed between 1978 and 2007. The types of buildings include schools, hospitals, government headquarters, manufacturing plants, and other public organizations. [9] For each building, I first observe its damage grade in the 2008 earthquake. Such grades are classified according to a 5-point scale (where 1 stands for intact and

[7] There has been much media coverage of the "tofu dregs" buildings following the earthquake, with a special emphasis on school buildings. The reports uncovered a pattern of corner-cutting and dubious laxity about quality control in the construction process. It was even admitted by a government official, "Its structure is not completely sound or its materials are not very strong ... weve built school buildings relatively fast, so some construction problems might exist." See Yuan (2008),Wong (2008), and Chen (2008) for details.

[8] Despite the widespread anecdotes, it is extremely difficult to pin down the role of local governance in the earthquake. The detailed information on earthquake damage is limited and lacks appropriate counterfactuals for causal inference. Malfeasant behaviors that took place far back in the past are even harder to track and identify, and whatever is exposed to the public can be highly selective. After all, the government officially declared that the damage was mainly due to the "unusually severe extent" of the earthquake (see Caixin (2009) for details).

[9] The sample is, admittedly, not guaranteed to be representative of all the buildings in the quake area. Most of the sampled buildings are public projects with substantial state involvement; I do not observe the majority of the residential or commercial buildings, however. This limitation, however, should not undermine the essence of my study, as public buildings have been identified as more vulnerable and dangerous in an earthquake (Miyamoto and Gilani, 2008; Zhang and Jin, 2008) and, therefore, are of particular interest to the study

5 stands for fully collapsed). I then identify, from archival sources, the incumbent county officials during the year in which the building was constructed. [10] I measure patronage ties at the county level by whether the county officials had the same hometown with their prefectural leaders — or "hometown ties", a traditional and prevalent means of favor exchange in China (see, for example, Fisman et al. (2017)). The data I collected also contain information on building characteristics (such as size, height, and usage), geographical features (seismic intensity and terrain ruggedness), and individual profiles (such as age and education) of county officials.

To estimate the causal effect of patronage ties on the earthquake damage to buildings, I employ an identification strategy that is in a similar spirit to a generalization of the difference-in-differences framework. Specifically, I compare buildings constructed under the authority of connected versus unconnected county officials to prefectural leaders. The design exploits two sources of variation. First, buildings located within the same county (and therefore, experienced similar seismic intensity) differ in their years of construction by which connections are defined. Second, for buildings constructed during the same year (so that they are in the same cohort), there is spatial variation in patronage ties. The identification assumption states that in the absence of connection, the difference between buildings constructed in connected and unconnected counties should be constant over time.

The estimated results indicate that patronage ties have played a significant role in creating social vulnerability: buildings constructed when the county officials had connections are expected to receive more severe damages during the earthquake. In particular, the probability of partial or full collapse increases by 13 percentage points (or 83 percent) for buildings constructed under the authority of connected officials relative to the unconnected benchmark. I evaluate my identifying assumption using event-study type analyses on the effect of gaining and losing connections. In so doing, I find no differential effects for buildings constructed before the county gained its connection, and the difference diminishes after the connection terminates. I consider some of the most prominent mechanisms that might bias my estimates — the selection in damage reporting, the economic condition in the year of construction, and unobserved features associated with homes of origin — and find very limited support for any of these possibilities.

I offer some suggestive evidence that poorer building quality likely indicates the lack of building code enforcement on the part of connected officials. First, I find that hometown ties matter primarily for buildings located in moderately affected regions where seismic intensity is equivalent to the resistance requirements. These buildings should have survived the quake, but suffered greater damage than would have been expected, which is often the

[10] I consider the two leading officials in each county: the party secretary and the governor.

pattern indicative of corner-cutting and code noncompliance. Second, the detrimental effects can be largely attributed to officials who are in direct charge of public projects (i.e., the governors) rather than to those who maintain more political authority (i.e., the party secretaries). Third, buildings with heavy state-involvement — schools and hospitals, in particular — are especially susceptible to the influence of connected officials; yet government headquarters in which officials themselves stay appear relatively immune. Most strikingly, I find that the involvement of private capital — through investment or donation — mitigates or even offsets the negative consequences of having a county official with patronage ties. Although none of these pieces of evidence is conclusive on its own, they collectively present a pattern suggestive of patronage ties undermining the accountability of connected officials and, thereby, facilitating corruption by these officials (or their agencies).

I supplement the building-level findings with an analysis of county-level aggregates that allow me to examine a set of broader and economically relevant outcomes. Using a dataset covering all 181 counties in Sichuan Province, I document a positive cross-county correlation between earthquake losses and the period of the connectedness of county officials: one additional year of having a politically connected official is associated with an 8 percent increase in mortality and a 3 percent increase in direct economic loss from the earthquake. This pattern is observed across all sectors except for government agencies. These results, though not necessarily causal, help to alleviate concerns about the external validity of the building-level analysis.

My work contributes most directly to the study of patronage ties within bureaucratic organizations. The theoretical foundations were laid by Aghion and Tirole (1997) and Prendergast and Topel (1996), who consider the conditions under which favoritism prevails. Some recent empirical work has discovered the prevalence of favoritism associated with patronage networks (Barbosa and Ferreira, 2019; Colonnelli et al., 2020; Jia et al., 2015; Shih, 2012; Xu, 2018; Jiang and Zhang, 2020); yet these papers focus exclusively on the selection and allocation of positions (or resources), without a clear notion of social welfare implications. [11] One such attempt is Jia (2017), which finds that connected politicians seem to favor technologies that pollute but enhance economic growth. By focusing on earthquake damages plausibly due to corner-cutting, I emphasize the potential role of bureaucratic collusion rather than promotion incentives for multi-task agents.

[11] Although some of these papers also present evidence that the connected officials tend to be incompetent or exert less effort for the principal, it does not necessarily imply detrimental social outcomes. For example, in a very well-identified study on how patronage affects the promotion and incentives of governors within the Colonial Office of the British Empire, Xu (2018) provides convincing evidence that connected colonial governors generate less revenue for the British Empire; yet it is less clear whether lower revenue generation is good or bad for the colonized people.

More broadly, this paper contributes in several ways to the growing literature on the consequences and alleviation of corruption. In contrast to the extensive literature that characterizes the efficiency loss from misallocation and distortion (see Akcigit et al. (2018) and Cingano and Pinotti (2013) for recent examples and Olken and Pande (2012) for a review of earlier work), my work highlights a more direct and salient social cost on a substantial scale; it throws into sharp relief the debate whether corruption is socially detrimental. In particular, I focus on a setting in which the actions — and in most states of the world, their consequences — are hidden from the public or even a central monitor; my findings offer a glimpse of the latent danger of corruption in terms of creating vulnerabilities that lead to very high social costs in some states of the world. In a similar vein, Fisman and Wang (2015) and Jia and Nie (2017) study the link between rent-seeking by firms and workplace fatalities. Whereas these prior studies look at firm-government connections, I emphasize the detrimental effects of collusion *within* the bureaucracy and, thus, speak also to a distinct literature on corruption in bureaucratic hierarchies (see, e.g., Charron et al. (2017) and Rose-Ackerman and Palifka (2016) for notable examples from political science). While I focus on the physical loss from a natural disaster as a particularly striking example, the notion of vulnerability and its association with corruption is likely applicable to other realms in the economy. [12] Additionally, the existing literature generally emphasizes the roles of electoral accountability and government auditing in fighting corruption (see Bobonis et al. (2016) and Avis et al. (2018) for recent examples); my results suggest that private participation may also be useful in alleviating corruption in certain public projects, especially in a setting in which a formal election is absent and the government audits themselves might be subject to corruption (see Chu et al. (2020) for details).

This study represents an application of political economy approaches to the increasingly interdisciplinary research in hazards and disasters. [13] The natural scientists have increasingly recognized that disasters are not merely acts of God, but arise from the interplay between naturally-occurring hazards and a vulnerability induced by socio-economic and institutional conditions. Despite the many calls to take institutional factors more seriously (see, e.g., O'Keefe et al. (1976) for the initial notion and Adger et al. (2005) and Eakin et al. (2017) for recent calls), the core hypothesis that institutional failures result in greater damage from natural disasters has gone largely untested (exceptions include Meng et al. (2015) and Kung

[12] One such example is shadow banking in the financial system. In China, at least four top-level regulators and nine senior banking executives have been under investigation for providing illicit financial services (Wu and Cheng, 2018). In the US, the collusion between banks and regulators has also been blamed for the oversight failures that amplified the financial crisis (Kaufmann, 2009).

[13] see Mcnutt (2015) for an editorial call for forming a disaster science community from a range of natural and social science disciplines.

and Chen (2011), which look at institutional failures and famine severity). Corruption has often been proposed as a potential force that magnifies the impact of natural disasters; until now, however, there is no formal evidence for this mechanism other than cross-country correlations between corruption perception and disaster deaths (see Kahn (2005), Escaleras et al. (2007) and Ambraseys and Bilham (2011)). To my knowledge, by exploiting building-level variation during a deadly earthquake, I provide the first causal evidence that corruption makes a society vulnerable to natural hazards. While I focus on one single earthquake in China, this scenario is likely representative of the role that corruption may play in other societies given the abundant anecdotal reports from across the globe (See, e.g., Kinzer (1999) for Turkey, Pejhan (2003) for Iran, Lin (2017) for Mexico and Scaglia (2010) for Italy).

The remainder of this paper is organized as follows. Section 2 introduces the geographical, institutional, and cultural backgrounds of the 2008 Sichuan earthquake, along with the anecdotal accounts of the shoddy buildings. Section 3 describes the sources and processing of the data and discusses their potential limitations. The building-level analysis of hometown ties and building damage is presented and discussed in Section 4, followed by the aggregate county-level analysis in Section 5. Section 6 concludes.

2 Background

2.1 Earthquake Hazards and Building Construction in China

China is one of the countries most prone to earthquakes in the world. It is located between the Pacific Rim seismic belt and the Eurasian seismic belt — the world's two largest earthquake focus areas. There have been 361 significant earthquakes in China since 1900, more than any other country and accounting for 10 percent of all global earthquakes. [14] Sichuan Province is particularly prone to earthquakes. Several large-scale strike-slip faults have developed throughout the area due to the collision of the Indian Plate with the Eurasian Plate and the resultant formation of the Qinghai-Tibetan Plateau (Xing and Xu, 2011). More than 400 earthquakes have been recorded in the history of Sichuan (Xie et al., 1983) and 58 significant ones since 1900.

The significant earthquake risk in China highlights the need for strong and effective building codes to ensure safety. The first edition of the national codes was promulgated in

[14] Calculated by the author using data from the Global Significant Earthquake Database. The database keeps records of all destructive earthquakes that meet at least one of the following criteria: moderate damage (approximately $1 million or more), 10 or more deaths, Magnitude 7.5 or greater, Modified Mercalli Intensity X or greater, or the earthquake generated a tsunami. See National Geophysical Data Center for details.

1974 and has been amended subsequently in 1978, 1989, 2001 and 2010 (Li et al., 2012). [15] The codes require that buildings should "[have] no damage under minor earthquakes, [be] repairable under moderate earthquakes, and [suffer] no collapse under severe earthquakes". [16] The specifications vary across the country, depending on the estimated earthquake hazards. Most of the regions in Sichuan Province are in the high-intensity zones in which buildings compliant with the codes should sustain (no collapse) at a local seismic intensity scale of VIII or IX according to the China Seismic Intensity Scale (Gao and Shi, 1992). [17] Public buildings such as schools and hospitals are required to survive even stronger earthquakes than this baseline requirement (National Codes of P.R.C., 2004).

Unfortunately, the construction industry in China is highly prone to corruption, which likely undermines the effective enforcement of the building codes. [18] [19] Local government officials in charge of local compliance and enforcement activities are particularly susceptible to construction-related corruption. [20] Interviews and case studies have documented various suspicious practices in almost every phase of a construction project, including poor project selection, misappropriation of funds, misrepresented qualification licensing, fake tendering, illegal subcontracting, unauthorized alteration, corner-cutting, loose site supervision, price inflation, and unqualified certificates of completion (Shan et al., 2017, 2019; Le et al., 2014). Some of these activities would result in a waste or misallocation of resources; others could detrimentally compromise the integrity and safety of the buildings. Most of these misdeeds,

[15] The 1974 Code did not work well because it did not impose sufficient safety requirements. The requirements have been significantly upgraded in the 1978 Code in response to the 1976 Tangshan earthquake that killed over 200 thousand people.

[16] According to the official explanation, "minor" standards for earthquakes with a 63 percent probability of exceedance in 50 years (or a yearly probability of 2%); "moderate" standards for earthquakes with a 10 percent probability of exceedance in 50 years (0.2% yearly); "severe" standards for earthquakes with a 2–3 percent probability of exceedance in 50 years (0.1% yearly) (National Codes of P.R.C., 1989).

[17] Intensities according to the Chinese Seismic Intensity Scale (CSIS) may not be equivalent to the Modified Mercalli Intensity (MMI) measures used by the USGS. A CSIS intensity of VIII or IX is approximately equivalent to a MMI intensity of VII or VIII in terms of the underlying seismic ground motion parameters. See the national standard (GBT 17742-2008). Empirically, an earthquake of magnitude 6.5 would produce such intensity at its epicenter.

[18] According to legal documents, 54% of the 12,759 bribery cases prosecuted in China between 2014–2017 involved construction projects (Chen, 2017).

[19] The phenomenon is not unique to China though, however. In a survey in 19 leading emerging market countries, the business executives and business professionals rank public works contracts and construction as the most corrupt industry in their home countries. See Transparency International (2011).

[20] Yu et al. (2019) analyzed 83 complete recorded cases of construction-related corruption held by the Chinese National Bureau of Corruption Prevention, and found that 50% of the convictions were associated with government agencies in direct charge of planning, licensing, inspecting, and project acceptance. It is not even uncommon for highly positioned government leading officials who are distant from specific projects to be directly involved: they account for an additional 25% of the corruption cases, but extract the highest total monetary amounts according to Yu et al. (2019). A more comprehensive report reveals that 1,671 officials at the county level or above received disciplinary sanctions for construction-related misconduct between 2009 and 2011 (10% of all bureaucrats sanctioned), including 78 prefectural level ones (Zhou, 2011).

and often their consequences, are very difficult to detect owing to their covert nature and the complexity and diversity of construction techniques. Only on rare occasions — usually by accident — do they come to light. [21]

2.2 The 2008 Earthquake and the Shoddy Building Scandals

The earthquake originated at 2:28:04 pm local time (GMT+8) on May 12, 2008, with a moment magnitude of $7.9M_W$. The epicenter was Yingxiu Town, Wenchuan County (N30.99, E103.36), 80 kilometers northwest of Chengdu Municipality, the capital city of Sichuan Province. It caused a rupture of approximately 240 kilometers, striking northeast along the Yingxiu-Beichuan fracture with a maximum displacement of 9 meters. [22] The shape of the intensity distribution was that of a narrow ellipsoid around the fracture, and most of the regions in Sichuan Province experienced a strong shaking of intensity VI or above (MMI), as shown in Figure 1. Hundreds of aftershocks were recorded around this rupture within 72 hours of the initial shock, with the latest aftershock exceeding $6.0M_W$ occurring on August 5, 2008 (Chen and Booth, 2012).

The 2008 Sichuan earthquake was one of the most costly earthquakes in human history. It killed 87,587 people, injured another 374,643, and incurred a direct economic loss of 845 billion RMB (80% of Sichuan's 2007 GDP). The death toll was extraordinarily high compared with other earthquakes of similar magnitude. [23] Most of the deaths resulted from the destruction of buildings, and public buildings — despite their higher resistance requirements — are among the most vulnerable and deadly ones in the earthquake. [24] In a survey of 484 buildings, 57% of the schools are no longer usable or have to be removed immediately, more than twice as much as the share of residential houses (Ye and Lu, 2008). [25]

While the official announcement attributes the collapse of buildings to the severity of the earthquake, it is widely believed that suspected shoddy construction is also responsible. A scandal emerged with the salient observation that some buildings crumbled to dust —

[21]One such example is the toppling over of a nearly finished, newly constructed 13-story apartment complex in Shanghai in June 2009, caused by the improper construction methods that undermined the foundation (Canaves, 2009). Another recent example is the collapse of a coronavirus quarantine hotel in Fujian Province in March 2020, suspiciously due to construction and remodeling incompliance (Yu and Lily, 2020).

[22]The estimation of focal depth ranges between 10km and 20km, according to various sources.

[23]Figure 2 plots the fatalities of the twenty most notable earthquakes (in terms of magnitude) since 2000 against their magnitudes. The death toll in the 2008 Sichuan earthquake is much larger than the other earthquakes of similar magnitude, and only comparable to the two strongest earthquakes of magnitudes 9 and above.

[24]In Dujiangyan City, for example, 3,004 out of the 3,091 deaths were caused by building collapse, and a quarter of them were primary and middle school students. (Yuan, 2008).

[25]It is also remarkable that 87% of the government headquarters in their sample remain safe aside from some additional repair requirements.

sometimes brittly in less than 10 seconds with no shaking at all — while others directly adjoining them remained mostly intact, for which Yardley (2008) provides a notable example. The fragility of certain buildings sharply contrasted with the performance of a few excellent buildings standing at the very heart of the disaster zone. [26] Investigative news reports have discovered the use of low-grade cement and inadequate steel reinforcements in some crumbled buildings; the reports also probe into a few dubious practices in their construction process that may be associated — either directly or indirectly — with the local governments' ignoring about ensuring building safety. [27] Despite all these widespread anecdotes and speculations, there is no formal evidence that statistically examines the potential link between possible corruption and its associated damages.

2.3 Hometown Ties and Bureaucratic Collusion

Hometown ties have been recognized as one important means of favor exchange in Chinese society. Since as early as the sixteenth century, having a shared home town has served as a fertile ground for building up social networks, creating emotional bonds, and trading reciprocal favors with people from various occupational and social backgrounds (Moll-murata, 2008). A few recent studies also document the prevalence of favoritism via hometown ties in the business, political, and academic worlds (Shih, 2012; Jia et al., 2015; Fisman et al., 2017; Shen et al., 2019; Chu et al., 2020; Fisman et al., forthcoming). In particular, social networks based on homes of origin appear to have facilitated bureaucratic and business collusion. It is not uncommon for corrupt officials to cluster around certain native habitats; having been aware of this phenomenon, the Chinese government explicitly prohibited its officials from participating in any hometown-based associations. [28]

In the context of this study, the collusion between the prefecture and county officials may be associated with corruption in the construction industry in several ways. One prominent channel is that the collusion might undermine the accountability of local officials who are in direct charge of the construction projects; thus, the local officials would be more susceptible to duty-related malfeasance — either the direct misappropriation of public funds or additional favor exchanges with contractors. Alternatively, there are also anecdotal accounts that

[26] The two most prominent examples are *Bailu Town Central Primary School* and *Liu Han Hope Elementary School*, both located directly above the rupture surface. In the former case, a three-story school building was elevated three meters above the ground, but the main building stood firmly, and 1,046 students successfully evacuated the building. See Branigan (2008) and China Daily (2011) for details.

[27] For some notable examples, see Deng (2008), Yuan (2008), Ding and Zhu (2008), Chen et al. (2008), and Hu (2008).

[28] See, for example, Guo (2019) for a prominent example of collective corruption of high-ranking officials originated from Shanxi Province, and China Comment (2017) for a more localized case. For the government's ban on officials' participation in hometown associations, see Huang (2015).

suggest the possibility of corrupted prefecture officials colluding with their trusted subordinates to commit the offense. Therefore, it is likely that the collusion between bureaucratic officials could eventually affect the quality regarding the safety of construction projects despite the caveat that the characteristics of the contractors are not directly observed.

3 Data

I combine information from multiple sources to construct two datasets — one at the building level and the other at the county level. The building-level dataset contains 1,076 buildings from 37 counties in the heart of the earthquake zone; all of the sampled buildings are built between 1978 and 2007. [29] The county-level dataset covers all 181 counties in Sichuan Province. Both samples contain information on earthquake damages in 2008 and the political connections of county officials to their prefectural-level supervisors. In the building-level dataset, the officials' political connections to their prefectural-level supervisors via hometown ties are defined over the year during which the building was constructed; in the county-level dataset, I measure the cumulative connections for each county over the past 30 years before the earthquake (1978 – 2007).

3.1 Earthquake Damages

Building Level The building-level dataset is constructed by combining two collections of local gazetteers. The first is a collection of specialized *Books of Earthquake Relief [Kangzhen Jiuzai Zhi]* from which I obtain a list of buildings of which the damages are described. The second collection is the general *County Gazetteers [Xian Zhi]* from which I obtained the construction history of a second list of buildings. My sample consists of 1,076 buildings that have been jointly mentioned in these two sources so that both of their damages and construction records are observed.

The collection *Books of Earthquake Relief* is a series of specialized gazetteers officially compiled and published by each administration's *Office of Local Gazetteers [Difangzhi Bangongshi]* after the earthquake. The books are generally composed of three parts: the damages, the rescues, and the reconstruction efforts during and following the 2008 quake. The damage sections contain detailed descriptions and statistics of the damages caused by the earthquake; it is also common for them to mention the damages of individual build-

[29] I restrict the sample to buildings constructed during this period for two reasons. First, the local governance was substantially distorted during the Cultural Revolution (1966–1976); second, as summarized in Section 2, there were no strict building codes in China until 1978.

ings. [30] By the time of my study, 31 counties and 3 prefectures have subsequently published their *Books of Earthquake Relief* — from which I extracted a list of buildings located in 37 counties. [31]

The damages of the sampled buildings are encoded according to a 5-point scale following the official guidelines. [32] The definitions and indexes of the damage scales are summarized as follows: [33]

1. **Intact or slight damage:** Load-bearing components are intact or have minor (less than 5%) cracks; non-load-bearing components and attachments have various damages; safe to use with no or minor repairs.

2. **Moderate damage:** Load-bearing components have some major cracks; non-load-bearing components and attachments have visible damages that must be repaired before use.

3. **Severe damage:** Load-bearing components have many severe cracks and minor collapse; some non-load-bearing components and attachments fall apart and are no longer serviceable.

4. **Partial collapse:** Load-bearing components are significantly deteriorated and must be removed immediately.

[30] In most cases, the materials are compiled and presented by sectors and by towns. As a result, buildings recognizable within a town-sector's scope are most likely to be recorded. The representative types include schools, hospitals, government headquarters, some other public organizations (e.g., libraries, news outlets, postal offices, nursing homes), and a few prominent local factories. Individual buildings for residential or commercial purposes are rarely covered in the records.

[31] The prefecture's *Book of Earthquake Relief* covers materials from all its governing counties, which allows me to observe some additional counties that have yet to publish their own *Books of Earthquake Relief*.

[32] The national standard *GB/T18208.3-2000* categorizes building earthquake damages into five grades: "intact", "slight", "moderate", "severe" and "collapsed". Most of the buildings I observe are directly referred to according to these grades. There are, however, buildings that have been described according to other parallel standards (e.g., *JGJ125-99* that uses 4 grades to appraise dangerous buildings) or even elaborately. The damage of these buildings is manually encoded through a careful reading of the descriptions in accordance with the definitions of the standard grades. The work was conducted by a second person who only saw the list of descriptions without knowing the details of the buildings being described (e.g., which county the building is located in, or whether it has been linked to those in the other source).

[33] The indexes I employ here vary slightly from the standard recommendation in *GB/T18208.3-2000*. First, I group "intact" and "slight damage" into one single category because there is literally no "intact" buildings that enters the sample. Second, I split the standard "collapsed" into two categories to differentiate the fully collapsed buildings (esp. the notoriously shoddy ones such as those summarized in Section 2) whenever informed. These modifications allow me to exploit better the types of variations in this specific context in which the seismic intensities are extraordinarily strong and the average buildings are "severely" affected (see Figure 4 for the sample distribution). My results are robust to using an alternative index system that strictly follows the recommendation in the national standard (i.e., grouping all collapsed buildings into one single category).

5. **Full collapse:** The entire building has collapsed or fallen apart; it has flattened in seconds and crumbled to dust.

I obtained the construction records from the collection of the general *County Gazetteers* published by each county's *Office of Local Gazetteers* every few decades. Most counties in Sichuan Province have published two rounds of *County Gazetteers* since 1949. The first round was published between 1985 and 1989, covering materials starting from 1949 (and in some cases, from 1911) until the publication year; the second round renewed the coverage until the 2003–2007 period. [34] The materials are generally compiled and presented by town and by sector, and the prominent construction projects completed within the town-sector scope are often highlighted in the gazetteers. [35] This allowed me to observe a second list of buildings where the years of construction are stated precisely. [36] I also collect, whenever available, other building features such as their size, number of stories, structure and material, and funding source.

I manually compared the two lists of buildings by their documented names and locations and successfully identified 1,065 buildings that were jointly mentioned in both lists, including schools, hospitals, government headquarters, public organizations, and factories. This is, admittedly, not a representative sample of all buildings in the quake area; and the buildings that enter the sample are likely to be selective. I offer a detailed discussion of these limitations and their empirical interpretations later in Section 3.5.

County Level I obtained the county-level damages from *The Comprehensive Statistics on Damage Evaluation of the 2008 Sichuan Earthquake*. This statistical compendium provides systematic damage statistics for all 181 counties in Sichuan Province. It reports county-aggregates of physical and economic losses as well as sector breakdowns. I used optical character recognition techniques to extract the statistical tables from a digital version of the book and manually corrected the recognition errors.

[34]The fact that these gazetteers are published before the 2008 earthquake makes it relatively unlikely for the observed construction projects to be selected by their future damages. It is nevertheless possible for selection on the latent quality though. I defer the discussion of this possibility to section 3.5

[35]The building types likely to be recorded in these gazetteers are similar to those likely described in the *Books of Earthquake Relief*. This feature makes it feasible to identify a set of buildings that have been jointly mentioned in these two sources.

[36]For the small set of buildings of which the construction spent multiple years, I define its year of construction as the beginning of the project.

3.2 Hometown Ties

I defined political connections as the hometown ties (i.e., shared city of origin) between local officials and their prefectural superiors. [37] I constructed the list of county- and prefecture-level officials and their cities of origin are constructed from various sources, including county gazetteers, *Information on the Organizational History of the CCP in Sichuan Province [Zhongguo Gongchandang Sichuan Sheng Zuzhishi Ziliao]*, *Sichuan Year Book [Sichuan Nianjian]*, Chen et al. (2019) and the online biographies of these officials. I also collected their gender, year of birth, education and ethnicity whenever available.

For each county in a given year, I defined the county as having a connected official if one or both of its top officials (i.e., the county secretary and the governor) share the same city of origin with at least one of their superiors (i.e., the prefecture secretary and the mayor). [38] I also constructed an intensity measure using the aggregated number of ties of the county officials.

In the building-level analysis, I defined the connectedness of the county officials over the year in which the building was constructed. In the county-level analysis, I aggregated the connectedness of the county officials over 1978–2007. I also constructed an indicator denoting whether the county officials had hometown ties in 2008 to account for the impact of patronage ties during the quake and post-quake.

3.3 Other Variables

I constructed some additional variables to account for other factors that could determine the damage to a building from the earthquake, including a set of building characteristics, geographical features, individual profiles of the officials, and socio-economic conditions of the counties.

Building Features The first set of controls to consider are the characteristics of the buildings that may be relevant for their resistance. I collected these characteristics from the general *County Gazetteers* from which I obtained the list of building construction histories. The documents also mention, though occasionally, some basic characteristics of the buildings, such as size, number of stories, structure, materials used, and funding source. For such

[37] I focused the top two county officials, i.e., the county's party secretary and governor, and the top two prefecture officials, i.e., the prefecture's party secretary and mayor, in defining the political connections.

[38] For transition years in which multiple county secretaries or governors have been in position, I considered the connections of the ones who were in their positions for the longest time during the year. My results are robust to accounting for county officials who have been temporarily in position, and to the cumulative months that the county's officials have been connected.

buildings I observed these characteristics and included them in my analyses; for cases of unreported information, I created a set of indicators denoting the specific missing variables.

Geographical Features Another factor that plays a central role in determining earthquake damage is geography — in particular, local seismic intensity and terrain ruggedness. For seismic intensity, I used peak ground acceleration (PGA) — a standard parameter in seismology that measures local ground motion. [39] The PGA contour map of this earthquake comes from *ShakeMap* (U.S. Geological Survey, 2017). The index for terrain ruggedness is constructed for each 30×30 arc-seconds grid cell using the elevation data from GTOPO30 (U.S. Geological Survey, 1996), following the procedure described in Nunn and Puga (2012). For the building sample, I geocoded each building's location using Google Map API services to determine its local ground motion parameter and terrain ruggedness. For the county sample, I took the average of all lands within a county to calculate its overall intensity and ruggedness.

Individual Characteristics Whether county officials have patronage ties may be determined by their other profiles that are relevant for local governance. Therefore, I also collected the individual profiles of these county officials from their online biographies, including gender, year of birth, education, ethnicity, and the first year in their current positions. Since there are two county officials of interest, I constructed the following variables for a given county and year: an indicator denoting gender, the average age, the average years of education, an indicator of belonging to a minor ethnicity group, and the average number of years of tenure in their current positions. I also constructed a set of indicators denoting the missing values.

Economic and Demographic Conditions Finally, I included economic and demographic factors that might constrain the financial resources available and thus affect building resistance. I focused on per capita GDP and population measures. I obtained the data from the *China County Statistical Yearbook*. For the building-level analysis, I included the per capita GDP and population of the county in the year in which the building was constructed. [40] For the county-level analysis, I included these variables in 2007 to capture the local economic condition prior to the earthquake's occurrence.

[39] My empirical results are robust to using distance to epicenters as an alternative proxy for seismic intensity.

[40] Note that the economic and demographic constraints (that affect building resistance) themselves might be an outcome of existing patronage ties — a matter often referred to as "bad controls" (Pearl, 2009). In light of this possibility, I did not include these conditions in my baseline specification in Section 4.2. Instead, I evaluated them as a robustness check in Section 4.3.

3.4 Description and Visualization

At the Building Level I present the summary statistics of my building level dataset in Table 1. There are 1,065 matched buildings in the sample. The damages are encoded according to the 5-point scale, with the average being 2.84. Buildings constructed under the authority of a connected county official represents 16% of the sample. The mean building in the sample is located 162km from Yingxiu and 121km from Beichuan, the two focal points of the intensity distribution, and its height is four floors. At the time of construction, the county officials were 44 years old, had some college education, and had been in their positions for three years on average. One issue highlighted in the table is the prominence of missing values for many control variables, especially those of building features. To utilize this information as much as possible in the analysis, I first encoded the missing values as 0 and then included a set of dummy indicators that denoted each of the missing variables.

Figure 3 shows the spatial distribution of the sampled buildings by damage scales and seismic intensity zones. A few observations emerge from the map. First, my sample spreads across multiple intensity zones, and is most representative of buildings in intensity VI and VII [41] Second, the levels of damage are generally seen as decreasing as distances from the fracture increase, yet it is not uncommon for buildings around the fracture to stand while those farther away collapse. Third, there are variations in damages for buildings within the same county or even at the same location, suggesting that factors other than seismic intensity may also affect the nature and extent of building damage.

Figure 4 plots the probability distribution of building damage by the connectedness of county officials. While buildings that receive "severe" damage (indexed as 3) are most representative in both cases, the distribution of the county-official connectedness buildings is skewed to the right. In terms of magnitude, the probability of partial or full collapse (indexed as 4 or 5) of connected buildings is 2.5 times that of buildings without such connections; in particular, one-half of the fully collapsed buildings are constructed exhibit county official connectedness where, we recall, only 16% of the buildings exhibited such connectedness at the time of their construction.

County Level The summary statistics of my county-level dataset is presented in Table 2. The average death toll and direct economic loss are seen to be 479 lives and 3.6 billion RMB respectively. Sixty percent of the counties have had a connected official, and the average number of years being connected is 2.67.

[41] The building codes generally require that buildings should not collapse under intensities of VI or VII

3.5 Caveats

One fundamental challenge in my study is that there are no publicly available comprehensive and systematic statistics on building damage; if any, it is even harder to identify their years of construction and the economic and institutional circumstances back then. [42] I overcame this difficulty by combining two collections of archival records — one for damages and the other for construction histories — and identified the jointly mentioned buildings. However, I found neither of the sources in a standardized statistical format, which introduces important caveats on the selectivity and representativeness of my sample.

Selectivity One leading concern about my sampling process is that the selection of buildings is hardly random. For example, a county might only record buildings whose damages are salient (either extraordinarily good or bad), leading to the problem of selection on outcomes. Also, since the gazetteers are compiled and published by each individual county, the selection function can also vary across counties, making samples from different counties incomparable as to buildings sampled.

These concerns can be significantly mitigated, however, by the inclusion of county fixed effects with which I only compare buildings in the same county if the selection is consistent within the county. In the possible situation that the selection function might be inconsistent even within a county, the identification relies on an additional assumption that the selection does not depend on the connectedness of county officials for the year in which the buildings were constructed. This assumption is generally reasonable since the past officials are no longer in the same positions (some of them have even retired) and, therefore, should have a very limited impact on the compilation of the gazetteers after 2008.

It is nevertheless possible that some of the past officials might have the ability to manipulate the selection of buildings to be reported in the gazetteers. However, it is most likely that their manipulation efforts would lead to a negative selection and, therefore, a downward bias of my estimates. I cannot, however, fully rule out the possibility that the damage reporting could be positively selected on past connectedness. [43] Therefore, I also provide a formal test of the potential selectivity in damage reporting using the full set of buildings that I obtained

[42] For example, one seemingly possible approach to obtain comprehensive building damages is to identify collapsed buildings from satellite photos. However, most of the high resolution satellites that cover the quake area are launched after 2008, making it hard to identify damages and even impossible to recover their construction histories.

[43] One such story could be that the political competition targets the connected officials and intentionally bring to light the buildings constructed under their authority. I believe this is relatively unlikely, though, given the archival nature of the documents that I rely on. I also provide in Section 4.2 a placebo test showing that connections to prefectural leaders in a neighboring prefecture have no effects on earthquake damage to buildings, a finding that largely mitigates the concerns on selection due to political competition.

from the *County Gazetteers*.

Representativeness Another concern is that my sample may not be representative of the universe of buildings in the quake area. In particular, it only takes into account buildings that are recognizable in a town and sector, and, for this reason, most of the sampled buildings are public projects. However, I believe that representativeness is not a major concern for the current study since public buildings have been identified as the most vulnerable and deadly ones in this earthquake and, therefore, are of particular interest to my study. To address the external validity of this selective sample, I complement the building-level analysis with an analysis of county-level aggregates to provide some suggestive evidence that the findings in this sample may exhibit more general implications.

4 Building Analysis

This section presents the main analyses using the building-level dataset. I start by describing my empirical design, discussing the identification assumptions, and formalizing the model specifications. I follow this by the baseline estimation of the impact of county officials' hometown connections on damages to the buildings. I then address some of the most prominent concerns that might bias the estimates, including the selection in damage reporting, the economic conditions in the year of construction, and common shocks to officials from some specific hometown. I close the section by discussing some heterogeneous effects that are suggestive of the potential corruption taking place.

4.1 Research Design and Model Specification

The research design is, in spirit, similar to a staggered differences-in-differences framework, in which I compare buildings constructed under the authority of politically connected (via hometown tie) county officials relative to their unconnected counterparts. I exploit two sources of variation, which are illustrated in Figure 5: the first for buildings located in the same county, for which the exposure to connected officials varies in the year in which they were constructed, and the second, for those constructed in the same cohort, for which the connection status of the incumbent bureaucrats varies across counties. The design is formalized by estimating the following equation:

$$Damage_{ict} = \beta HometownTie_{ct} + \delta_c + \sigma_t + \mathbf{X'_{ict}}\mathbf{\Gamma} + \varepsilon_{ict} \tag{1}$$

where i indexes buildings, c indexes counties, and t indexes building cohorts (i.e., years of construction). The outcome of interest, denoted $Damage_{ijt}$, is the 5-point damage scale of a building i, located in county c, built in year t. $HometownTie_{ct}$ is an indicator variable denoting that the county officials in county c, year t share a home of origin with their prefecture-level superiors. The equation also controls for county and year fixed effects, δ_c and σ_t, respectively; $\mathbf{X'_{ict}}$ denotes a vector of other building or county level covariates that also vary in time. ε_{ict} denotes the error term. I compute standard errors that allow for clustering by counties on the rationale that the buildings have been sampled by individual counties. The coefficient of interest is β, and a positive β would suggest buildings constructed under connected officials being more vulnerable than their unconnected counterparts in the 2008 earthquake.

The estimation strategy inherits all the advantages and potential pitfalls of the classical differences-in-differences estimators. In the model, the county fixed effects control for time-invariant factors that differ between counties, including, for example, location and average earthquake intensity; it also captures the potentially county-specific sampling functions of buildings. The year fixed effects take into account any secular patterns of earthquake damage that affect all buildings in the same cohort: for example, building age or the construction technology. I also consider the following set of additional controls that may nevertheless vary within a county: first, the basic features of the building, such as type of use, size, number of stories and structure; second, within-county variations in the geographical characteristics of the building's location, including the seismic motion (measured by peak ground acceleration) and terrain ruggedness at the building's site; third, the profiles of the county officials, such as gender, age, education, ethnicity, and term.

The identification requires that buildings constructed in a connected and unconnected regime should be otherwise identical in damage in the absence of the connections, conditional on the factors that have been controlled for. While this assumption cannot be directly validated, I will present various diagnostic tests and consider some of the most prominent mechanisms through which this assumption could be violated.

4.2 Main Results: Hometown Tie and Building Damage

Baseline I started by estimating the effect of bureaucrats' hometown connections on the earthquake damage to buildings using both the linear and ordered-probit versions of Equation (1). The results are reported in Table 3. In column (1), I show the linear estimates of Equation (1) including only $HometownTie$, along with county and year fixed effects. The coefficient on $HometownTie$ is 0.31, significant at the 5 percent level. The magnitude is just above

10% of the mean damage index, or 38% of its standard deviation. In column (2), I include building type × year fixed effects, which capture, for example, the evolution of technology and safety requirements that may vary across different types of buildings. In doing so, I rule out the comparison between different types of buildings and only exploit the variations among simultaneously constructed buildings identical in type. The coefficient on $HometownTie$ is almost unchanged, though the level of significance improves from 5% to 1%.

Columns (3) and (4) consider some additional building-specific characteristics that might influence the earthquake damage. In column (3), I control for building features, including size, number of stories, number of rooms, and structure; since these variables are only available for a small subset of buildings in the sample, I also include a set of dummies indicating those that are missing. The coefficient and level of significance on $HometownTie$ remain constant. Column (4) considers the geography of the building's location, including local peak ground acceleration (PGA) — the seismic ground motion parameter — and terrain ruggedness; the results remain mostly the same. Finally, in column (5), I further include the personal profiles of the county officials: their gender, ethnicity, age, education, and term, taking an average of the party secretary and the governor. Again, my estimates remain the same.

In column (6), I estimate, with the full set of controls, the ordered-probit model of Equation (1) to accommodate the ordinal nature of the dependent variable. The estimated coefficient of $HometownTie$ on the latent outcome variable is 0.65, significant at the 1 percent level. To aid in the interpretation of this coefficient, I compute the predictive margins of $HometownTie$ — i.e., the predicted probability of falling within any of the five categories by connectedness — and plot the results in Figure 6, along with the 95% confidence intervals. The figure shows a pattern that echoes my previous results: buildings constructed under the authority of connected county officials stochastically dominate their unconnected counterparts in earthquake damage. In particular, the officials' $HometownTie$ increases the probability of partial or full collapse (indexed by 4 and 5) by 13 percentage points (or 83 percent) from 15.7% to 28.7%.

Overall, the results in Table 3 indicate that the political connections of local officials via hometown ties exert a robust effect in making the buildings vulnerable in the earthquake. I also verified that my findings are robust to alternative treatment intensities such as the number of ties or the duration being connected; they are also robust to using a different damage classification method.

Event Studies The identification in my baseline specification relies on the assumption that buildings constructed under the authority of connected and unconnected officials should be otherwise identical in terms of earthquake damage in the absence of such connections.

While a direct test of this counterfactual assumption is not feasible, I employ some diagnostic approaches that allow me to examine the extent to which the assumption holds. One strategy is to look at the effects of entering and exiting a connected regime in an event-study framework. Specifically, I investigate the year-by-year differences in earthquake damage for buildings constructed right before and right after the county officials gain and lose their hometown ties using the following flexible specifications:

$$Damage_{ict} = \sum_{j=-3}^{3} \beta_j GainTie_{cjt} + \delta_c + \sigma_t + \mathbf{X'_{ict}\Gamma} + \varepsilon_{ict} \tag{2}$$

$$Damage_{ict} = \sum_{j=-3}^{3} \beta_j LoseTie_{cjt} + \delta_c + \sigma_t + \mathbf{X'_{ict}\Gamma} + \varepsilon_{ict} \tag{3}$$

where $GainTie_{cjt}$ ($LoseTie_{cjt}$) is a set of dummies indicating the normalized year j relative to the moment that county c enters (exits) a connected regime. Buildings constructed beyond 3 years from a connected regime are included in the comparison group. If the identification assumption holds, we should expect a consistently positive effect for buildings constructed within a connected regime and no differences before the county gains or after it loses its connection.

I estimated these flexible equations with the full set of controls and present the results in Figure 7. Panel (a) examines the effect of gaining political connections using Equation (2) and plots the estimated coefficients along with their 95% confidence intervals. The horizontal axis is normalized to the year in which the county enters a connected regime. The comparison is relative to buildings constructed more than 3 years before the establishment of the political connections. The figure shows that buildings constructed ahead of a connected regime exhibit no tendency toward vulnerability — a pattern consistent with a generalized common trends assumption. I also observe a notable increase in earthquake damage if a building is constructed after the connection has been established.

Turning to the effect of losing a connection, I plotted, in Panel (b), the coefficients and confidence intervals estimated from Equation (3) in which the relative year is centered around the county's exiting a connected regime. Buildings constructed more than 3 years after the connection ends are included in the comparison group. A symmetric pattern emerges from the estimates that buildings tend to have greater strength — despite some apparent noise — if constructed after the county loses its connection. Taken together, the event studies show no anticipatory or carryover effects of hometown ties, which provides supportive evidence that the counterfactual assumption is likely to hold.

Placebo To further probe the extent to which the buildings' conditional damage might be identical in the absence of hometown ties, I performed an additional placebo test using the local officials' political connections with higher-ranking officials from a different but neighboring prefecture — so that the privileges of having connections with a direct supervisor are not granted. This test captures, for example, the extent to which county officials with and without connections to prefectural leaders are systematically different. [44] The results, obtained for all specifications parallel to those in the baseline, are presented in Table 4. I observe, across all columns, close-to-zero effects of this non-supervisor hometown connection. This test suggests that having a hometown tie per se does not imply poorer building quality unless the connection is associated with a direct supervisor — a pattern that reinforces my identification assumption.

In sum, the results I have presented in this section provide robust evidence that buildings constructed under the authority of politically connected officials tended to be more severely damaged in the 2008 earthquake. I also provide supporting evidence that may be informative about the counterfactual in the context of the absence of connections, which facilitates causal interpretations of the results.

4.3 Addressing Additional Concerns

The results I have obtained reveal a clear association between the county officials' hometown ties and the buildings' earthquake damage. To make credible causal claims, however, I have to rule out the alternative mechanisms that might bias my estimates. I consider in this part some of the most prominent channels: the selection bias, the underlying socio-economic conditions, and potential common hometown shocks.

Selection One major concern of this study, as discussed in Section 3.5, is that the buildings observed in the sample may not be randomly selected. If, for example, the selection is somehow manipulated by the connected ex-officials, my findings are likely subject to this selection bias — although it appears more likely a downward bias in most of the plausible occasions. To get a sense of the extent to which the selection of buildings might depend on the connection, I examine whether the hometown tie is predictive of a building's damage being observed in my sample. Specifically, I take the list of buildings for which I can observe the construction history from the *County Gazetteers*, and regress a building's being selected

[44] The difference between county officials with and without upward connections could result from several channels. For example, some cities may have comparative advantages in producing leading government officials. Another possibility is the incentive and ability to manipulate the selection of buildings reported in the local gazetteers after the earthquake (which I have discussed in Section 3.5).

into the linked sample (i.e., the building's damage being observed in the *Books of Earthquake Relief*) on the hometown tie of the county officials during the building's construction. While this list of buildings may well be unrepresentative of the population, it is at least suggestive of the nature of the selection process concerning the role of hometown connections.

Table 5 reports the results for all specifications parallel to those in the baseline. The outcome is a dummy variable denoting whether the building's damage is observed. Columns (1) – (5) report the OLS estimates with different sets of controls, and column (6) estimates a probit model to exploit the potential nonlinear effects. The estimated coefficients are, if anything, negative and statistically insignificant across all specifications. They suggest that, despite the lack of randomization in the sampling process, it is unlikely that there exists positive selection based on the hometown ties of ex-officials that could otherwise contaminate my main results.

Social Economic Environment Another potential source of bias is the socio-economic condition of the county at the time of the building's construction. For example, the public budget might be more constrained in years with negative economic shocks, leading to insufficient resources to keep the buildings compliant with the quality requirements. I did not include any proxies for the socio-economic conditions as control variables in the baseline because these outcomes might themselves be the consequence of having a connected official, and hence be likely bad controls for the study. However, if such shocks are predictive of the presence of a connected official, it is possible that omitting the socio-economic circumstances may bias these results.

To make sure that my results are not subject to this possibility, I replicate the baseline analyses controlling for additional socio-economic conditions — in particular, per capita GDP and population; I present the results in Table 6. First, I find that, higher per capita GDP, as expected, significantly mitigates building damage; the increase in population, on the other hand, contributes to the vulnerability of the buildings. More importantly, the effect of $HometownTie$ on a building's damage is, across various specification, robust to the inclusion of socio-economic controls. The coefficients across all columns appear approximately 25% smaller than those in the baseline after partialing out the socio-economic constraints, yet they remain significant at the 5% level or above. These results suggest that, while some of the effects of having a connected county official on building damage may come from the lack of financial resources during the construction, this mechanism alone cannot explain most of my findings.They also reinstate the argument that the consequences of patronage ties extend far beyond the immediately visible economic outcomes.

Hometown Shocks I consider a third possibility, namely, that the $HometownTie$ of county officials may capture shocks to some specific homes of origin. For example, officials from some specific cities may be particularly good (or bad) at regulating the construction industry — due to, for example, the city's earthquake history or its industrial endowment. My results may be biased by this home-of-origin effect if these places also tend to produce less (or more) prefectural leaders. To rule out this possibility, I estimated the baseline model with the set of hometown fixed effects so that the comparison is of officials with the same homes of origin. The results are reported in Table 7. Unsurprisingly, the estimated coefficients shrink after the exclusion of between-hometown variations, yet they remain significant at least at the 10% levels. Therefore, I believe that my results mainly reflect the essence of being connected via hometown ties rather than capturing some shared city effects specific to some hometown.

4.4 Heterogeneous Effects Suggestive of Corruption

The results I have presented provide clear causal evidence that the poor resistance of the buildings may be attributable to the authority of politically connected officials. However, whether this relationship reflects abuses of power by connected officials is less clear. While the specific behaviors of the officials are generally unobservable, I examine heterogeneous effects along four dimensions — seismic intensity, official's position, building type, and the funding source — through which I observe some evidence suggestive of corruption taking place.

By Seismic Intensity I start by examining the role of patronage ties across different seismic intensities (compared to the resistance requirements specified in the building codes). [45] Specifically, I compare the perceived ground motion to the resistance requirements, namely, the range of motion parameters within which buildings are required "not to collapse" according to the building codes, and I partition my sample into three intensity groups: buildings for which the perceived motion is weaker than, equivalent to, or stronger than the resistance requirements. [46] I then multiply the $HometownTie$ indicator with the set of dummies, each denoting one of the intensity groups and jointly estimate the group-specific

[45] As noted in Section 2, the resistance requirements vary across regions and have been substantially modified over time. The information is extracted from the generations of *Seismic Ground Motion Parameters Zonation Map* attached to national codes. I employ this relative seismic intensity as it allows me to detect more effectively the underlying corner-cutting and code noncompliance. My results are robust to grouping the buildings based solely on observed seismic intensity without referring to the required resistance though.

[46] It follows that the collapse of a building that suffered from a ground motion stronger than the resistance requirements (given its location and year of construction) is perhaps venial , whereas the collapse of a building that experienced a ground motion no stronger than the resistance requirements is almost surely a signal of code noncompliance.

effects of hometown ties on building collapses (either partly or fully). [47] The estimates, using specifications parallel to the baseline, are reported in Table 8. They suggest that hometown ties matter only for buildings that experienced a moderate ground motion under which a building that is compliant with the code should not collapse. The pattern is revealed more clearly in Figure 8, in which I plot the predictive margins of the probability of building collapse using the estimates from column (6) of Table 8. First, focusing on the unconnected buildings, I find that the probability of collapse barely changes when the perceived ground motion is weaker or equivalent to the required resistance, and increases substantially when the ground motion exceeds the required resistance levels — a pattern that makes perfect sense for code-compliant buildings. Turning to the connected buildings, however, I find a substantial increase in the probability of collapse when the perceived seismic intensity is just within the range of required resistance, and these buildings are just equally, if not more, likely to collapse as they are when hit by stronger, beyond-resistance seismic waves. In addition, while connected buildings appear more likely to collapse than their unconnected counterparts overall, a pattern consistent with the baseline, the gap is particularly stark for a ground motion equivalent to the required resistance. Yet, there is no statistical difference between the two groups for stronger motions. Overall, the observed patterns suggest that corner-cutting and code noncompliance are bringing about the vulnerability of these connected buildings.

By Official's Position The second exercise explores the differential effects between the connected party secretaries and the governors. While both are the top officials in a county, they differ substantially in their ranges of responsibilities. The party secretary, who retains the formal political authority in the county, sets the general policy line and oversees the work of the government; the governor, being the head of the government agency, is responsible for making and implementing specific policies and administering social programs (Shirk, 1993). Consequently, the governors are placed in a position that is more susceptible to direct embezzlement or favor exchanges. Motivated by this institutional structure, I distinguish between the hometown tie of the party secretary and that of the governor and separately estimate their impacts on building damage. The results, summarized in Table 9, reveal that the overly-damaged buildings were mostly constructed in the administrations of connected governors; the connected party secretaries, on the contrary, exhibit much smaller effects, which, although still positive, are insignificant at any conventional levels. While it remains ambiguous whether this result alone reflects the connected governors' incompetence to enforce the building codes or their willful rent-seeking activities, the finding is suggestive that

[47] I use the building collapse indicator as the dependent variable in this exercise to facilitate the interpretation in terms of code violation. The estimates are consistent with the ones using the same 5-point damage scale as what I have used in the baseline.

it is the direct association with the construction projects that matters and, for which reason, corruption is at least more feasible.

By Building Type I then exploit the heterogeneous effects of $HometownTie$ on different types of buildings. The intention is to investigate whether the connected officials disproportionately undermine the quality of certain types of buildings. Specifically, I multiply the $HometownTie$ indicator with the set of dummies, each denoting a specific type of buildings in my sample: hospitals, schools, public organizations, factories, and government headquarters. The estimated coefficients, along with their 95% confidence intervals, are presented visually in Figure 9. According to the graph, schools and hospitals appear to be particularly vulnerable to the authority of politically connected officials, whereas other types of buildings are relatively less susceptible. The effect of $HometownTie$ is even negative — despite its large standard error — for factories and government headquarters. I conducted a post-estimation test that confirms statistically significant differences between hospitals and the other types of buildings. Overall, the pattern suggests that buildings with heavier state-involvement are more likely to be adversely affected by the connected officials, with the exception of government headquarter buildings in which the officials themselves reside.

By Funding Source Strikingly, I find that the destructive effects of connected officials can be mitigated by the involvement of private capital in the construction process. This pattern is identified by multiplying $HometownTie$ and an indicator that equals 1 if private funds have partially financed the project. This category typically includes investments and donations by firms, charities, and sometimes individuals. The results are reported in Table 10, with all specifications parallel to those in the baseline. A few patterns emerge from the table. First, the coefficients on $HometownTie$ across all specifications are larger than those in the baseline, and all are significant at the 1% level once the funding source has been accounted for. This set of coefficients estimates the average effect of $HometownTie$ on earthquake damage for buildings not associated with any form of private resources. Second, the coefficients on the interaction term, $HometownTie \times PrivateFund$, are negative and significant at least at the 10% level in the most comprehensive specifications. Moreover, the magnitude of the coefficients on the interaction is, if not larger, as large as those on $HometownTie$, suggesting that the involvement of private capital serves to mitigate or even offset the adverse effect of having a connected official. Finally, I find that the main effect of $PrivateFund$, which captures the role of private capital for buildings constructed outside a connected regime, does not appear to improve building quality. These results suggest that the association between connected officials and poor building quality is more likely due to the potentially willful misconduct of the officials rather than their inability or negligence in regulating the profit-seeking firms.

To sum up, by exploring heterogeneous effects along a variety of dimensions, I find evidence that: (a) the collapse of connected buildings likely reflects corner-cutting and code noncompliance during the construction, (b) hometown ties matter only for officials in direct charge of public projects, (c) public projects with heavy state-involvement are especially susceptible, and (d) private investment or donation serves to mitigate the detrimental consequences. While none of these pieces of evidence are sufficiently conclusive on their own, they collectively support the theme that there might be some sort of corruption occurring in government-managed projects administered by connected county officials that makes buildings inordinately vulnerable to earthquake hazards.

5 Aggregate Analyses

The building-level analyses provide plausibly causal evidence that the connected county officials may have been associated with violations and abuses in the construction industry that contributed to damage in the 2008 earthquake that reduced the resistance of buildings to collapse. The internal validity of the causal inference has been established by a differences-in-differences style design that compares buildings constructed under the authority of connected county officials to their unconnected counterparts conditional on various geographic, building, and individual profiles, and a few additional checks that rule out the most prominent alternative explanations. However, the external validity of this claim remains unclear due to the possible selectiveness of the sample. Also unclear are the economic implications of the excess building damages. Therefore, I supplement my building-level findings with an analysis of county-level aggregates that allows me to examine more systematic and economically relevant outcomes. While this analysis only admits cross-sectional correlations with no causal implications, it is at least suggestive of the extent to which the causal relation I draw from my building-level analysis can be generalized.

5.1 Model Specification

My county-level sample contains all 181 counties in Sichuan Province. For each county, I observed the aggregate statistics of fatality and direct economic loss decomposed by sectors. I aggregated a county's exposure to connected officials over the past 30 years (i.e., 1978 – 2007) to construct two measures: an indicator denoting whether the county ever had a connected official and the cumulative number of years of having a connected official. The estimating equation had the following form:

$$Y_i = \beta Tie_i + \mathbf{X_i'}\mathbf{\Gamma} + \epsilon_i \tag{4}$$

where i indexes counties. Y_i denotes any of the aggregate outcomes that I study: the earthquake fatality and direct economic loss. Tie_i denotes any of the cumulative measures of exposure to connected officials: ever-connected and the cumulative number of years being connected. $\mathbf{X_i'}$ denotes a vector of county-level covariates: average seismic motion, average ruggedness, the logarithms of GDP in 2007, the population in 2007, and the connection status of the county officials in 2008. These controls take into consideration the geographic determinants of earthquake intensities, the socio-economic conditions at the time of the earthquake, and the potential manipulation of the statistics of damages. The model does not, however, account for the potential factors that could possibly make vulnerable counties more favorable to the connected officials — for example, worse rule of law — through which it could bias my results. Therefore, I refrain myself from making any causal claims beyond noting cross-sectional correlations between the exposure to connected officials and the mortality and economic loss in the 2008 earthquake.

5.2 Results

The main results of my aggregate analyses are presented in Table 11. The first three columns consider the logarithm of fatalities (the total number of people who died or became missing in the earthquake). In column (1), I compare the earthquake fatalities between the ever-connected counties versus the never-connected ones, conditional on the geographic, socio-economic, and during-earthquake connectedness controls. The coefficient on $EverConnected$ is 0.457, significant at the 5% level. It suggests that the total number of dead or missing is approximately 46% higher, on average, in counties with exposure to connected officials relative to that in never-connected counties. Columns (2) and (3) consider the marginal effects of having one additional year of exposure by looking at the cumulative number of years that a county has had a connected official. The coefficient on $YearsConnected$ in column (2) is 0.125, significant at the 1% level. It suggests that one additional year of having a connected official is associated with an approximate 12.5% increase in earthquake fatality. This coefficient is reduced by about one-third if I restrict the comparison to counties within the same prefecture, as shown in column (3), in which the set of prefecture fixed effects is included; yet the effect remains significant at least at the 10% level.

The next three columns examine the effects of cumulative hometown ties on the logarithm of direct economic loss. Column (4) compares the ever-connected versus the never-connected counties. The estimated coefficient on *EverConnected* suggests, on average, a 33% higher direct loss in economic value in counties that ever had a connected official, a significant effect at the 5% level. Columns (5) and (6) estimate, with and without the prefecture fixed effects, the marginal effects of the cumulative number of years being connected. The results show that one additional year of having a connected official is associated with a 3–5% increase in total economic loss, significant at least at the 5% level.

I then explore the effects of cumulative hometown ties on direct economic losses in various sectors. The outcomes that I observe include damages in economic value to infrastructures, education facilities, health facilities, government agencies, and physical losses in the agriculture, manufacturing, and service sector operations. All estimations take into consideration the geographic and socio-economic controls and the set of prefecture fixed effects. The results are summarized in Table 12. I first observe a consistent positive effect of cumulative hometown ties on direct losses in all sectors. The magnitudes range between 0.5% to 5.0%, depending on the specific sector. Most of the coefficients are significant at least at the 10% level, with the only exception being that of government agencies, which is, nevertheless, still consistent with the pattern that I observe in my building-level results.

Overall, the county-level results suggest a correlation between the authority of the politically connected officials and the human and economic loss attributable to the earthquake. While the association is not necessarily causal, it suggests that the patterns I observe at the building level are likely representative of the general role that patronage ties may play in worsening the outcomes of the earthquake.

6 Concluding Remarks

In this paper, I have examined the link between political connections and earthquake damages in the context of the 2008 Sichuan Earthquake. I constructed two original datasets, one at the building level and the other at the county level. Using the building-level dataset, I have established a plausibly causal relationship between the county officials' political connections in the year in which a building was constructed and the damage of the building in the 2008 earthquake. The estimates across a variety of specifications robustly suggest that buildings constructed under the authority of a connected official are 83% more likely to collapse relative to their non-connected counterparts. I have offered some suggestive evidence that the detrimental effects are likely attributable to the potential corruption of the connected officials. To evaluate the external validity of these findings, I have analyzed a second county-level dataset that allows me to examine more systematic and economically relevant outcomes. The findings show that the cumulative number of years that a county has had a connected official, conditional on geographic and socio-economic conditions, is positively correlated with the aggregate statistics of earthquake damage, such as fatalities and direct economic loss. This result, while not necessarily causal, suggests that the patterns I have observed in my building-level dataset — a possibly selective sample — are likely representative of the role that political connections may play in worsening the effects of earthquakes.

The findings in this paper offer several unique, fresh insights into the understanding of bureaucratic connections and corruption in general. In particular, the paper brings to light a particularly detrimental social cost of corruption that would be otherwise impossible to observe in most states of the world. It throws into sharp relief the debate over whether corruption is socially detrimental — the answer to which is less obvious if we only look at inefficiencies from resource misallocation or effort distortion. I also emphasize that, by focusing on bureaucratic collusion rather than rent-seeking by firms, I identify a type of corruption that is not only invisible in the present, but potentially long enough that the perpetrators are long gone. My findings are suggestive of the potential role that corruption may play in making a society vulnerable, and much of its consequences can remain deeply hidden over long periods.

References

Adger, W. Neil, Terry P. Hughes, Carl Folke, Stephen R. Carpenter, and Johan Rockstrm, "Social-ecological Resilience to Coastal Disasters," *Science*, 2005, *309* (5737), 1036–1039.

Aghion, Philippe and Jean Tirole, "Formal and Real Authority in Organizations," *Journal of Political Economy*, 1997, *105* (1), 1–29.

Akcigit, Ufuk, Salome Baslandz, and Francesca Lotti, "Connecting to Power: Political Connections, Innovation, and Firm Dynamics," Working Paper 25136 October 2018.

Ambraseys, Nicholas and Roger Bilham, "Corruption Kills," *Nature*, jan 2011, *469* (7329), 153–155.

Avis, Eric, Claudio Ferraz, and Frederico Finan, "Do Government Audits Reduce Corruption? Estimating the Impacts of Exposing Corrupt Politicians," *Journal of Political Economy*, 2018, *126* (5), 1912–1964.

Barbosa, Klenio and Fernando V Ferreira, "Occupy Government: Democracy and the Dynamics of Personnel Decisions and Public Finances," Working Paper 25501 January 2019.

Bobonis, Gustavo J., Luis R. Cmara Fuertes, and Rainer Schwabe, "Monitoring Corruptible Politicians," *American Economic Review*, August 2016, *106* (8), 2371–2405.

Branigan, Tania, "Pupils Saved After One School Stands Firm in Quake," *The Guardian*, May 20 2008.

Caixin, "Investigation Report on Public Buildings in the 2008 Sichuan Earthquake Remains Unavailable," *Caixin*, march 2009.

Canaves, Sky, "Shanghai Building Collapses, Nearly Intact," *The Wall Street Journal*, Jun 29 2009.

Charron, Nicholas, Carl Dahlstrm, Mihaly Fazekas, and Victor Lapuente, "Careers, Connections, and Corruption Risks: Investigating the Impact of Bureaucratic Meritocracy on Public Procurement Processes," *The Journal of Politics*, 2017, *79* (1), 89–104.

Chen, Huan, Xiaoying Chen, and Xu Kai, "Sichuan 4737 Ming Xuesheng Dizhen Zhong Yunan Kuata Xiaoshe Yinfa Guanzhu [4737 Students Died in the Sichuan Earthquake and the Collapsed School Buildings Raise Attention]," *21st Century Business Herald*, May 28 2008.

Chen, Lei, "Big Data of 12,759 Judicial Documents Reveal: Over Half of the Briberies Involves Construction Projects," *Legal Daily*, December 21 2017.

Chen, Min, "Zhenxiang Bi Rongyu Geng Zhongyao — Lin Qiang Fangtan Lu [truth Is More Important Than Honor — an Interview with Lin, Qiang]," *Nanfang Zhoumo*, May 29 2008.

Chen, Shuo, Xinyu Fan, and Zhitao Zhu, "The Promotion Club," *Working Paper*, 2019.

Chen, Y. and D.c. Booth, *The Wenchuan Earthquake of 2008: Anatomy of a Disaster*, Springer Berlin Heidelberg, 2012.

China Comment, "Dianmen Tongxiang Hui: Yinbi Yunzuo 18 Nian, Nengliang Za Zheme Da? [the Hometown Association of Dianmen: Haveing Secretely Operated for 18 Years, Why Is It so Powerful?]," *Xinhua Net*, 8 2017.

China Daily, "'strongest School Building' Teaches Earthquake Survival," *China Daily*, May 3 2011.

Chu, Jian, Raymond Fisman, Songtao Tan, and Yongxiang Wang, "Hometown Ties and the Quality of Government Monitoring: Evidence from Rotation of Chinese Auditors," Working Paper 27032 April 2020.

Cingano, Federico and Paolo Pinotti, "Politicians at Work: The Private Returns and Social Costs of Political Connections," *Journal of the European Economic Association*, apr 2013, *11* (2), 433–465.

Colonnelli, Emanuele, Mounu Prem, and Edoardo Teso, "Patronage and Selection in Public Sector Organizations," *American Economic Review*, October 2020, *110* (10), 3071–99.

Deng, Fei, "Gouri De Pu Jiu Zao [the Damn 'pu Jiu' Products']," *Phoenix Weekly*, June 2008.

Dewan, Torun and Francesco Squintani, "In Defense of Factions," *American Journal of Political Science*, 2016, *60* (4), 860–881.

Ding, Buzhi and Hongjun Zhu, "Mianzhu Fuxin Number 2 School: How was the Collapsed School Building Constructed?," *Nanfang Zhoumo*, may 2008.

Eakin, Hallie, Luis A. Bojrquez-Tapia, Marco A. Janssen, Matei Georgescu, David Manuel-Navarrete, Enrique R. Vivoni, Ana E. Escalante, Andres Baeza-Castro, M. Mazari-Hiriart, and Amy M. Lerner, "Opinion: Urban Resilience Efforts Must Consider Social and Political Forces," *Proceedings of the National Academy of Sciences of the United States of America*, 2017, *114* (2), 186–189.

Escaleras, Monica, Nejat Anbarci, and Charles A. Register, "Public Sector Corruption and Major Earthquakes: A Potentially Deadly Interaction," *Public Choice*, 2007, *132* (1), 209–230.

Fisman, Raymond and Yongxiang Wang, "The Mortality Cost of Political Connection," *Review of Economic Studies*, 2015.

_ , Jing Shi, Yongxiang Wang, and Rong Xu, "Social Ties and Favoritism in Chinese Science," *Journal of Political Economy*, 2017.

_ , _ , _ , Weixing Wu, and Others, "Social Ties and the Selection of Chinas Political Elite," *American Economic Review*, forthcoming.

Gao, Wenxue and Zhenliang Shi, "Seismic Intensity Zoning Map of China (1990) and Its Explanations," *Earthquake Research in China*, December 1992, *8* (4), 1–11.

Grindle, Merilee S., *Jobs for the Boys*, Harvard University Press, 2012.

Guo, Xuezhi, *Political Groupings: Commonalities, Factions, and Cliques*, Cambridge University Press,

He, Chang Rong, Qun Chen, Sheng Li Han, and Ru Zhang, "Earthquake characteristics and building damage in high-intensity areas of Wenchuan earthquake I: Yingxiu Town," *Natural Hazards*, 2011, *57* (2), 279–292.

_ , _ , _ , and _ , "Earthquake characteristics and building damage in high-intensity areas of Wenchuan earthquake II: Dujiangyan and Pengzhou City," *Natural Hazards*, 2011, *57* (2), 279–292.

Hu, Zhiqiang, "Sichuan Luoshui Zhongxue Jiaoxue Lou Daota Jianzhu Shang Tanyan Gai Weilou [the School Building of Sichuan Luoshui Middle School Collapsed, and the Constructor Admitted the Shoddy Building Construction]," *Henan Business Daily*, June 4 2008.

Huang, Shuai, "Zhongjiwei: Youxie Ganbu Gao Tongxiang Hui Shi Zuiweng Zhiyi Buzai Jiu [ccdi: Some Officials Organize Hometown Associations for Ulterior Motives]," *Beijing Youth Daily*, January 2015.

Jia, Ruixue, "Pollution for Promotion," *Working paper*, 2017.

_ **and Huihua Nie**, "Decentralization , Collusion and Coalmine Deaths," *Review of Economics and Statistics*, 2017, pp. 1–40.

_ **, Masayuki Kudamatsu, and David Seim**, "Political selection in China: The complementary roles of connections and performance," *Journal of the European Economic Association*, aug 2015, *13* (4), 631–668.

Jiang, Junyan, "Making Bureaucracy Work: Patronage Networks, Performance Incentives, and Economic Development in China," *American Journal of Political Science*, 2018, *62* (4), 982–999.

_ **and Muyang Zhang**, "Friends with Benefits: Patronage Networks and Distributive Politics Inchina," *Journal of Public Economics*, 2020, *184*, 104143.

Kahn, Matthew E., "The Death Toll from Natural Disasters: The Role of Income, Geography, and Institutions," *The Review of Economics and Statistics*, 2005, *87* (2), 271–284.

Kaufmann, Daniel, "Corruption and the Global Financial Crisis," *Forbes*, January 2009.

Kinzer, Stephen, "The Turkish Quake's Secret Accomplice: Corruption," *New York Times*, August 17 1999.

Kung, James Kai-sing and Shuo Chen, "The Tragedy of the Nomenklatura: Career Incentives and Political Radicalism during China's Great Leap Famine," *American Political Science Review*, 2011, *105* (1), 27–45.

Le, Yun, Ming Shan, Albert Chan, and Yi Hu, "Overview of Corruption Research in Construction," *Journal of Management in Engineering*, 05 2014, *30*, 02514001.

Li, Guoqiang, Yanbin Xu, and Feifei Sun, "Overview of Performance-based Seismic Design of Building Structures in China," *International Journal of High-Rise Buildings*, September 2012, *1* (3), 169–179.

Lin, Rong-gong, "Why Some Buildings Crumbled and Others Survived the Mexico City Quake: A Sober Lesson for California," *Los Angeles Times*, September 21 2017.

Mcnutt, Marcia, "A Community for Disaster Science," *Science*, 2015, *348* (6230), 11–11.

Meng, Xin, Nancy Qian, and Pierre Yared, "The Institutional Causes of China's Great Famine, 1959-1961," *The Review of Economic Studies*, 2015, *82* (4 (293)), 1568–1611.

Miyamoto, H K and A S Gilani, "Reconnaissance Report of the 2008 Sichuan Earthquake , Damage Survey of Buildings and Retrofit Options," in "The 14th World Conference on Earthquake Engineering World Conference on Earthquake Engineering" number MMI 2008.

Moll-murata, Christine, "Chinese Guilds from the Seventeenth to the Twentieth Centuries: An Overview," *International Review of Social History*, 2008, *53* (S16), 213–247.

National Codes of P.R.C., "Specifications for Anti-seismic Construction Design," *GBJ11-89*, 1989.

_ , "Standard for Classification of Seismic Protection of Building Constructions," *GB50223-2004*, 2004.

National Geophysical Data Center, "NCEI/WDS Significant Earthquake Database," *National Geophysical Data Center, NOAA.*

Nunn, Nathan and Diego Puga, "Ruggedness: The Blessing of Bad Geography in Africa," *Review of Economics and Statistics*, 2012, *94* (1), 20–36.

O'Keefe, Phil, Ken Westgate, and Ben Wisner, "Taking the Naturalness Out of Natural Disasters," *Nature*, 1976, *260* (5552), 566–567.

Olken, Benjamin A and Rohini Pande, "Corruption in Developing Countries," *Annual Review of Economics*, 2012, *4* (1), 479–509.

Pearl, Judea, *Causality*, Cambridge University Press, 2009.

Pejhan, Sassan, "Ready for Future Bam?," *The Iranian*, January 3 2003.

Prendergast, Canice and Robert H. Topel, "Favoritism in organizations," *Journal of Political Economy*, 1996.

Rose-Ackerman, S and B J Palifka, *Corruption and Government: Causes, Consequences, and Reform*, Cambridge University Press, 2016.

Scaglia, Paul, "Comment: Quake Underlines Italy's Sad Legacy of Corruption".," *Italian Insider*, April 9 2010.

Shan, Ming., Yun. Le, Albert P.c. Chan, and Yi. Hu, *Corruption in the Public Construction Sector: A Holistic View*, Springer Singapore, 2019.

Shan, Ming, Yun Le, Kenneth T. W. Yiu, Albert P. C. Chan, and Yi Hu, "Investigating the Underlying Factors of Corruption in the Public Construction Sector: Evidence from China," *Science and Engineering Ethics*, 2017, *23*, 1643–1666.

Shen, Yu, Di Gao, Di Bu, Lina Yan, and Ping Chen, "Ceo Hometown Ties and Tax Avoidance-evidence from China's Listed Firms," *Accounting & Finance*, 2019, *58* (5), 1549–1580.

Shih, Victor, "Getting Ahead in the Communist Party: Explaining the Advancement of Central Committee Members in China," *American Political Science Review*, 2012, *106* (1).

Shirk, S.l., *The Political Logic of Economic Reform in China* California Series on Social Choice and Political Economy, University of California Press, 1993.

Stokes, Susan C., "Perverse Accountability: A Formal Model of Machine Politics with Evidence from Argentina," *American Political Science Review*, 2005, *99* (3), 315??325.

Toral, Guillermo, "The Benefits of Patronage: How the Political Appointment of Bureaucrats Can Enhance Their Accountability and Effectiveness," *Available at SSRN: https://ssrn.com/abstract=3462459*, October 2019.

Transparency International, "Bribe Payers Index," 2011.

U.S. Geological Survey, "Gtopo30," 1996.

_ , "Shakemap — Earthquake Ground Motion and Shaking Intensity Maps: U.s. Geological Survey," 2017.

Voth, Hans-joachim and Guo Xu, "Patronage for Productivity: Selection and Performance in the Age of Sail," *CEPR Discussion Paper No. DP13963, Available at SSRN: https://ssrn.com/abstract=3464489*, 2019.

Wong, Edward, "China Admits Building Flaws in Quake," *The New York Times*, september 2008.

Wu, Hongyuran and Leng Cheng, "Graft-buster Targets Banks Over Corrupt Lending," *Caixin*, January 2018.

Xie, Yushou, Meibiao Cai, Huian Wang, and Liming Wen, *Compilation of Historical Archives of Chinese Earthquakes*, Vol. 1, Beijing: Science Publish House, 1983.

Xing, Huilin and Xiwei Xu, *Tectonic Setting of Chuan-dian Region*, Berlin, Heidelberg: Springer Berlin Heidelberg,

Xu, Guo, "The Costs of Patronage: Evidence from the British Empire," *American Economic Review*, November 2018, *108* (11), 3170–3198.

Yardley, Jim, "Chinese Are Left to Ask Why Schools Crumbled," *The New York Times*, may 2008.

Ye, Lieping and Xinzheng Lu, "Analysis on Seismic Damages of Buildings in the Wenchuan Earthquake," *Journal of Building Structures*, 2008, *29* (4), 1–9.

Yu, Verna and Kuo Lily, "At Least 10 Dead After Coronavirus Quarantine Hotel in China Collapses," *The Guardian*, March 7 2020.

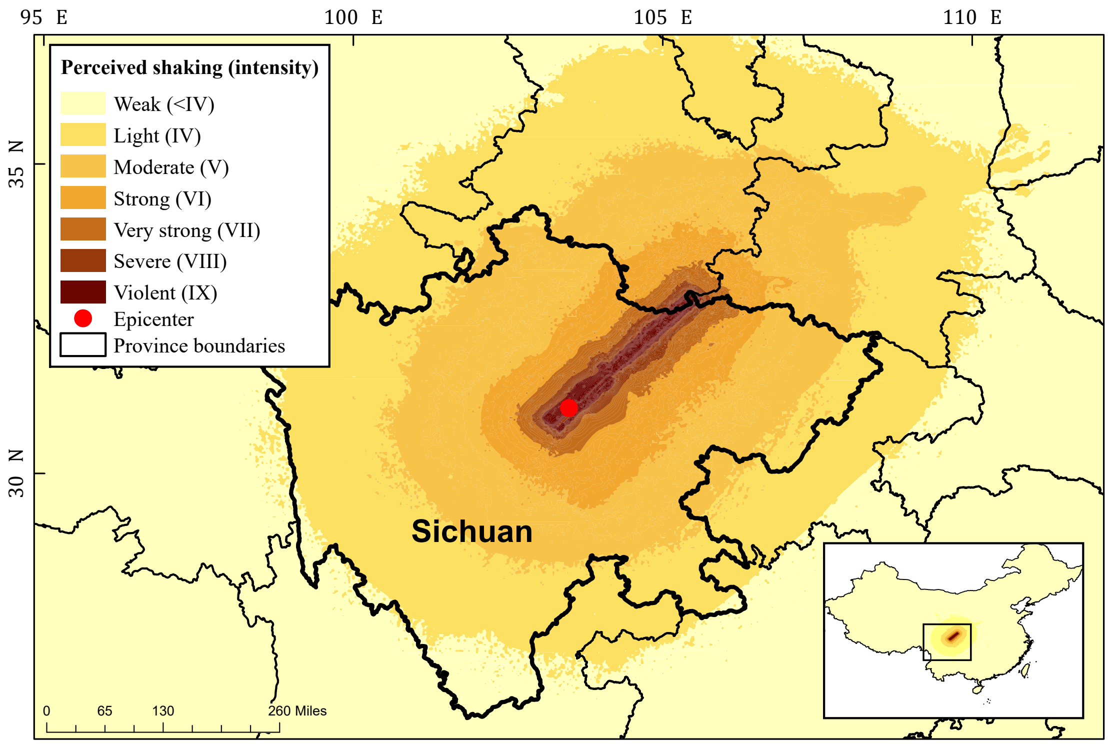
Yu, Yao, Igor Martek, M. Reza Hosseini, and Chuan Chen, "Demographic Variables of Corruption in the Chinese Construction Industry: Association Rule Analysis of Conviction Records," *Science and Engineering Ethics*, 2019, *25*, 1147–1165.

Yuan, Boxin, "Worries on the School Buildings [xiaoshe yousi lu]," june 2008.

Zhang, Minzheng and Yingjie Jin, "Building damage in Dujiangyan during Wenchuan Earthquake," *Earthquake Engineering and Engineering Vibration*, sep 2008, *7* (3), 263–269.

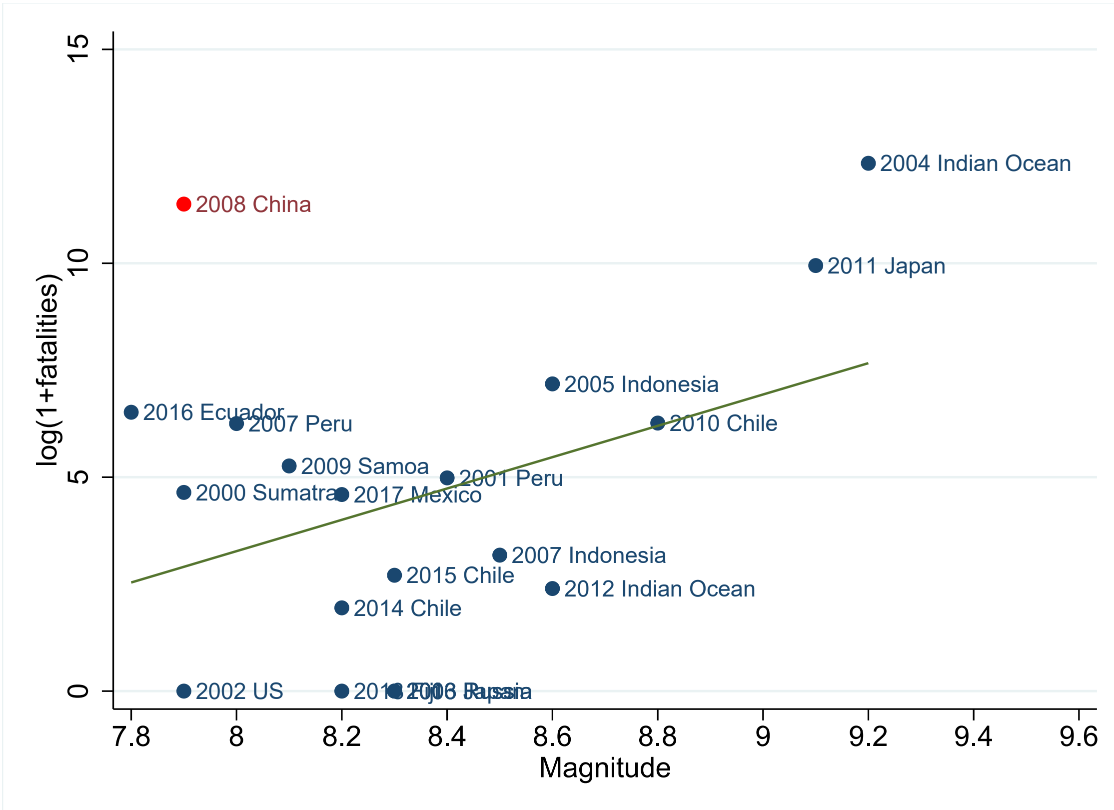
Zhou, Yingfeng, "A Total of 78 Officials at the Bureau Level Received Disciplinary Sanctions in the Special Campaign against Corruption in Construction.," *Xinhua Net*, May 17 2011.

Figure 1: Intensity distribution of the 2008 Sichuan Earthquake



Source: USGS

Figure 2: The 20 most notable earthquakes since 2000 in terms of magnitude



Source: USGS

Figure 3: Spatial distributions of building damages in the sample

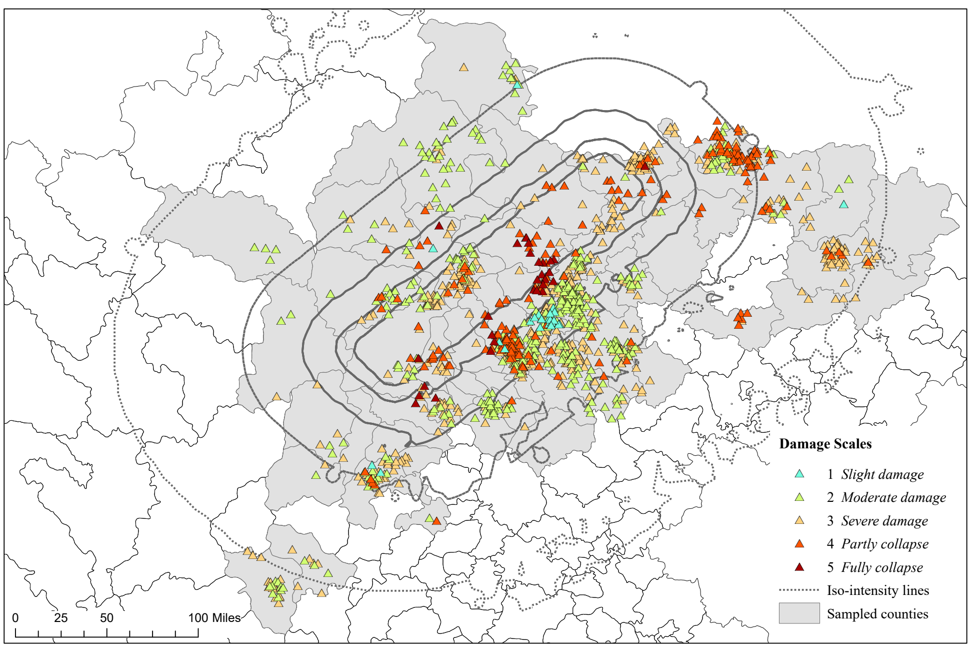
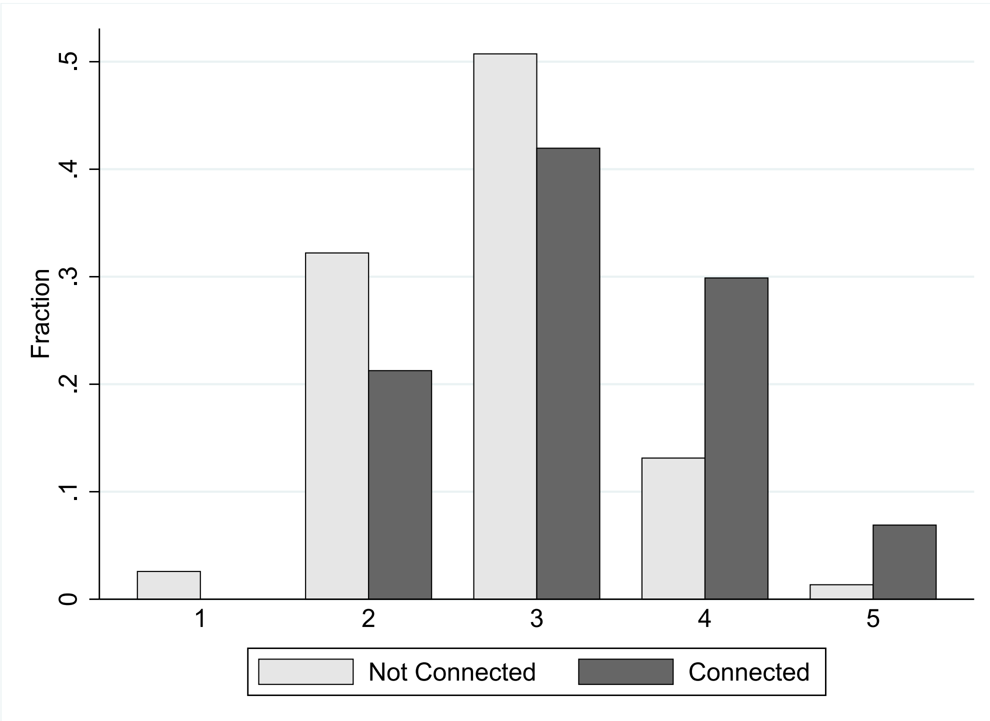


Figure 4: Distribution of damage scales by connectedness



Note. The figure depicts the distribution of damage scales with and without hometown ties. Each bar represents the fraction of buildings that experienced each of the damage scales with and without hometown ties during their years of construction.

Figure 5: Graphic illustration of the identification design for the building-level analysis

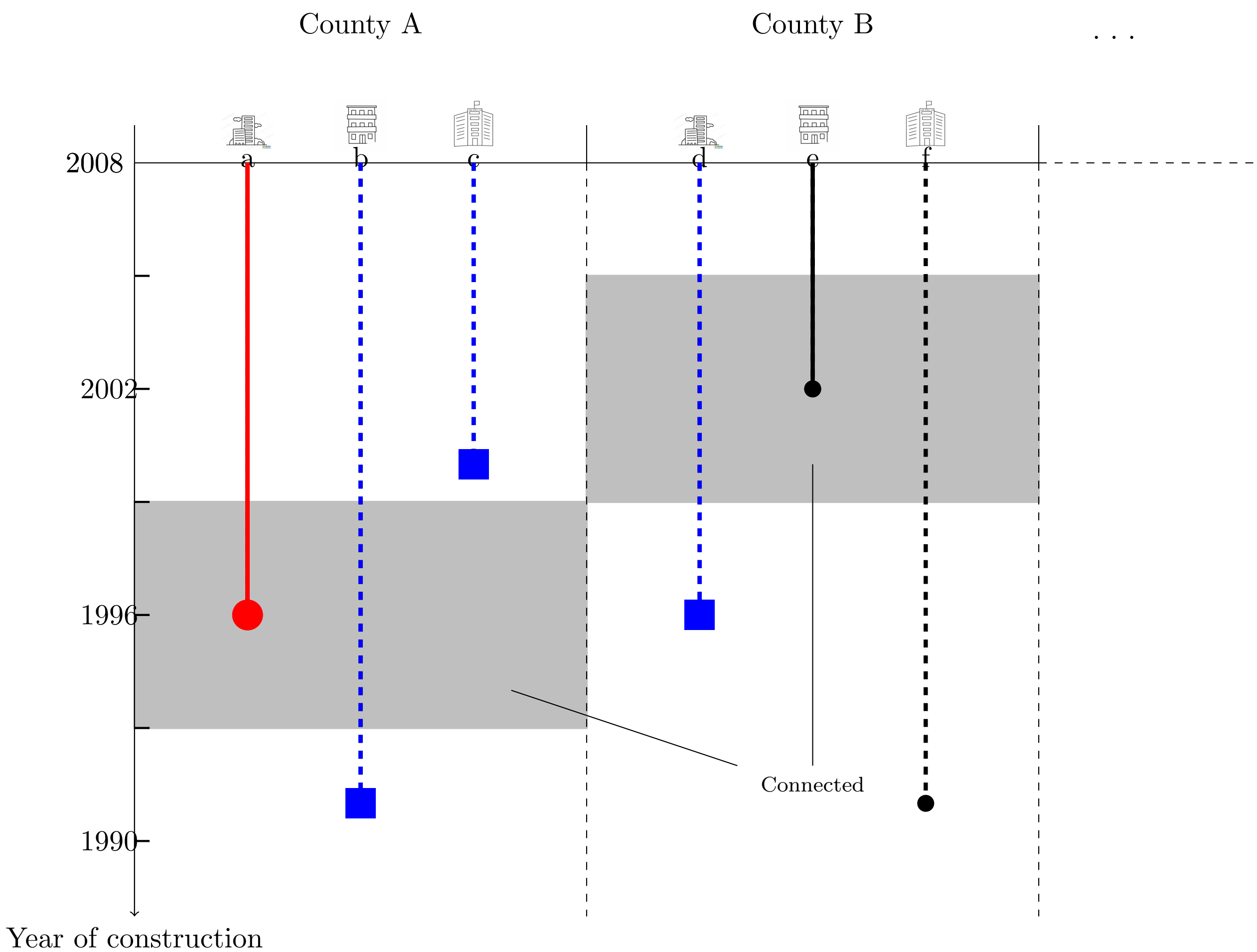
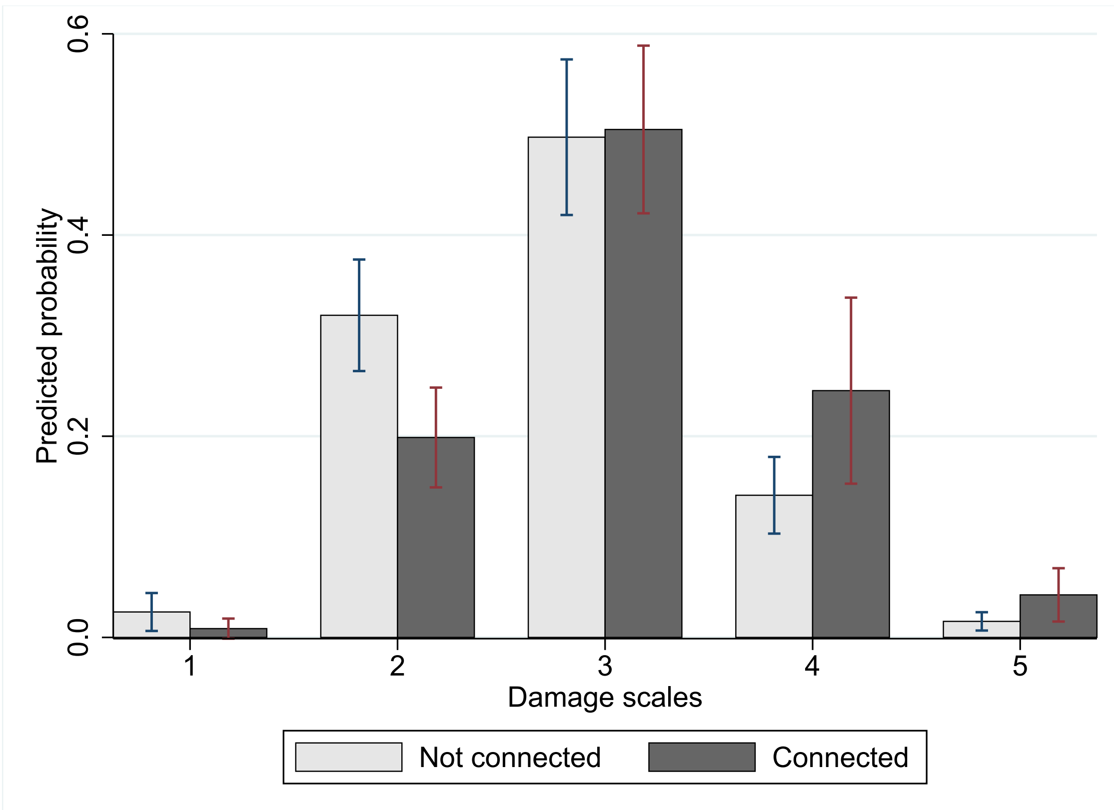
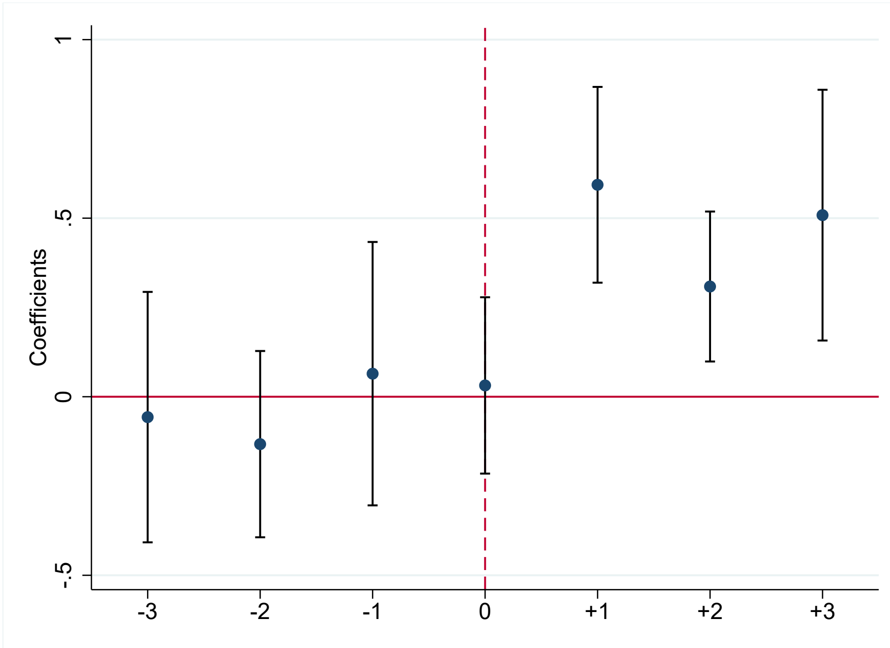


Figure 6: Predictive margins of hometown ties for each damage category

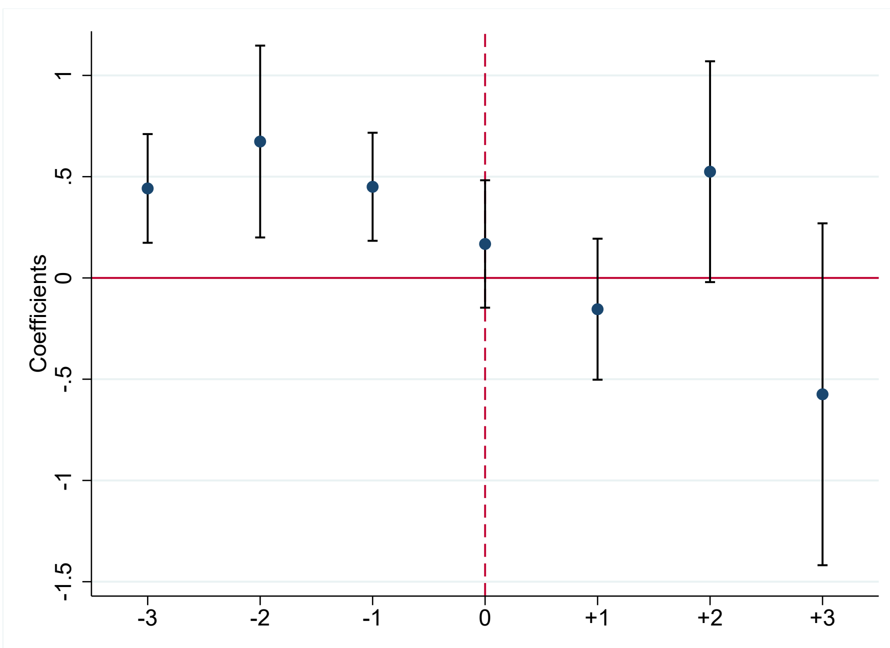


Note. The figure depicts the predictive margins of hometown ties derived from the ordinal-probit estimation in Column (6), Table 3. Each bar represents the predicted probability for each of the damage scales a building would have experienced with and without a connected official when constructed. The regression considers account county fixed effects, year fixed effects, building type by year fixed effects, building features, and geographic controls. Standard errors are clustered by county.

Figure 7: The effects of gaining and losing connections on building damages



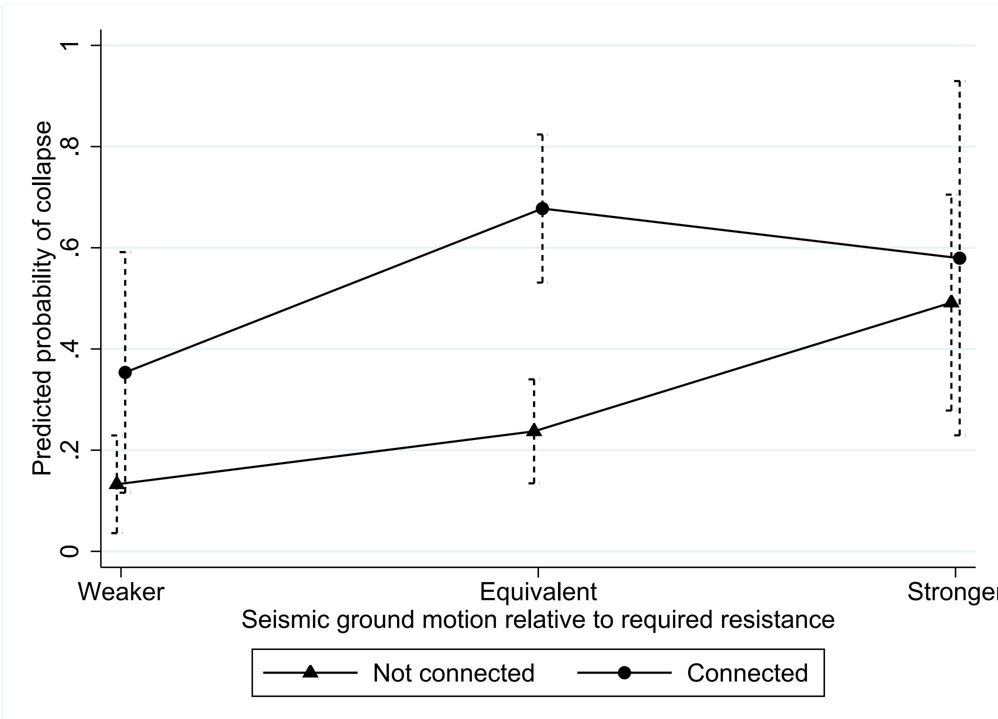
(a) Gaining connection



(b) Losing connection

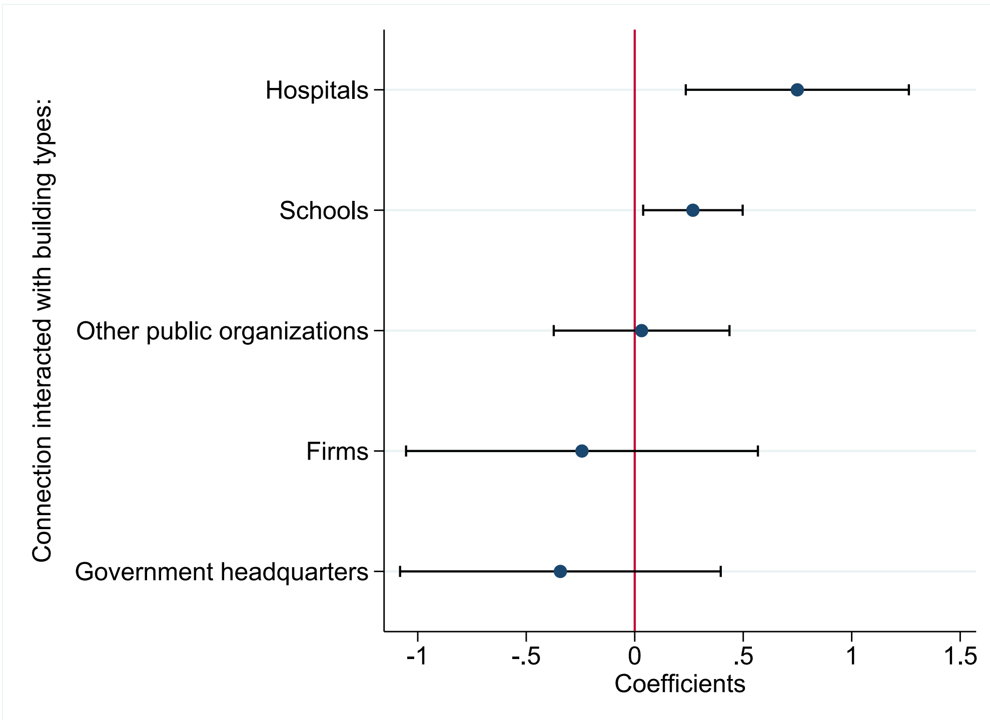
Note. The figures depict the effects of gaining and losing a connected official on building damages. The markers and capped spikes represent the OLS estimators and 95% confidence intervals. Figure 7(a) normalizes the years of construction to the year when the county gains a connected official (year 0), with buildings constructed more than 3 years earlier as the comparison. Figure 7(b) normalizes the years of construction to the year when the county loses a connected official (year 0), with buildings constructed more than 3 years later as the comparison. The dependent variables are the level of damages on the 1–5 scale. The regression considers county fixed effects, year fixed effects, building type by year fixed effects, building features, and geographic controls. Standard errors are clustered by county.

Figure 8: Resistance requirements, seismic intensities and earthquake damage



Note. The figure depicts the predictive margins of patronage ties, by seismic groups, derived from the probit estimation in column (6), Table 8. The scatters and connected lines represent the predicted probability of collapse for buildings suffering from a ground motion weaker than, equivalent to, and stronger than the seismic resistance requirements, respectively. The regression considers county fixed effects, year fixed effects, building type by year fixed effects, building features, and geographic controls. Standard errors are clustered by county.

Figure 9: Hometown ties and building damages by building types



Note. The figure depicts the effect of political connection on building damages across different types of buildings. The markers with capped spikes represent the OLS estimators and 95% confidence intervals of the interaction terms between political connection and each of the building types. The dependent variable is the level of damages on the 1–5 scale. The regression considers county fixed effects, year fixed effects, building type by year fixed effects, building features, and geographic controls. Standard errors are clustered by county.

Table 1: Descriptive statistics of main variables in the building-level analysis

	Obs.	Mean	S.D	Max.	Min.
Outcome					
Damage Scale	1065	2.86	0.79	5.00	1.00
Treatment					
HometownTie	1065	0.16	0.37	1.00	0.00
Geographics					
Peak ground acceleration (% of g)	1065	28.72	23.05	104.00	4.00
Ruggedness	1065	265.96	302.27	1682.99	0.00
BuildingFeatures					
Stories #	55	4.65	2.44	13.00	2.00
Size (1,000 m^2)	611	4.88	14.83	220.00	0.00
Politicians					
AnyFemale	546	0.06	0.23	1.00	0.00
avg(Age)	639	44.05	4.58	56.00	32.00
avg(YrEdu)	792	15.13	2.47	18.00	9.00
avg(Term)	1065	2.97	1.57	8.00	1.00

Note. The unit of observation is a building in the quake-affected area.

Table 2: Descriptive statistics of main variables in the county-level analysis

	Obs.	Mean	S.D	Max.	Min.
Dead_or_missing	181	479.46	2603.65	23787.00	0.00
Total_econ_loss (100M RMB)	181	36.16	86.50	596.76	0.00
EverConnected	181	0.59	0.49	1.00	0.00
YearsConnected	181	2.67	3.32	13.00	0.00
Peak ground acceleration (% of g)	136	11.01	15.07	70.83	1.00
Ruggedness	166	305.60	250.71	901.00	8.51
GDP (100M RMB)	137	43.91	43.31	282.19	1.83
Population (10K)	138	47.26	40.36	157.00	3.00
2008Connectedness	181	0.28	0.45	1.00	0.00

Note. The unit of observation is a county in Sichuan Province.

Table 3: Patronage ties and building damages

	Dependent Variable: Damage Scale (1–5)					
	OLS					Ordered Probit
	(1)	(2)	(3)	(4)	(5)	(6)
HometownTie	0.3086**	0.3103***	0.3051***	0.3001***	0.2993***	0.6345***
	(0.1140)	(0.0977)	(0.1008)	(0.1016)	(0.0972)	(0.1610)
Individual Controls					Y	Y
Geographic Controls				Y	Y	Y
Building Controls			Y	Y	Y	Y
BuildingType × Year FE		Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Wild cluster p-value	0.008	0.018	0.028	0.023	0.036	
Mean(Dep.var)	2.857	2.861	2.861	2.861	2.861	2.861
# Counties	35	35	35	35	35	35
# Observations	1062	1050	1050	1050	1050	1050
Adjusted R^2	0.332	0.385	0.388	0.389	0.390	
Pseudo R^2						0.286

Notes: The dependent variable in all specifications is the level of damages on the 1(intact or slight damage)–5(full collapse) scale. *HometownTie* is an indicator variable denoting that the county has a connected official (either the party secretary of the governor) via hometown ties when the building was constructed. Individual Controls include an indicator for female, an indicator for minority, average age, average education and average term of the party secretary and the governor. Geographic Controls include the seismic ground motion parameter and terrain ruggedness of the building's location. Building Controls include the building's size, number of storeys, number of rooms, and a set of indicators denoting missing values. BuildingType includes a set of indicators denoting schools, hospitals, government headquarters, manufacture plants, and other public organizations. Standard errors are clustered by county.
Significance: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: Non-supervisor connection and building damages

	Dependent Variable: Damage Scale (1–5)					
	OLS					Ordered Probit
	(1)	(2)	(3)	(4)	(5)	(6)
HometownTie (w/ non-supervisor)	-0.0408	0.0669	0.0565	0.0625	0.0597	0.1012
	(0.1297)	(0.1119)	(0.1097)	(0.1082)	(0.1062)	(0.1980)
Individual Controls					Y	Y
Geographic Controls				Y	Y	Y
Building Controls			Y	Y	Y	Y
BuildingType × Year FE		Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Mean(Dep.var)	2.857	2.861	2.861	2.861	2.861	2.861
# Counties	35	35	35	35	35	35
# Observations	1062	1050	1050	1050	1050	1050
Adjusted R^2	0.320	0.375	0.377	0.379	0.380	
Pseudo R^2						0.280

Notes: The dependent variable in all specifications is the level of damages on the 1(intact or slight damage)–5(full collapse) scale. $HometownTie(non - supervisor)$ is an indicator variable denoting that the county has an official connected with a prefectural-level official in an adjacent prefecture when the building was constructed. Individual Controls include an indicator for female, an indicator for minority, average age, average education and average term of the party secretary and the governor. Geographic Controls include the seismic ground motion parameter and terrain ruggedness of the building's location. Building Controls include the building's size, number of storeys, number of rooms, and a set of indicators denoting missing values. BuildingType includes a set of indicators denoting schools, hospitals, government headquarters, manufacture plants, and other public organizations. Standard errors are clustered by county.
Significance: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5: Patronage ties and selection of buildings

	Dependent Variable: $\mathbb{1}\{DamagesObserved\}$					
	OLS					Probit
	(1)	(2)	(3)	(4)	(5)	(6)
HometownTie	-0.0395	-0.0253	-0.0230	-0.0232	-0.0118	-0.0763
	(0.0294)	(0.0259)	(0.0255)	(0.0262)	(0.0232)	(0.0988)
Individual Controls					Y	Y
Geographic Controls				Y	Y	Y
Building Controls			Y	Y	Y	Y
BuildingType × Year FE		Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Mean(Dep.var)	0.185	0.185	0.185	0.185	0.185	0.211
# Counties	39	39	39	39	39	36
# Observations	5501	5500	5500	5479	5479	4799
Adjusted R^2	0.172	0.276	0.281	0.283	0.287	
Pseudo R^2						0.298

Notes: The sample includes all buildings for which the years of contruction are observed. The dependent variable is an indicator variable denoting that the building's damage scale is observed. *HometownTie* is an indicator variable denoting that the county has a connected official (either the party secretary of the governor) via hometown ties when the building was constructed. Individual Controls include an indicator for female, an indicator for minority, average age, average education and average term of the party secretary and the governor. Geographic Controls include the seismic ground motion parameter and terrain ruggedness of the building's location. Building Controls include the building's size, number of storeys, number of rooms, and a set of indicators denoting missing values. BuildingType includes a set of indicators denoting schools, hospitals, government headquarters, manufacture plants, and other public organizations. Column (6) drops observations of which the outcome variable can be perfectly predicted by the set of fixed effects. Standard errors are clustered by county.
Significance: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6: Patronage ties and building damages with social economic controls

	Dependent Variable: Damage Scale (1–5)					
	OLS					Ordered Probit
	(1)	(2)	(3)	(4)	(5)	(6)
HometownTie	0.2628**	0.2427**	0.2286**	0.2258**	0.2148**	0.4575**
	(0.1041)	(0.1002)	(0.1004)	(0.1032)	(0.1022)	(0.1817)
Per capita GDP (1,000 RMB)	-0.0140**	-0.0230**	-0.0229**	-0.0238**	-0.0220*	-0.0469**
	(0.0063)	(0.0104)	(0.0105)	(0.0109)	(0.0118)	(0.0227)
Population (1,000)	0.0001	0.0002**	0.0002**	0.0002**	0.0002**	0.0005**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Individual Controls					Y	Y
Geographic Controls				Y	Y	Y
Building Controls			Y	Y	Y	Y
BuildingType × Year FE		Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Mean(Dep.var)	2.857	2.861	2.861	2.861	2.861	2.861
# Counties	35	35	35	35	35	35
# Observations	1062	1050	1050	1050	1050	1050
Adjusted R^2	0.334	0.389	0.392	0.393	0.394	
Pseudo R^2						0.291

Notes: The dependent variable in all specifications is the level of damages on the 1(intact or slight damage)–5(full collapse) scale. *HometownTie* is an indicator variable denoting that the county has a connected official (either the party secretary of the governor) via hometown ties when the building was constructed. Individual Controls include an indicator for female, an indicator for minority, average age, average education and average term of the party secretary and the governor. Geographic Controls include the seismic ground motion parameter and terrain ruggedness of the building's location. Building Controls include the building's size, number of storeys, number of rooms, and a set of indicators denoting missing values. BuildingType includes a set of indicators denoting schools, hospitals, government headquarters, manufacture plants, and other public organizations. Standard errors are clustered by county.
Significance: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7: Patronage ties and building damages with hometown fixed effects

	Dependent Variable: Damage Scale (1–5)					
	OLS					Ordered Probit
	(1)	(2)	(3)	(4)	(5)	(6)
HometownTie	0.2456***	0.1901*	0.1836*	0.1688*	0.1551*	0.3559**
	(0.0801)	(0.0977)	(0.0963)	(0.0946)	(0.0895)	(0.1601)
Individual Controls					Y	Y
Geographic Controls				Y	Y	Y
Building Controls			Y	Y	Y	Y
BuildingType × Year FE		Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
HomeCity FE	Y	Y	Y	Y	Y	Y
Mean(Dep.var)	2.857	2.861	2.861	2.861	2.861	2.861
# Counties	35	35	35	35	35	35
# Observations	1062	1050	1050	1050	1050	1050
Adjusted R^2	0.349	0.402	0.406	0.407	0.406	
Pseudo R^2						0.315

Notes: The dependent variable in all specifications is the level of damages on the 1(intact or slight damage)–5(full collapse) scale. *HometownTie* is an indicator variable denoting that the county has a connected official (either the party secretary of the governor) via hometown ties when the building was constructed. Individual Controls include an indicator for female, an indicator for minority, average age, average education and average term of the party secretary and the governor. Geographic Controls include the seismic ground motion parameter and terrain ruggedness of the building's location. Building Controls include the building's size, number of storeys, number of rooms, and a set of indicators denoting missing values. BuildingType includes a set of indicators denoting schools, hospitals, government headquarters, manufacture plants, and other public organizations. Standard errors are clustered by county. *HomeCityFE* is a set of fixed effects for each specific city of origin.
Significance: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8: Patronage ties and building damages by seismic intensity groups

	Dependent Variable: $\mathbb{1}\{Collapse\}$					
	OLS					Probit
	(1)	(2)	(3)	(4)	(5)	(6)
HometownTie × Weaker	0.0809	0.0845	0.0696	0.0794	0.0770	1.1859**
	(0.0896)	(0.0987)	(0.0976)	(0.0983)	(0.0997)	(0.5929)
HometownTie × Equivalent	0.2514***	0.2394***	0.2465***	0.2451***	0.2647***	1.8411***
	(0.0896)	(0.0799)	(0.0770)	(0.0763)	(0.0689)	(0.3542)
HometownTie × Stronger	0.0723	0.0803	0.0591	0.0567	0.0944	0.3462
	(0.1042)	(0.1322)	(0.1217)	(0.1278)	(0.1456)	(0.7651)
Equivalent	0.0455	0.0413	0.0283	0.0442	0.0550	0.6584**
	(0.0568)	(0.0684)	(0.0628)	(0.0560)	(0.0575)	(0.3038)
Stronger	0.1394**	0.1253	0.1180	0.1498*	0.1596*	1.7305***
	(0.0666)	(0.0808)	(0.0800)	(0.0842)	(0.0902)	(0.5686)
Individual Controls					Y	Y
Geographic Controls				Y	Y	Y
Building Controls			Y	Y	Y	Y
BuildingType × Year FE		Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Mean(Dep.var)	0.181	0.182	0.182	0.182	0.182	0.326
# Counties	35	35	35	35	35	20
# Observations	1062	1050	1050	1050	1050	565
Adjusted R^2	0.300	0.343	0.347	0.347	0.349	
Pseudo R^2						0.386

Notes: The dependent variable in all specifications is the level of damages on the 1(intact or slight damage)–5(full collapse) scale. *HometownTie* is an indicator variable denoting that the county has a connected official (either the party secretary of the governor) via hometown ties when the building was constructed. *Weaker*, *Equivalent*, and *Strong* are three indicators denoting whether the observed seismic ground motion parameter (PGA) at the building's location is weather than, equivalent to or stronger than the required resistance (intensities under which the building should not collapse) in the building codes. Individual Controls include an indicator for female, an indicator for minority, average age, average education and average term of the party secretary and the governor. Geographic Controls include the seismic ground motion parameter and terrain ruggedness of the building's location. Building Controls include the building's size, number of storeys, number of rooms, and a set of indicators denoting missing values. BuildingType includes a set of indicators denoting schools, hospitals, government headquarters, manufacture plants, and other public organizations. Column (6) drops observations of which the outcome variable can be perfectly predicted by the set of

Table 9: Patronage ties and building damages by position

	Dependent Variable: Damage Scale (1–5)					
	OLS					Ordered Probit
	(1)	(2)	(3)	(4)	(5)	(6)
HometownTie(secretary)	0.1672	0.1674	0.1483	0.1310	0.0734	0.1847
	(0.1267)	(0.1399)	(0.1481)	(0.1456)	(0.1225)	(0.2285)
HometownTie(governor)	0.2735**	0.2794**	0.2820**	0.2914**	0.3308**	0.6809***
	(0.1066)	(0.1172)	(0.1280)	(0.1169)	(0.1302)	(0.2306)
Individual Controls					Y	Y
Geographic Controls				Y	Y	Y
Building Controls			Y	Y	Y	Y
BuildingType × Year FE		Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Mean(Dep.var)	2.839	2.843	2.843	2.843	2.843	2.843
# Counties	35	35	35	35	35	35
# Observations	981	969	969	969	969	969
Adjusted R^2	0.332	0.382	0.386	0.386	0.388	
Pseudo R^2						0.290

Notes: The dependent variable in all specifications is the level of damages on the 1(intact or slight damage)–5(full collapse) scale. $HometownTie(secretary)$ is an indicator denoting that the county has a connected party secretary via hometown ties when the building was constructed. $HometownTie(governor)$ is an indicator denoting that the county has a connected governor via hometown ties when the building was constructed. Individual Controls include an indicator for female, an indicator for minority, average age, average education and average term of the party secretary and the governor. Geographic Controls include the seismic ground motion parameter and terrain ruggedness of the building's location. Building Controls include the building's size, number of storeys, number of rooms, and a set of indicators denoting missing values. BuildingType includes a set of indicators denoting schools, hospitals, government headquarters, manufacture plants, and other public organizations. Standard errors are clustered by county.

Significance: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10: Patronage ties and building damages by funding source

	Dependent Variable: Damage Scale (1–5)					
	OLS					Ordered Probit
	(1)	(2)	(3)	(4)	(5)	(6)
HometownTie	0.3386***	0.3653***	0.3571***	0.3530***	0.3522***	0.7449***
	(0.1112)	(0.0877)	(0.0908)	(0.0935)	(0.0867)	(0.1457)
PrivateFund	0.0150	-0.0239	-0.0349	-0.0359	-0.0411	-0.0944
	(0.1298)	(0.1300)	(0.1302)	(0.1261)	(0.1319)	(0.2576)
HometownTie × PrivateFund	-0.2398	-0.4135**	-0.3922**	-0.3948**	-0.4073*	-0.8069*
	(0.1734)	(0.1860)	(0.1827)	(0.1916)	(0.2112)	(0.4305)
Individual Controls					Y	Y
Geographic Controls				Y	Y	Y
Building Controls			Y	Y	Y	Y
BuildingType × Year FE		Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Mean(Dep.var)	2.857	2.861	2.861	2.861	2.861	2.861
# Counties	35	35	35	35	35	35
# Observations	1062	1050	1050	1050	1050	1050
Adjusted R^2	0.332	0.389	0.392	0.392	0.394	
Pseudo R^2						0.290

Notes: The dependent variable in all specifications is the level of damages on the 1(intact or slight damage)–5(full collapse) scale. *HometownTie* is an indicator variable denoting that the county has a connected official (either the party secretary of the governor) via hometown ties when the building was constructed. *PrivateFund* is an indicator denoting that private capital has participated in the building's construction. Individual Controls include an indicator for female, an indicator for minority, average age, average education and average term of the party secretary and the governor. Geographic Controls include the seismic ground motion parameter and terrain ruggedness of the building's location. Building Controls include the building's size, number of storeys, number of rooms, and a set of indicators denoting missing values. BuildingType includes a set of indicators denoting schools, hospitals, government headquarters, manufacture plants, and other public organizations. Standard errors are clustered by county.
Significance: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 11: Cumulative connections and aggregate loss

	Dependent Variables:					
	$ln(1 + dead\_or\_missing\#)$			$ln(1 + total\_econ\_loss)$		
	(1)	(2)	(3)	(4)	(5)	(6)
EverConnected	0.2428			0.2746**		
	(0.2193)			(0.1312)		
YearsConnected		0.1001***	0.0782**		0.0416**	0.0328*
		(0.0324)	(0.0394)		(0.0200)	(0.0173)
Controls	Y	Y	Y	Y	Y	Y
Prefecture FE			Y			Y
Mean(Dep.var)	1.531	1.531	1.531	2.010	2.010	2.010
# Observations	181	181	181	181	181	181
Adjusted R^2	0.676	0.692	0.786	0.792	0.792	0.920

Notes: The dependent variable in the first three columns is the natural log of the number of deaths (including missings) plus one; the dependent variable in the last three columns is the natural log of total economic loss plus one. *EverConnected* is an indicator variable denoting whether the county ever had a connected official since 1978. $YearsConnected$ denotes the cumulative number of years that the county had a connected official since 1978. The control variable include the county's average seismic ground motion parameter (PGA), average terrain ruggedness, GDP in 2007, population in 2007, connection status in 2008, and a set of indicators denoting whether each of these variables is missing. Robust standard errors in parentheses. Significance: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 12: Cumulative connections and aggregate economic loss by sector

	Dependent Variables: $ln(1 + econ\_loss)$ in ...						
	Infrastructure	Education	Health	Government	Agriculture	Manufacture	Service
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
YearsConnected	0.0304**	0.0068**	0.0061*	0.0072	0.0332***	0.0563***	0.0388**
	(0.0142)	(0.0034)	(0.0031)	(0.0094)	(0.0110)	(0.0196)	(0.0188)
Controls	Y	Y	Y	Y	Y	Y	Y
Prefecture FE	Y	Y	Y	Y	Y	Y	Y
Mean(Dep.var)	0.783	0.138	0.069	0.155	0.334	0.480	0.393
# Observations	181	181	181	181	181	181	181
Adjusted R^2	0.843	0.663	0.567	0.642	0.795	0.747	0.696

Notes: The dependent variables are the natural log of economic loss in each sector plus one. $YearsConnected$ denotes the cumulative number of years that the county had a connected official since 1978. The control variable include the county's average seismic ground motion parameter (PGA), average terrain ruggedness, GDP in 2007, population in 2007, connection status in 2008, and a set of indicators denoting whether each of these variables is missing. Robust standard errors in parentheses. Significance: * significant at 10%; ** significant at 5%; *** significant at 1%.