Homogeneity as a Pre-Condition for Democracy:

The Influence of Religious Fragmentation on the Effect of

Electoral Reforms on Public Goods in China[*]

(Incomplete)

Gerard Padro-i-Miquel[†], Nancy Qian[‡] and Yang Yao[§]

October 26, 2012

Abstract

This study examines how the performance of elections depends on religious fragmentation in rural Chinese villages. We use new data sources to document religious composition and the recent introduction of local elections in each village. Then, we examine the extent to which the pre-existing level of religious heterogeneity affects the change in local government public goods expenditure due to the introduction of elections. We find that the magnitude of the increase in public goods expenditure due to elections declines with religious fragmentation. This suggests that voter heterogeneity constrains the potential benefits of elections for public goods provision.

Key Words: Religion, Fractionalization, Voter Heterogeneity, Democracy, Elections

1   Introduction

A central question for economists, political scientists and policymakers is why the introduction of democracy in developing countries during the 20th century so often failed to produce the public policy changes that Western European countries experienced historically when they democratized (e.g. Acemoglu and Robinson, 2000,Lizzeri and Persico, 2004). One potential answer, as argued by the *modernization* (Lipset, 1959) and the *critical junctures* hypotheses (Acemoglu et al., 2008), is that democracy can only survive and succeed in contexts where certain historical pre-conditions exist. However, we have little concrete evidence on what exact pre-conditions are required or which economic outcomes are most sensitive to them. This paper addresses this important question by examining how the introduction of elections interacts with *voter fragmentation*, defined as the clustering of citizens in different groups with distinct identities, in determining government-provided public goods in rural China.

Village elections were introduced in rural China during the 1980s and 90s to partially replace the Communist Party-appointment system that had previously determined village leadership. They have been found to increase the accountability of local leaders to villagers (Martinez-Bravo et al., 2011,Brandt and Turner, 2007) and to have increased local public goods provision on average (e.g., Martinez-Bravo et al., 2012; Mu and Zhang, 2011; Zhang et al., 2004).[1] This increase is likely to correspond to villagers' demands since public goods provision was extremely low prior to the reform (Luo et al., 2007).

While the average improvement in public goods provision due to the introduction of elections is important, one also needs to know how pre-conditions influence the effect of elections before one can begin to apply lessons from the Chinese experience to other contexts. In this study, we focus on the role of one pre-condition – voter fragmentation, which varies widely across China's large geographic landscape and diverse population. Moreover, since the literature has long-recognized the potential importance of religious fragmentation on economic performance (e.g., Alesina et al., 2003; Montalvo and Reynal-Querol, 2003), and Sinologists have argued that religion has re-emerged strongly during the post-Mao reform era (1978-) as an important dimension of social clustering, we will focus on religious fragmentation as our main measure of voter heterogeneity.[2]

---

[1]See section 2 for a discussion on the policy reform.

[2]We discuss the re-emergence of religion in rural China in section 2. Another potentially relevant dimension

Our study asks whether the introduction of elections increased public goods more or less in villages with a higher level of preexisting religious fragmentation. This is *a priori* ambiguous because the lack of trust and the preference heterogeneity associated with fragmentation reduces the government's ability and willingness to raise revenues to provide public goods both before and after the introduction of elections. On the one hand, voter fragmentation limits the capacity of elections to keep elected officials accountable, which weakens the gains of elections relative to autocratic appointment. On the other hand, citizens have more heterogeneous preferences in fragmented villages. Hence, prior to the introduction of elections, the autocratically appointed leader experiences more difficulty raising funds and determining which public goods to provide in such villages. Since elections serve as a mechanism for aggregating voter preferences, fragmented societies might therefore have more to gain from the introduction of elections. Our empirical analysis will estimate the net of these opposing forces.

The Chinese context provides several key advantages for understanding the relationship between fragmentation and the effects of institutional change. Relative to cross-country studies, which have dominated the literature on institutional reform and fragmentation, our data is of higher quality. We produce new data that includes a nearly nationally representative sample of over two hundred villages and twenty years. The main source is a unique survey conducted by the authors, the *Village Democracy Survey* (VDS), that includes public goods expenditure and provision data, and the year of the introduction of elections and other reforms. We supplement it with demographic variables from the *National Fixed Point Survey* (NFS), which is collected by the Ministry of Agriculture each year in the same villages as the VDS.

Second, Chinese villages are more similar to each other than independent countries are to each other. More importantly, they are also largely fiscally autonomous in terms of determining and financing village public goods. Therefore, unlike most within-country studies, we can use local electoral reforms to examine public goods provision and funding.

Finally, the implementation of electoral reforms helps to identify the effect of introducing elections. These reforms were implemented in a top-down fashion and were rolled out rapidly during the

---

of heterogeneity is kinship networks. However, several studies by sociologists find that extended kinship networks have become less important in China over time due to factors such as the collectivization of agriculture during the Maoist era and the rapid economic growth and social modernization that followed (e.g., Cohen, 1992; Jiang, 1995). For completeness, we will examine the influences of fractionalization along kinship lines and other sources of heterogeneity such as pre-election income after we present the main results on religious fragmentation.

late 1980s and early 1990s, generating variation in the timing of the introduction of elections across villages. This timing across villages was quasi-random and unrelated to observable village characteristics (Martinez-Bravo et al., 2012). Moreover, unlike other democratization reforms, which often coincide with broader political and institutional reforms or are the consequences of widespread economic, political or social strife, the Chinese electoral reforms were introduced in isolation of any other institutional changes at the village level. This makes it much easier to identify the effects of the introduction of elections and how they interact with other factors.

The main empirical analysis examines the interaction effect of the introduction of elections, which varies over time, and a time-invariant measure of the pre-existing level of religious fractionalization that varies across villages.[3] The baseline specification controls for village fixed effects, which absorb all time-invariant differences across villages (including the main effect of religious fractionalization); and year fixed effects, which control for all changes over time that affect all villages similarly, such as macro economic changes taking place in China during this period. We also add province-time trends to control for the growing economic divergence across regions during the reform era. Our interpretation of the interaction effect assumes that, conditional on our baseline controls, the interaction of the introduction of elections and religious fractionalization is not jointly determined with public goods. In other words, we assume that fractionalization is not correlated with other factors (beyond the baseline controls) that can influence the effect of elections on public goods. We do not take this as given and provide a large body of evidence against alternative explanations in the Robustness section.

We find that prior to the introduction of elections, village government expenditure on public goods was very similar across villages with different degrees of fragmentation; elections increase public goods expenditure, but the magnitude of the increase *declines* with fractionalization. All of these results on public goods expenditure are entirely driven by expenditure that is funded by villagers. In contrast, there is no effect on expenditure that is funded by the upper government. Thus, we can rule out the possibility that the upper government increased transfers for public goods to more homogenous villages after the reform. In addition, the evidence suggests that the effects

---

[3]In most of the paper, we measure fragmentation by constructing an index of fractionalization. This particular choice of measurement is not important for our results, which are robust to using an alternative polarization index. This is shown and discussed in more detail later in the paper. See Alesina et al. (2003), Duclos et al. (2004), Esteban and Ray (2007) and Montalvo and Reynal-Querol (2003) for discussions of the different measures of fragmentation.

on expenditure are paralleled by effects on provision, which suggests that changes in public goods expenditure by the local government indeed affects provision and does not only crowd out private expenditure. Our estimates imply that 86% of villages in the sample were homogenous enough to experience some gains in public goods due to the introduction of elections.

To check that our estimates accurately capture the influence of religious fractionalization on elections and public goods, we conduct a host of robustness exercises. First, we show that the quality of election implementation is not correlated with religious fractionalization, which mitigates the concern that elections themselves might have been procedurally subverted in fractionalized villages. Second, we address the concern that the NFS data on individuals belonging to official religions understate the actual number of religious individuals. We use the best available data on religiosity constructed by ethnographers and sociologists and use them to impute "true" fractionalization. Doing this results in higher levels of religious population and fractionalization. However, the estimated interaction effect of fractionalization and the introduction of elections is very similar when we use this imputed measure.

Third, one may be concerned that our estimate of the effect of religious fractionalization is confounded by other factors that are correlated with fractionalization and also interact with the introduction of elections in determining public goods. To rule out these alternative interpretations of our results, we examine the correlates of fractionalization in the data and perform an exhaustive series of robustness tests to show that they do not confound our results. Specifically, we show that our findings are robust to controlling for the interaction of the introduction of elections with (i) the correlates of religious fragmentation, and (ii) other potentially confounding factors such as the population share of specific religions, the fractionalization of extended families, the presence of lineage groups, the stock of social capital within villages, the population share of the most popular two surnames, the average pre-election level of total government expenditure on public goods, the average pre-election level of household income at different points of the village income distribution, the average pre-election level of income inequality (within villages). See the subsection on Robustness for a detailed discussion of these and other checks on our results.

Note that since religion and ethnicity often coincide and we do not have good measures of the latter, our results for religious heterogeneity can be interpreted broadly as ethno-religious hetero-

geneity.[4]

In providing novel and rigorous empirical evidence for the influence of voter fragmentation on the effect of elections on public goods, our study makes several contributions to the literature. First, since elections are commonly considered one of the two key components of democracy (the other being "checks and balances"), our results provide direct evidence that voter homogeneity is a precondition for successful democratization in terms of public goods provision. For policy makers, our results show that the presence of strong and distinct groups in society can severely limit the effects of a democratic transition. This study is most similar to a companion study that examines the role of social capital in determining the effects of elections on public goods in China (PadróiMiquel et al., 2012) and a recent study by Bandiera and Levy (2010), which provides theoretical and empirical evidence that heterogeneity causes democratically elected local governments in Indonesia to implement policies that favor elites.[5] It also adds to cross-country studies that argue that the effect of democracy is heterogeneous (e.g., Persson and Tabellini, 2007).

Second, we add to a large empirical literature studying the relationship between heterogeneity and public goods provision. We change the object of analysis from the cross-sectional effect of heterogeneity on public goods (e.g., Alesina et al., 1999; Alesina and La Ferrara, 2002) to the examination of how heterogeneity modulates the effects of institutional change on public goods.[6] In focusing on a developing country, we are most similar to Khwaja (2009), Okten and Osili (2004) and Miguel and Gugerty (2005), which find that social fragmentation reduces collective action towards public goods in Pakistan, Indonesia and Kenya; and Banerjee et al. (2001), Banerjee and Somanathan (2007) and Munshi and Rosenzweig (2008) which examine how groups mobilize through the political system to obtain public goods in India.[7] In focusing on religious fractionalization as

---

[4]There is little variation in language within the villages in our sample. Thus, we do not consider linguistic fragmentation in our study.

[5]PadróiMiquel et al. (2012) finds that elections increase public goods more in villages where there is a temple and interprets this as reflecting the additional social capital in villages with temples. These two papers differ and complement each other in that they explore different pre-conditions. It is important to note that the results of the two papers are not mutually exclusive. We show later in the paper that both the interaction effect of religious fractionalization and the presence of a temple with the introduction of elections are large in magnitude and orthogonal in the sense that both are significant when estimated together in one equation.

[6]The seminal paper in the cross-sectional literature is Alesina et al. (1999), which generated a literature that is surveyed in Alesina and Ferrara (2005). Luttmer (2001) and Alesina and La Ferrara (2002) find that fragmentation affects preferences towards neighbors. See also Munshi and Wilson (2010) for an analysis of the origin and transmission of fragmentation in the United States.

[7]See also Glennerster et al. (2010) and Dayton-Johnson (2000) for analyses of this relationship in Sierra Leone and Mexico, and Habyarimana et al. (2007) for an experimental study in Uganda. Our study is loosely related to cross-country studies of the relationship between ethnic/linguistic/religious fragmentation and macro economic

our measure of heterogeneity, we contribute to the macro-empirical literature which has struggled to find effects of religious fractionalization on growth (e.g., Alesina et al., 2003; Montalvo and Reynal-Querol, 2003).[8]

Religion in China has become an object of increasing academic interest and systematic data collection has just begun.[9] To the best of our knowledge, we produce the first village level and the first panel dataset that documents regional religious composition across China during the modern era. The historical work of Weber (1968) notwithstanding, our study is also the first to empirically examine the influence of religion on economic outcomes in China. In this sense, our analysis and data make a general contribution by opening religion in rural China as context for future economic research.

This paper is organized as follows. Section 2 discusses the background. Section 3 discusses the empirical strategy. Section 4 describes the data. Section 5 presents the results. Section 6 offers concluding remarks.

2 Background

2.1 Religion in China

The Chinese government officially recognizes five religions, which were initially sanctioned in the 1950s, but then abolished during the Cultural Revolution: Buddhism, Daoism, Islam, Catholicism and Protestantism (e.g. Cohen, 1992). The official statistics for religious population in 2003 are shown in Table 1 column (1).[10] The most popular official religion is Buddhism, which was introduced from India during the 4th Century. In 2003, 100 million Chinese were officially Buddhists. 90.5 million were of the Mahayana school, which includes distinctly Chinese Han branches of this religion. 7.6 million were Tibetan Buddhists, who mostly live in the province of Tibet. 1.5 million were Theravada Buddhists, who mostly live in the province of Yunnan. The second most popular religion is Islam, which was introduced through the area now known as Xinjiang during the 8th

---

performance that was pioneered by Easterly and Levine (1997). See also Desmet et al. (2009) and Alesina et al. (2003).

[8]A possible reason for this difficulty is that a country's reported religious fractionalization is an outcome of factors such as religious tolerance, which may be correlated with factors that have a positive influence on public goods such as trust and value for public goods. This is less likely to be an issue in China, where all villages are subject to the same central government attitude towards religion.

[9]See for instance the recent release of the first Spatial Explorer of Religion (accessible at http://chinadataonline.org/religionexplorer/) a joint initiative of Purdue University and University of Michigan.

[10]These official statistics are taken from Gong (1998: Table 2).

Century. In 2003, approximately 20.3 million of the Chinese population were Muslim. These are followed by the Christian religions, which were introduced in China during the 17th Century. In 2003, Protestantism officially comprised approximately sixteen million followers and Catholicism comprised approximately five million followers. The fifth most popular religion is Daoism, which originated at the same time as Buddhism and is indigenous to China. Approximately three million Chinese were Daoists in 2003.

More popular than all of the official religions combined is what anthropologists refer to as folk religion (e.g., Cohen, 1992). While it is not recorded in official statistics, survey evidence suggests that approximately 20% of the rural population follows the practices of traditional folk religions (Le and Jiang, 1998: p. 75). Folk religions come in varied and diffused forms, including utilitarian ancestor or lineage worship (worshipping one's ancestors so that the ancestor's soul can intervene on behalf of its living descendants), the worship of local deities, divination, geomancy (e.g. *fengshui*), witchcraft (e.g., sorcery, exorcism and planchette writing), physiognomy, and certain taboos (Gao, 1994, p.330-55; MacInnis, 1989, p. 367-74, p. 385-410; Dean, 1993; Siu, 1989, p. 121-37). Folk religions tend to vary across regions, and their followers generally believe in several variants at any one time (Faure and Siu, 1995; Feuchtwang, 2001).

The post-Mao regime (1978-) has been much more tolerant towards religion than its predecessor (1949-78), which peaked in anti-religion fervor during the Cultural Revolution (1966-76). The policy of the post-Mao regime is similar to the historical policy of the former Imperial governments – although it espouses and promotes one official belief (atheism), it tolerates other religions as long as they do not challenge the power of the central government. During the reform era, all forms of traditional practices have gradually revived.[11]

Official religions enjoy relatively well-demarcated and open places of worship (e.g., Lai, 2003). Unofficial religions comprise sects of Buddhism/Daoism (e.g., Falung Gong, Zhong Gong Fawen)

---

[11]The revival of religion and state tolerance is consistent with the growth in the number of religious individuals over time. Folk religions were the first to rebound, resulting in a marked rise in the number of new temples being built and a boom in sales of manuals and books on folk religions. Also, survey evidence in Hubei province by Gong and Zhou (1999) show that the number of Buddhists and Daoists fell from 98,000 and 65,300 in 1966 to 93,000 and 46,000 in 1982, but then grew to be 800,000 and 300,000 in 1996. The number of places for worship and religious meetings in China exhibit the same pattern. They decreased from 120,000 during the early Communist era to 40,000 in the late 1980s, but then grew steadily to 100,000 by 2003 (Zhu, 1994; He, 1999). Similarly, the China Christian Council was re-established in 1980 to repair state-religious relationships with Chinese Christians. According to this organization's statistics, the number of churches grew from 4,000 in 1986 to 7,000 in 1991. Even more numerous were "gathering places", which grew from 25,000 in 1991 to over 50,000 in 2004, 70% of which are in rural areas (Luo, 2004, Ch. 2).

and Christianity not recognized by the State and Tibetan Buddhists and Xinjiang Muslims who challenge Beijing's control (e.g. Cohen, 1992, Youngliang, 1994). Since our sample does not include Tibet and Xinjiang, and the unrecognized sects of Buddhism and Protestantism are typically urban, we will forego further discussion of these groups and focus on underground Catholics, which are believed to be concentrated in rural areas (e.g. Lai, 2003).

The under-ground Catholic church includes individuals who follow the Vatican's appointed bishops instead of those appointed by the Chinese State (e.g., Madsen and Fan, 2009; Hunter and Chan, 2007, p. 241; Gong and Zhou, 1999, p. 73). It is believed to have attracted more followers than the official church by the early 1990s. This led to a gradual reconciliation between the Vatican and official Chinese Catholic Church. For example, the recent government appointment of the Bishop of Shanghai, one of the most prominent positions for Chinese Catholics, was neither officially sanctioned nor opposed by the Vatican and followed by members of both the official and under-ground Church (Madsen and Fan, 2009). Hence, our empirical analysis will take the undercounting of Catholics into account by enlarging the number of Catholics, but will not distinguish between the two different types of Catholics.[12]

There are several additional facts to keep in mind for our analysis. First, religious beliefs in rural China are typically uncorrelated with educational background or occupation (Lai, 2003). In fact, even village officials and Communist Party members are known to partake in religious ceremonies and rituals (e.g., Tsai, 2002, 2007). In a survey of Hubei province, Gong and Zhou (1999, p.71) find that 11% of the followers of Buddhism and Daoism were school teachers and Party cadres. Second, there is generally little tension between religious groups in China. For example, anthropologists such as Sweeten (2001) have noted that even before the Communist regime subdued religion, conflict between followers of different religions in rural areas dominated by the Han-Chinese (who are over 92% of the total population today) were mostly about practical day-to-day issues. Finally, while the revival of religion reflects the persistence of traditional beliefs, the State's past efforts to eliminate religion is believed to have significantly weakened religious beliefs and sociologists have documented that many popular religious rituals and teachings are mere fragments of their historical predecessors

---

[12]Although the current regime has been consistently tolerant towards the sanctioned religions, it is widely believed that the historical persecution of religious individuals causes the official data, which rely on individual's self-proclamation of beliefs, to under-count the number of religious persons. We will discuss this in more detail later in the paper.

(e.g. Madsen, 1989; Siu, 1989). The last two facts imply that the tensions or conflict that exist between religious groups are likely to be much weaker in China than in other contexts.

2.2   Village Government and Public Goods

Villages are the lowest level of administration in rural China. Village governments were first organized by the communist government during the early 1950s, with two groups of leaders in each village. The village committee, which typically comprises three to five members, is led by the village chairman, henceforth VC. This position is also sometimes called the village chief or village head. The Chinese Communist Party (CCP) branch in the village is led by the village party secretary, henceforth PS. Before elections were introduced, all these positions were filled by appointment by the county government and village party branch.[13] Since all levels of government above the village are dominated by the CCP, we will sometimes use the term *party* to refer to the village party branch and all the upper-levels of government as one body for simplicity.

The village government is extremely important for the well-being of its citizens and one of its main roles is to determine and finance village public goods (e.g., O'Brien, 1994; Oi and Rozelle, 2000; Rozelle, 1994, ?, 2007; Whiting, 1996). The village government is responsible for determining the object of public goods investment as well as raising most of the funds required for the investment. Village governments finance public goods by imposing *ad hoc* fees and levies. In our paper, we refer to these tariffs as *taxes* for simplicity.[14] Raising revenues and determining the object of investment require significant effort from village leaders, who had little incentive to provide public goods during the early post-Mao era prior to the introduction of elections. This led to the provision of public goods prior to the electoral reforms to be far below the demand from villagers (e.g., Luo et al., 2007, 2010).

---

[13]The Chinese government, led by the Chinese Communist Party (CCP), is broadly ordered in a vertical hierarchy, from the central government in Beijing down to the rural levels that comprise counties and townships. According to the *National Statistical Yearbooks*, rural population decreased from approximately 83% of total population in 1980 to approximately 75% by 2000.

[14]Such taxes can be controversial in cases when villagers believe them to be extortionary and misallocated by corrupt village governments. This led the central government to ban village taxes altogether in the *Tax and Fee Reform* in 2003. For our study, this ban will have little effect as it occurred towards the end of our study period. But we will check that our estimates are robust to controlling for their introduction. Note that informal taxes have been found to be important in other contexts such as in Indonesia (e.g. Singhal and Olken, 2009).

2.3 Village Elections

Motivation   The main motivation for the introduction of elections was to resolve information problems faced by the central government. China is a large, heterogeneous and quickly changing nation. There are almost 700,000 villages in China. Proponents of the reform argued that making local leaders accountable to villagers would impose checks on the VC's behavior and would also allow villagers to select the most competent candidates (Kelliher, 1997; O'Brien and Li, 1999). Public goods provision featured prominently in the discussion of whether elections should be introduced. It was hoped that local leaders with a democratic mandate would better determine which public good investments were necessary and would better facilitate the local coordination necessary for providing them. Opponents, however, retorted that making rural leaders accountable to villagers would disrupt the implementation of unpopular policies, such as the One Child Policy, and generally weaken hierarchical control in an increasingly heterogeneous country. In particular, regional governments voiced concerns about the effect of elections in two types of "problematic" villages – e.g., villages that were dominated by a large kinship clan that could monopolize elections.[15]

Thus, taking these potential costs into account, the democratization reforms were gradual and controlled. The VC and the village committee were to be elected by the villagers instead of appointed by the regional CCP. VCs were to be elected for three-year terms with no stipulated term limits. However, to ensure that village leaders would still be partially accountable to the CCP, there was no change in the selection method of the members of the village CCP branch and PS positions, who continued to be appointed. Moreover, the upper government maintained control of the democratization process and only gradually increased openness. Initially, the regional CCP nominated the candidates but was required by law to nominate more candidates than open positions. Only in a second wave of reforms were nominations opened to all villagers. This is commonly referred to as *haixuan*. Both reforms were irreversible – once elections or open nominations were introduced, they remained in place thereafter.

Timing   Elections were introduced in a top-down fashion by the provincial and county governments. Once the provincial government decided to implement village elections, almost all villages

---

[15]In the latter case, the concern was that the elected position would be captured by the dominant clan, which would then implement policies for the benefit of its clan members at the cost of other villagers (O'Brien and Li, 2006: Ch. 3).

within that province followed shortly (O'Brien and Li, 1999). By all accounts, villages had little discretion over the timing of introduction of elections, which is characteristic of reforms in rural China. "These [elections] should not be interpreted as bottom-up initiatives by the villagers themselves; they are not in a position to play any precedent-setting part in the initiation of new electoral reforms. There is a mistaken belief among some people outside China regarding this... elections are quietly being instituted at levels above the village, engineered first in selected districts at a distance from Beijing, through the connivance of the [central] Ministry of Civil Affairs and middle-ranking officials out in the regions." — Unger (2002, p. 222).[16]

Several innovative provincial governments began to experiment with elections in the early 1980s. After some debate within the CCP, village elections were formally codified by the central government in the *Organizational Law on Village Committees* (henceforth OLVC) in 1987. From this point onwards, all provinces were pushed to introduce elections for all rural areas. Finally, a revision of the OLVC in 1998 made elections of VCs mandatory and required candidate nominations to be open to all villagers.

The top-down process of introducing elections means that differences in timing across villages are largely driven by the upper governments' preferences of where to first introduce elections. Typically, elections would be first implemented in model villages, to test procedures and logistics. After that they would be rolled out quickly to all villages. Anecdotal evidence from interviews that the authors conducted with county and province-level officials and the speed in which elections were rolled out within provinces suggest that the roll out was orthogonal to village characteristics for most villages.

The quantitative data on election timing is consistent with the qualitative evidence that timing was quasi-random. Our companion paper uses the same data that we use in this paper to show that the roll out of elections was consistent with top-down implementation and was very rapid. Most villages within a county implemented elections in the same year, and over 60% of villages within a province introduced elections within three years of the first election in the same province (Martinez-Bravo et al., 2012).[17] Moreover, we examine the timing of the introduction of village elections and a large number of variables measuring pre-election income, inequality, human capital,

---

[16]Unger (2002) notes the general passivity of villages in implementing rural reforms in his study of land reforms and the adoption of the *Household Responsibility Reform* during the mid 1980s.

[17]Note that all of the villages in our study had introduced elections by the end of the sample in 2005, but only half had introduced open nominations.

geography, public goods, and unpopular central government policies such as the One Child Policy or the permanent expropriation of land by the upper government. Conditional on the introduction at the province level, the timing of the introduction at the village level is uncorrelated with any of these variables.

3 Conceptual Framework

3.1 Religious Fragmentation, Public Goods Provision and Elections

Social Heterogeneity and Public Goods   The first step to conceptualize the relationship between religious diversity, government-provided public goods and elections is to focus on the different mechanisms that can hinder public goods provision in the presence of social heterogeneity, regardless of institutions.

Existing research has proposed several different channels to explain the often observed negative cross-sectional correlation between fragmentation and public goods provision.[18] The most plausible mechanism in the context of rural China is that religious activity induces altruism, trust, and willingness to join efforts with other members of the religious group (Vigdor, 2004; Guiso et al.; Alesina and Ferrara,2000). Rituals, practices and festivals throughout the year induce repeated and intense interactions with those who share their faith and this facilitates communication, trust and empathy. As in many other contexts, each religious group ends up building a strong social identity that helps accumulate these different dimensions of within-group social capital. Theoretically, in the extreme case in which religious participants fully internalize the preferences of the other followers of their faith, a religiously homogeneous village would enjoy optimal contributions to the public good. By the same logic, to the extent that altruism and trust are limited to the religious group, the more fragmented the village, the lower the willingness to contribute to public goods.[19] Also, social sanctions might be weak for members of other groups, which results in less social leverage for enforcing contributions (Miguel and Gugerty, 2005).

A different mechanism in the literature suggests that different groups might prefer different

---

[18]This literature, reviewed in Alesina and Ferrara (2005) and Banerjee et al. (2008), often considers a public goods game in which citizens willingly contribute to the public good. In the case of rural China, the village government has limited enforcement power, but needs to collect contributions to provide goods. Hence, the insights of the literature are applicable in this context – i.e., villagers have the ability to increase the cost that the village government faces for collecting contributions. This ability can lower government-provided public goods provision in the same circumstances that lower provision in the public goods game.

[19]For example, Guiso et al. (2003) finds that religious people are more intolerant of diversity than non-religious ones, regardless of the type of religion, albeit some religions are worse than others.

varieties of public goods, and technological constraints are such that only one variety can be provided (Alesina et al., 1999). In a fragmented village, villagers might refrain from contributing since they suspect they will not get their preferred variety.[20] This mechanism could be relevant when the public good under consideration is schooling, since different religions might have different preferences over the religious orientation of education. However, note that even if all citizens have similar demands for a certain public good, such as better irrigation, groups can still differ on their preferences over the location of the public amenity since it has been observed that individuals of similar religions often cluster into neighborhoods within villages (e.g., Cohen, 1992). This means that religious diversity may also cause preference divergence for public goods due to the geographic differences across groups.[21]

It has also been noted that different religions might have different appreciation for the common good.[22] In the case of rural China, scholars argue that most practitioners of folk religion rely on faith for individual material benefits (e.g., Lai, 2003). In contrast, Muslims and Christians adhere more to moral teachings of the religion such as sharing with their family members, neighbors and friends (e.g. Berlie, 2004; Israeli, 2002); and Buddhism and Daoism encourage disciples to divorce themselves from everyday life and normal practices, which could reduce the disciples' value for both the public and private goods. This suggests that different religions induce different preferences for the *level* of public good provision. Note that this mechanism does not induce any obvious relationship between fragmentation and public good provision. Instead, it predicts a relationship between the fraction of the population that belongs to each religious group and public good provision, which we can examine empirically.

The Interaction of Social Heterogeneity and Elections in Determining Public Goods

The mechanisms discussed so far predict a negative cross-sectional relationship between fragmen-

---

[20]In the extreme, such situation can generate wasteful conflict between groups best captured by a polarization index of diversity (Esteban and Ray, 1999; Montalvo and Reynal-Querol, 2003). See Banerjee et al. (2008) for a recent literature review. Given the scant anecdotal evidence of conflict across religious affiliations in China today, this does not seem a first order mechanism in our context. Also, see Fernández and Levy (2008), which provides theoretical evidence that taste conflict first dilutes but later reinforces class interests.

[21]This has been documented in historically in mainland China (e.g., Yang , 1961, p. 98, 158) and in a modern context in Taiwan (e.g., Deglopper, 1974, p. 65). Unfortunately, our data does not allow us to identify the geographic location of households within villages.

[22]For example, Putnam et al. (1994) argues that less hierarchical religions (such as Protestant religions) teach people to take responsibility and internalize the common good of their small communities whereas hierarchical Catholicism does not share these features since the institution is supposed to look after the common good.

tation and public goods provision given a fixed institutional environment. Hence, we would expect the level of public goods to be higher in homogeneous villages *both* under appointed leaders (baseline) and under elections. The main difference between the two institutional situations are that *(i)* elections increase accountability and *(ii)* elections provice a mechanism for preference aggregation. These two functions of elections make the sign of the interaction effect of fragmentation and the introduction of elections ambiguous *ex ante*.

On the one hand, elected leaders are more directly accountable to citizens than appointed leaders. This has two effects. First, accountable governments better reflect the preferences of the population. Since fragmented villages have a lower preference for public goods, the relationship between heterogeneity and public goods provision should be steeper under elections than under appointed leaders. Second, all else equal, citizens are more willing to contribute to the village government for public goods when they feel that they can hold the government accountable. A necessary condition for effective government accountability under elections is that some citizens need to gather and distribute information on government performance. Since monitoring activities are public goods and public goods are better provided in homogeneous villages for the reasons stated earlier, elected officials are more accountable in homogeneous villages.[23] This causes villagers to be more willing to contribute to the government for public goods when the government is elected rather than appointed. These two mechanisms predict that the interaction effect of elections and heterogeneity is *negative*.

On the other hand, elections also serve as a mechanism for aggregating voter preferences. In fragmented villages with low communication and contentious relationships across groups, it is likely to be more difficult for appointed village leaders to determine the most preferred public goods by the majority of villagers. His inability to propose the majority-preferred public good will cause villagers to resist contributing to the public goods that he chooses. Hence, in terms of preference aggregation, heterogeneous villages will have more to gain from the introduction of elections. This mechanism predicts that the interaction effect of elections and heterogeneity is *positive*. This mechanism is likely to be stronger if the pre-election correlation between heterogeneity and public goods is highly negative.

---

[23]For a review of reasons why democracy works better in high social capital environments see Boix and Posner (1998). See also Banerjee and Pande (2007), Bandiera and Levy (2010) and PadroiMiquel (2007) for other reasons strongly fragmented polities find it difficult to keep elected leaders accountable.

In principle, both mechanisms can co-exist and our empirical analysis will estimate the net of these opposing forces. In practice, there was very little public goods provision in both heterogeneous and homogenous villages prior to the introduction of elections.[24] Thus, we expect the preference aggregation mechanism to be quite weak in this context. Therefore the increase in accountability is likely to generate a negative net effect of the interaction between religious fragmentation and the introduction of elections.

3.2 Measuring Fragmentation

Fragmentation can be measured in several ways. In the literature, it is typically measured as the population share of each group, or with fractionalization and polarization indices. Each measure reflects a different mechanism. The first measure we examine is the fractionalization index. This index captures the probability that two randomly drawn villagers belong to different groups. It best proxies the lack of trust and altruism across groups and the differences in preferences of each religious group regarding the type of public goods to be provided. Following Alesina et al. (2003), this is calculated using the standard formula

$$F_i = 1 - \sum_{j=1}^{N} s_{ij}^2. \tag{1}$$

The fractionalization index for village i is equal to one minus the sum of the squares of s_{ri}, the population share of religion j in village i. N is the total number of religions.

Second, we can measure heterogeneity as the population share of each religion. As we discussed in the previous section, this captures the differences in the value for the level of public goods across religions. Given the qualitative evidence from ethnographers, we have no prior on which one of these mechanisms are more important in the Chinese context and will infer their role from the empirical analysis.

Finally, we measure heterogeneity using a polarization index, which captures the potential for conflict for a given group composition. Following the work of Montalvo and Reynal-Querol (2003) and Esteban and Ray (1994), we use the standard formula

$$P_i = 1 - \sum_{j=1}^{N} \left(\frac{0.5 - s_{ij}}{0.5} \right)^2 s_{ij}. \tag{2}$$

Given that there is little known conflict across religious groups in China, our prior is that polarization is less likely to matter than the other two measures.

---

[24]In addition, after we present the main results, we will show that public goods provision was uncorrelated to religious fragmentation prior to the first elections (conditional on the baseline controls).

3.3 Identification

The main outcome we examine is village government expenditure on public goods. To estimate the effect that voter heterogeneity has on the introduction of elections, we estimate the following equation

$$Y_{ijt} = \alpha_1 E_{ijt} + \alpha_2 (E_{ijt} \times H_{ij}) + \beta_1 O_{ijt} \times + \beta_2 (O_{ijt} \times H_{ij}) + \gamma X_{ijt} + \tau\theta_j + \delta_{ij} + \rho_t + \varepsilon_{it}, \quad (3)$$

where the outcome of interest for village i in province j during year t is a function of: the interaction effect of a measure of heterogeneity, H_{ij}, and the introduction of elections, E_{ijt}; the interaction term of heterogeneity and the introduction of open nominations in each village, O_{ijt}; the main effects of the introduction of elections and open nominations; a vector of village-year specific controls, X_{ijt}; province-year trends, $\tau\theta_j$; village fixed effects, δ_i; and year fixed effects, ρ_t.

Our main estimates cluster the standard errors at the village level to correct for serially correlated shocks within each village. Given the top-down nature of the reform, one may also be concerned about correlated shocks within provinces. To address this, we will also present the standard errors clustered at the province level in the robustness section.

In this equation, village fixed effects control for all differences across villages that are time-invariant (e.g., geography), and year fixed effects control for all changes over time that affect villages similarly (e.g., macro economic growth, economic liberalization). Moreover, province-time trends will control for the regional economic and cultural divergence across China during our period of study (e.g. the coastal regions experienced more rapid economic growth and were more exposed to outside cultural influences). Because elections were introduced rapidly across villages within provinces, we do not have enough variation in the data to control for province-year fixed effects. However, after we present the main results, we will show that our results are robust to controlling for province-time trends with other functional forms.

The vector of controls, X_{ijt}, includes several variables. First, we control for village population, which addresses the fact that there may be economies of scale in public goods provision or that it may be more difficult to coordinate larger populations. Second, we control for the share of village population that is religious, which is highly correlated with religious heterogeneity and could affect public goods. Since it is a time invariant measure, we control for its interaction with the full set of year dummy variables to allow its influence to vary flexibly over time. Finally, we

16

control for the interaction of religious heterogeneity and year fixed effects. Since heterogeneity is a time invariant village-level measure, we interact it with the full set of year fixed effects to allow villages to differ according to the level of fragmentation in a way that is fully flexible over time. Note that this means that our estimate of the interaction of heterogeneity and the introduction of elections is very conservative in that it captures the systematic change in public goods after the introduction of elections in villages with higher levels of heterogeneity that is not already captured by the interactions of heterogeneity and year fixed effects.

To interpret the estimates, consider the case of when we examine religious fractionalization. α_1 is the total effect of the introduction of elections for villages with no fractionalization, $H_i = 0$. $\alpha_1 + \alpha_2$ is the total effect of the introduction of elections for villages where there is a high ("infinite") degree of fractionalization, $H_i = 1$. α_2 is the differential effect of the introduction of elections between these two types of village. The hypothesis that religious fractionalization impedes the ability of an elected government's ability to provide public goods predicts that $\hat{\alpha}_2 < 0$. In contrast, if fractionalization has no influence, then $\hat{\alpha}_2 \approx 0$.

Conceptually, our empirical strategy is similar to a triple differences estimate (DDD). We compare public goods investment: i) in villages before and after the introduction of elections (e.g. first difference), ii) between villages that have already introduced elections to those that have not (e.g., second differences), and iii) between villages that have high heterogeneity to villages with low heterogeneity (e.g., triple differences). Our identification strategy assumes that conditional on the baseline controls, our measure of heterogeneity is not correlated with other factors that influence the effects of elections on public goods expenditures. We do not take this as given and will provide a large body of evidence against this concern after presenting our main results.

4   Data

4.1   The Village Democracy Survey

This study mainly uses village- and year-level data from a panel of 217 villages for the years 1986-2005 from *The Village Democracy Survey* (VDS), a unique retrospective survey conducted by the authors of this paper. In 2006, our survey recorded the history of electoral reforms and public goods expenditures. In 2011, we returned to the same villages to collect data on the presence of voluntary social organizations, and on the number of households per surname for the four most

prevalent surnames in the village roster (in 2011), which we will use in the robustness exercises.[25] Our main variables are obtained from village records, and therefore are not subject to reporting or recall biases. For information not contained in records, our survey relies on the collective response of current and former living village leaders and elders, who were all invited to be present together to answer our surveyors. The only variables in this study that rely on these responses are those related to family trees, which are used in the robustness exercises.

We supplement the VDS with annual data collected each year by the Ministry of Agriculture in the *National Fixed Point Survey* (NFS). This survey is nationally representative and the villages are updated over time. It began in 1986 and is collected each year, except in 1992 and 94 for administrative reasons. The VDS is conducted in the same villages as the NFS and we have merged the data from the two village level surveys. The NFS provides us with data of village household income, inequality, the share of population that is religious and many other variables.

These two surveys are merged at the village and year level to form the sample that we use for estimating the main results. It comprises a balanced panel of 217 villages for the years 1986-2005. In addition, the NFS surveys a random sample of approximately 100 households per village each year (out of approximately 420 households per village on average) with detailed questions regarding household expenditures. We were able to obtain this additional household data for approximately a third of the villages in the total sample.

These are the most comprehensive data on village-level reforms and village-level outcomes ever constructed. Our data cover a larger and more nationally representative sample, and span a longer time horizon than any other existing data of rural China that are available to researchers. The panel aspect of our data means that we can control for village fixed effects and year fixed effects. Since we have many villages from each province, we can also control for province-year trends, which are important for addressing the growing economic divergence across regions in China. An additional advantage of the data is the accuracy and uniformity of the historical public expenditures data, which come from administrative records overseen by the Ministry of Agriculture. The Ministry of Agriculture imposes the same book keeping rules across villages as well as require each village to record public goods expenditure by type and by the source of financing. The latter adds to the

---

[25]For administrative reasons, the 2011 wave includes only 195 of the original villages. The VDS questionnaires are available at

http://www.econ.yale.edu/~nq3/NANCYS_Yale_Website/Village_Democracy_Survey.html

granularity and comparability of the data. Note that government policy strictly limits permanent migration from rural areas.[26]

4.2 Measuring Religion

The NFS categorizes religions according to the official religions that are sanctioned by the State: Buddhists, Christians, Muslims and "other" religions, which is our context is believed to mostly comprise Daoists. We categorize the remaining villagers as "atheists." Hence we have $N = 5$. Note that in practice, a significant share of the latter group comprise individuals who practice the Chinese folk religions that we discussed earlier, but who do not adhere to one of the official religions. We will address this omission later in the section on Robustness.

The data on the share of population belonging to each religion is collected by the NFS for the years 1993, 94-2005. Although the number of religious individuals grow over time, it remains roughly constant as a share of population.[27] Therefore, to maximize the number of observations, we take the average over time of these variables for each village and assume that the share is similar for our entire study period 1982-2005. Thus, the measures of the share of religious population and religious fractionalization we use for the analysis will be time-invariant.

The descriptive statistics are presented in Table 1 columns (4)-(6). The population shares of each religion are also presented in Figure 1a. Note that although there are few religious individuals in the sample as a whole, religious individuals can be concentrated in some villages. This is illustrated in the histogram of the share of religious populations (of any religion) across villages in Figure 2a. Figure 3a is a histogram of the fractionalization index which we calculate from the data on the population shares of each religion and non-religious individuals.

There are several potential concerns over our measurement of religious groups. First, one may be concerned that the introduction of elections affected the religious composition of villagers. In this case, our explanatory variable, which is the average of religious composition from pre- and post-reform years will confound the components of religious composition that are exogenous to

---

[26]Workers in China often migrate temporarily for work. However, the household registration system that ties access to public goods and government benefits makes permanent migration costly. Also, rural residents are also dis-incentivized to migrate permanently away because that results in the loss of the right to farmland.

[27]Although the share of religious population (in total and for each religion) within each village does not change dramatically over time, it does vary year-to-year, which is consistent with these data being collected in real time. The mean religious fractionalization across villages is .0206, where as the avereage standard deviation of this variable over time across villages is .0355.

elections with the component that is an outcome of elections. Second, one may be concerned that the timing of the elections is correlated with religious fractionalization, which will raise the concern of omitted variables for our interpretation – i.e., religious fractionalization is correlated with other factors that influence elections and public goods. In the next section of the paper, we will mitigate these concerns by showing that neither of these relationships exist in the data.

The main caveat for our measure is that it relies on data collected by a government Ministry, which may be mis-measured due to the State's traditional attitude towards religion. We will address this by constructing imputed measures of religion using independent data collected by academics. Since the results using the imputed measures are similar to those using the NFS data, we will use the NFS data as our main measure and present the alternative results afterwards in the section on Robustness.

4.3   Descriptive Statistics

In this section, we describe the variables that are relevant for this study.[28] Table 2 describes the main (non-religion) variables for our analysis and lists the data source. The descriptive statistics show that the average village has 420 households and that 68% of all government spending on public goods is financed by funds raised from villagers.

Table 3 aggregates our data to the village level and presents the correlates of religious fractionalization. It shows that fractionalization is almost perfectly correlated with polarization.[29] It is also positively correlated with total village population and the shares of the different religious groups. As suggested by the descriptive literature, fractionalization is uncorrelated with the fraction of high school graduates in a village.

Fractionalization is positively correlated with the average pre-election level of government spending on public goods, and the fraction of which that is financed by villagers. This is likely to be due to the fact that fractionalized villages have higher pre-election household incomes for all parts of the village income distribution, are more populous and there may be economies of scale in public goods

---

[28]For a more comprehensive discussion of the VDS data, see a companion study on the effect of the introduction of elections on economic policy by Martinez-Bravo et al. (2012).

[29]When we examine the cross-sectional relationship between fractionalization and polarization more closely in Appendix Figure A.1, we find that the relationship is monotonic for the entire range of fractionalization. This is due to the fact that in our data we do not have high levels of fractionalization. This differs from the non-monotonic cross-country relationship between ethnic fractionalization and polarization documented in Montalvo and Reynal-Querol (2003).

provision. We also find that fractionalization is positively correlated with the pre-election level of income inequality in a village. These correlations are important because they highlight the fact that fractionalization is not randomly assigned and the need to carefully control for the correlates of fractionalization in our empirical analysis.

Note that fractionalization is uncorrelated with the timing in the introduction of elections. This supports our identification assumption that fractionalization is not correlated with other factors that may influence the effect of elections in determining public goods. Recall from the discussion on measuring fractionalization that another concern pertains to the possibility that elections affected religious composition. To address this, examine the effect of the introduction of elections on a time-varying measure of religious fragmentation and find that there is no effect, thus ruling out this possibility.[30]

5 Results

5.1 Main Results

Table 4 presents the estimated effects of each measure of heterogeneity. Across all these specifications, the introduction of elections increases public goods provision, and the coefficient is very robust. We are, however, interested in the interaction of the introduction of elections with the different measures of fragmentation. In column (1), we examine fractionalization while controlling for all of the baseline controls. The interaction of fractionalization with post-elections is negative and statistically significant at the 5% level. In column (2), we examine the interaction effect of elections and the population shares of each religion, where non-religious individuals form the omitted category. This specification controls for all of the baseline controls except for the interaction of the population share of all religious individuals and year fixed effects as it is highly collinear with the explanatory variables of interest. The coefficients vary across religions in signs and magnitudes, but none are statistically significant. In column (3), we examine polarization while controlling for all of the baseline coefficients. The estimated interaction effect is negative and statistically significant at

---

[30]We estimate the following equation

$$H_{ijt} = \alpha E_{ijt} + \beta O_{ijt} + \gamma X_{ijt} + \tau \theta_j + \delta_i + \rho_t + \varepsilon_{it}, \tag{4}$$

where religious fractionalization for village i in province j during year t is a function of: the introduction of elections, E_{ijt}; the introduction of open nominations in each village, O_{ijt}; village population, X_{ijt}; province-year trends, $\tau \theta_j$; village fixed effects, δ_i; and year fixed effects, ρ_t. The estimated coefficient for the introduction of elections, α, is 0.012 with a standard error of 0.010. These results are not shown in tables for brevity.

the 1% level, and the magnitude is about half of that of fractionalization in column (1). Since in our sample the standard deviation of fractionalization is about half that of polarization, the effects of the two variables are comparable.

Since fractionalization, the population share of each religion, and polarization are highly correlated, we examine the effects of all of these measures simultaneously in one equation in column (4). This controls for all of the baseline controls except for the interaction of year fixed effects with the share of all religious individuals. In this estimate, we see that the interaction with fractionalization is similar to that in column (1); it is large in magnitude, negative and statistically significant at the 1% level. The estimates for the interaction with the population share of each religion and polarization are reduced in magnitude and statistically insignificant.

In column (5), we re-estimate column (4) excluding polarization, but cluster the standard errors at the province level to address the possibility that the province-level initiated electoral reforms induced serially correlated shocks for villages within each province. This alternative clustering method reduces the standard error for fractionalization. Therefore, for the remainder of the paper, we will present the more conservative village-level clustered standard errors.[31]

Table 4 also presents the estimated effect of the introduction of open nominations and religious fractionalization. The estimate is always small in magnitude and statistically insignificant, as is the main effect of open nominations. In the remainder of the paper, we will continue to control for the introduction of open nominations and its interaction with the same variable that is interacted with the introduction of elections. However, we will not report the estimates for brevity.

The results shown in here provide several insights. The fact that the shares of the different religious groups are not significant suggests that the effects of heterogeneity are not driven by different attitudes towards public goods across the religious groups. Similarly, the fact that fractionalization wins the horse-race over polarization in column (4) is consistent with the belief that conflict across groups is an unlikely culprit in our context.[32] These results together with the robustness of the fractionalization result suggest that the lack of trust and cross-group social capital is likely to be

---

[31]Note that we also check that the standard errors clustered at the province level are not biased by the fact that there are only 29 provinces by also using the wild t-bootstrap clustered method as suggested by Cameron et al. (2008) that adjust for small sample biases. The precision of these corrected estimates are very similar to our main results that cluster at the village level. We do not report these estimates for brevity. They are available upon request.

[32]Note that the strong correlation between fractionalization and polarization means that this interpretation must be made very cautiously.

the main mechanism behind the dampening influence of heterogeneity on the effects of elections.

To assess the magnitude of our results, consider that the estimates for the main effect of post-election in column (1) shows that the introduction of elections increased government public goods expenditure by 265,400 RMB (37,914 Constant 2000 USD) for villages with zero fractionalization. For villages with the mean level of fractionalization of 0.076, elections increased government public goods expenditure by 148,361 RMB (21,194 Constant 2000 USD, $(-154 \times 0.076 + 26.54) \times 10,000 = 148,361$). Another way to assess the magnitude is to ask how many villages experienced increases in public goods due to the introduction of elections given their levels of religious fractionalization. Dividing the absolute values of the main effect by the interaction effect (26.54/154.2), we find that a village with fractionalization indices below 0.17 will experience some increase in public goods from the introduction of elections. This includes 86% of the villages in our sample. Thus, our results show that although increased religious fractionalization reduces the increase in government public goods expenditure that followed the introduction of elections, most villages were homogenous enough to experience some increase.

Since only fractionalization is statistically significant in column (4), we will use fractionalization instead of polarization as our main measure for the remainder of the paper. Also, we will use the more conservative estimate in the simpler specification in column (1) as our baseline specification henceforth. We will return to discuss the estimates from using imputed religious fractionalization measures in column (6) later in the paper.

5.2 Timing the Effects

In order to ensure that the estimated effects are a consequence of the introduction of elections and not by spurious changes that may have occurred in the pre- or post-election periods, it is important to examine the timing of our estimated effects. We estimate the following equation

$$y_{it} = \sum_{\tau=-3}^{4} \alpha_\tau e_{it\tau} + \sum_{\tau=-3}^{4} \beta_\tau (e_{it\tau} \times H_i) + \sum_{\tau=-3}^{4} \theta_\tau o_{it\tau} \times + \sum_{\tau=-3}^{4} \lambda_\tau (o_{it\tau} \times H_i) \qquad (5)$$

$$+ \gamma X_{ijt} + \tau \theta_j + \delta_{ij} + \rho_t + \varepsilon_{it},$$

where $e_{it\tau} = 1$ if village i experienced the introduction of elections τ years ago in year t, and $o_{it\tau} = 1$ if village i experienced the introduction of open nominations τ years ago. The other variables have the same notation as in the baseline equation. Note that although we examine a similar window of time before and after each reform for consistency, we do not exclude any observation. Instead, we

follow convention to maximize the information in our estimation and group all of the observations that are four or more years prior to the first reform together, and they constitute the reference group; and similarly, we group all of the observations that are four or more years after the reform together.

α_τ is a vector of dummy variables that captures the number of years since the first election for villages with zero fractionalization $(F_i = 0)$, β_τ is a vector of coefficients that reflects the differential effect of elections between hypothesized villages fractionalization equal to one and villages with with zero fractionalization, for each year since the election. θ_τ and λ_τ are the analogous estimates for the introduction of open nominations.

For our identification strategy, we would like to establish that there are no pre-trends in public goods expenditure in the years leading up to the first election ($\beta_\tau \approx 0$ when $\tau < 0$); that for villages with no fractionalization the positive effect on public goods expenditure occurs with the introduction of elections ($\alpha_\tau > 0$ when $\tau \geq 0$); and that public goods expenditure between homogenous and heterogeneous villages diverge when elections are introduced ($\beta_\tau < 0$ when $\tau \geq 0$).

The estimates are presented in Appendix Table A.1.[33] The coefficients of the dummy variables for the years since the first election and the coefficients of their interaction with religious fractionalization are plotted in Figure 4 (on two vertical axises for presentational purposes). It shows that there is no pre-trend in government spending on public goods in the years leading up the first election for either homogenous or heterogeneous villages. More importantly, it shows that spending in the two types of villages diverged when elections were introduced – they increased for very homogenous villages and decreased for very heterogenous villages. These estimates provide strong support for our identification strategy and interpretation.

5.3   Alternative Explanations

The main concern when interpreting our results is that religious fractionalization is correlated with factors that may reduce the benefit of elections in terms of increasing government spending on public goods. In this section, we consider and provide evidence against such alternatives.

---

[33]Note that the statistical significance of the year-by-year interaction point estimates are not important. Instead, we are interested in the joint statistical difference between the point-estimates after the reform and those before the reform, which is conceptually similar to the main interaction effect of the introduction of elections and religious fractionalization.

Upper Government Expenditure   According to the theoretical literature that we discussed in section 3, fragmentation increases the difficulty for the village government to raise funds from villagers and reduces the willingness to provide public goods. This is our interpretation of the main results. However, there is the possibility that the change in public expenditure after elections is due to a change in upper government policy that targeted spending towards homogeneous villages when they introduced elections. To explore this, we investigate whether the effects on loval public goods expenditure are driven by funds raised from villagers, or by transfers from the upper levels of government. Table 5 column (2) shows that the interaction and the main effects on funds raised from villagers in column (2) is almost identical in magnitude to the baseline in column (1). In contrast, the estimates for funds from upper government transfers in column (3) are small in magnitude and statistically insignificant. This is consistent with our claim that the main results are driven by a shift in leader accountability and how that shift varies with pre-existing voter heterogeneity rather than any changes in upper government policies towards villages.

Pre-Election Correlation Between Fractionalization and Public Goods   A related concern is that village governments of heterogeneous villages might have spent more on public goods prior to the introduction of elections. If this were the case, one would suspect that our main result is simply a mechanical outcome of the functional form of the returns to public investment (e.g., there are decreasing returns). In Table 5 column (4), we examine the main effect of religious fractionalization to investigate the pre-election differences in government public goods expenditure. Since fractionalization is time-invariant, we must exclude village fixed effects. In its place, we add the correlates of fractionalization from Table 3 that are not already controlled for in the baseline (the pre-election levels of income at the 10th, 50th and 90th percentiles of the village income distribution, and the village Gini coefficient) and their interactions with the introduction of elections.

The main effect of fractionalization is positive, but very small in magnitude and statistically insignificant. There was little difference in government expenditure on public goods between villages with high and low fractionalization prior to the introduction of elections.

Election Quality   One may also be concerned that our main results are driven by poor implementation of the electoral reforms in fragmented villages. For instance, this would be the case if there is limited interaction across religions, which could make it more difficult to inform villagers

25

of proper electoral procedures, and thereby allow more corrupt elections. If this were true, the right interpretation of our main results would be that heterogeneous communities underwent poorer formal institutional change. To investigate this, we collected data on the occurrence of the most common aberrations in elections from village records. These include the presence of roving ballot boxes, not having anonymous ballots, and allowing voting by proxy without a signed permission form by the individual who is away. We create a dummy variable that equals one if any of these aberrations occurred after the introduction of the first election, or if it is before the first election. In our sample, 85% of the observations have poor quality elections. We examine this variable as the dependent variable in our main estimating equation. Table 5 column (5) shows that the coefficient of the interaction term between fractionalization and post first election is very small in magnitude and statistically insignificant. Thus, we conclude that our estimates are not driven by differences in electoral quality between heterogeneous and homogenous villages and that our interpretation of the results as the effect of heterogeneity conditional on the introduction of elections of identical quality is the most plausible.

5.4 Robustness

Mismeasurement of Religious Composition   The main issue with our measure of religious fragmentation is the potential mismeasurement of the size of the religious population in the NFS data. There are three closely related concerns. First, the NFS does not distinguish between Catholics and Protestants. Second, the NFS only reports officially sanctioned religions. The main implication for our study is that our data will undercount pro-Vatican Catholics and that individuals who follow folk religion will be mis-categorized as non-religious. These errors in measurement will likely cause our data to understate fragmentation. Finally, government repression of religion during the Maoist era may cause followers of even sanctioned religions to be reluctant to report their beliefs to the state. This means that our estimates of religious individuals of the sanctioned faiths may also be under-estimates of true figures. The effect of this on the bias of our measure is ambiguous.

To address this, we construct imputed measures of fractionalization using the most reliable data available on actual religious populations in China. These data are collected by anthropologists, ethnographers and sociologists and unfortunately are only available at the aggregate level. Lai (2003) summarizes these estimates, which we show in Table 1. Column (3) shows that according

to these estimates, our data may underreport Buddhism (Mahayana) by 46.6% and Christianity by 66.7% (where Protestants are underreported by 67% and Catholics are underreported by 100%). They also show that approximately 28.5% of Christians are Catholics.

To impute the true religious population, we first divide Christians in each village into two categories – Protestants and Catholics, where we assume that 28.5% of the Christian population is Catholic. Then, we adjust the number of religious individuals for each group by the estimated difference shown in column (3).[34] Then, we add the category of folk religion by assuming that 20% of the total village population follow folk religious practices. The descriptive statistics for the imputed measures are shown in Table 1 columns (7)-(9). A comparison with the measures constructed from the raw NFS data show that the share of religious population is obviously higher with the imputed measures. More importantly, the imputed measure shows more fragmentation. Figure 1b illustrates the population shares of each religion using the imputed measures. Figure 2b is a histogram of the religious population share (of all religions) across villages using the imputed data. Figure 3b is a histogram of the fractionalization index constructed from the imputed data across villages. The cross sectional correlation between the imputed measure of religious fractionalization and the reported measure is 0.71 and is statistically significant at the 1% level.

We re-estimate the baseline equation using the imputed measure of religious fractionalization. Table 4 column (6) shows that the estimated interaction effect of fractionalization and the introduction of elections is very similar to the baseline estimate, which we re-state in column (1). It is also statistically significant at the 5% level.

Potential Omitted Variables Finally, we address the concern that religious fragmentation is correlated with other factors that could influence elections (to the extent that these other factors are observable or correlated with observables). We control for the correlates shown in Table 3 – the pre-election average government public goods expenditure; household income for the 10th, 50th and 90th percentile households; and village Gini coefficient – each interacted with the introduction of elections and the introduction of open nominations.

In addition, we investigate the potential influence of the presence of a village temple and the de-

---

[34]We can alternatively only adjust the number of catholics upwards in the provinces known to have more Catholics (Hebei, Shaanxi, Guangxi, Gansu and Xinjiang (Lai, 2003)). This does not affect our results and is omitted for brevity. The alternative imputed fractionalization measure and regression results when we use them are available upon request.

mographic structure of kinship/lineage groups. In a companion paper, PadróiMiquel et al. (2012),we use the presence of a village temple to proxy for social capital and find that it interacts positively with the introduction of elections in increasing public goods. Village temples are not specific to any one religion and are used to worship a range of local deities by all villagers. They are funded and maintained by voluntary villagers. Temples are an important venues for village events such as fairs, festivals, and public discussions.

Another potentially important omitted variable is the presence of kinship networks. The effects of kinship networks on elections or public goods are ambiguous ex ante. On the one hand, several recent studies in political science such as Tsai (2007) find that kinship networks are important for providing public goods in rural China, and can act as a substitute for formal institutions such as elections. On the other hand, economists have recently argued that although group clustering such as kinship networks can reflect higher levels of trust between group members, they may actually reduce trust across groups, which can reduce public goods for the entire community (of many groups) (e.g. Guiso et al., 2004; Putnam et al., 1994). Moreover, scholars have observed that kinship networks have declined in importance relative to other dimensions of social clustering as China modernizes (e.g., Cohen, 1992; Jiang, 1995).[35]

To address these concerns, we document whether there is a temple in the village during our sample period and the number of households belonging to each surname in each village. As there is little time variation in the presence of temple and we were only able to obtain surname data for 2011, we use time-invariant measures for our analysis, and will control for the interaction of these measures and the introduction of elections.[36] The proxy for a temple is dummy if there was ever a temple.[37] To measure the presence of kinship groups, we calculate the average fractionalization of surnames to measure kinship fragmentation. We also measure kinship networks with the population share of the top two surnames and the presence of a lineage group (e.g. the presence of family that

---

[35]The decline of the importance of kinship networks has also been observed for societies that are culturally Chinese outside of the People's Republic of China. For example, in a description of villages in Taiwan during the 1970s, De-glopper, 1974, p. 65 states that "Neighborhoods... are composed of diverse populations who bear different surnames, who earn a living in different ways, and whose income ranges from high to very low. They have nothing in common except residence in an arbitrarily and rather vaguely defined area, and they do nothing in common except worship. This is because the other traditional social divisions – guilds and surnames – no longer matter today".

[36]To study the potential influences of kinship groups, we returned to the same villages that we surveyed for the first wave of the VDS in 2011 to record the surnames of all of the villagers from the village roster. For administrative reasons, we were able to obtain these data for one year 2011 and 214 out of the 217 original villages.

[37]33% of the villages in our sample have had at least one temple. The standard deviation of this variable is 0.47 (47%).

maintains a written family tree or ancestral hall), which is often used to proxy for the social capital of kinship networks in sociology and political science.[38] Also, there is little correlation between religious fractionalization and the presence of temples or the kinship measures.[39]

The estimates are shown in Table 6. In column (10), we control for all of these interactions in one equation (except the interaction of surname polarization because it is highly correlated with surname fractionalization). Our main result is very robust and similar to the baseline, which we re-state in column (1). This mitigates the concern that our main results are driven by spurious correlations. It is interesting to note that the interaction effect of the presence of a village temple and the introduction of elections is positive and statistically significant. The coexistence of the effect of the village temple and religious fragmentation means that the dimensions of social capital captured by the presence of a village temple are orthogonal to the social capital damaged by fragmentation.

Another interesting result is that the interaction of surname fragmentation and the introduction of elections is statistically zero (it is small in magnitude and statistically insignificant). This suggests that religion is more important as a factor of social clustering in rural China than extended kinship networks. Similarly, it is notable that the pre-election income levels and income inequality (Gini) has little influence on the effect of elections. This is likely to be due to the fact that elections significantly increased income redistribution (e.g. Martinez-Bravo et al., 2012), which means that individuals can move across income groups and that the clustering of individuals into income groups is less stable than for religion.

Finally, in Table 7 columns (1)-(7), we control for a large number of additional factors that could potentially influence the effect of elections on public goods: the interaction of a dummy variable indicating that a village is a suburb of an urban area and year fixed effects; a dummy variable indicating that the *Tax and Fee Reform* has been introduced; dummy variables for the presence of lineage groups, village temples, and for whether a village ever experienced an administrative merger, each interacted with year fixed effects; the pre-election average of household incomes at different parts of the village income distribution, each interacted with year fixed effects. Note that

---

[38]See PadróiMiquel et al. (2012) and the references within for detailed discussions of village temples and lineage groups. The average village in our sample comprise of household that belong to 24 surnames (standard deviation is 22). The mean fractionalization is 0.727 (standard deviation is 0.23), the population share of the two largest households is on average 50% (standard deviation is 0.28 or 28%), and 43% of villages have at least one lineage group on average (standard deviation is 0.50 or 50%).

[39]For example, the correlation between the presence of a village temple and religious fractionalization is 0.229, and the correlation with the fractionalization of surnames across villages is -0.12.

some of these controls (the presence of the lineage group, the presence of village temples, and pre-election household incomes) are similar to those that we controlled for in the previous table. The difference here is that we impose a more flexible functional form on the influences of these variables by interacting them with the full vector of year fixed effects and thereby allowing their effects to vary fully flexible over time, rather than interacting them with post-election dummy variables.

In column (8), we control for a quadratic province-time trend. In column (9), we control for all of the additional variables except the province-quadratic time trends (we use the baseline specification of linear time-trends instead) in one regression. The estimates show that our main result is robust to controlling for any or all of these additional controls. Similarly, we find that our results are very similar when we control for a quadratic-province time trend instead of a linear one.

The results in this section show that our main findings are very robust to controls and are therefore unlikely to be confounded by spurious correlations.

5.5 Additional Results

Which Villages Drive the Main Results? Given the large share of non-religious population, it is interesting to investigate the extent to which this drives our result. First, we examine whether the estimates change when we exclude the villages that are homogeneously non-religious (note that 38 out of 217 villages in our sample are homogenous according to the NFS data and they are all homogeneously non-religious). Table 8 column (2) re-estimates the baseline on a sample restricted to villages with some religious population. Although the sample size is smaller than the baseline in column (1), the estimates have the same sign, are slightly larger in magnitude, and are statistically significant at the 1% level.

Second, we divide the sample into two groups of villages according to whether they are below or above the sample median in terms of the share of non-religious population. Columns (3) and (4) show that the estimates maintain the negative sign in both subsamples. The estimates for the below median sample in column (3) is smaller in magnitude and more precisely estimated. They show that the estimates are not particularly driven by villages where there are many non-religious individuals. Neither of the estimates are statistically significant and are not statistically different from each other.

In columns (5) and (6), we divide the sample according to whether a village is above or below the

sample median level of fractionalization and re-estimate our baseline equation in each sub-sample to investigate whether our main results are driven by the high or low fractionalization villages. Both estimates are negative, but imprecise. They suggest that our main results are rather general in terms of the level of fractionalization. However, we cannot be conclusive on this point due to the imprecision of the estimates.

The estimates in columns (3)-(6) show that the influence of fragmentation on elections is quite general in terms of the level of religious population share and fractionalization.

Another interesting margin to investigate is the margin of government spending. Public expenditures are not made every year for each village. Hence, we investigate the extent to which the main results are driven by villages with higher religious fractionalization making fewer versus smaller public goods investments. Column (7) examines a dummy variable for whether any investment is made by the government. The interaction effect is negative, but statistically insignificant. Column (8) examines the amount of investment and is restricted to the sample of observations with positive investments. The estimate is large and negative, but statistically insignificant. The imprecision is most likely due to the small sample size. The estimates in column (7) and (8) suggest that our main results reflect both changes on the intensive (e.g. larger investments) and extensive (e.g. the number of investments) margin. But the lack of precision prevents us from being conclusive on this point.

Private Expenditure Crowd Out   Finally, we investigate the extent to which the increase in public expenditure in villages with low religious fractionalization crowds out private expenditure on public goods in such villages. Unfortunately, we do not have direct measures of private expenditure on public goods. Therefore, we approach this question in two indirect exercises.

First, we examine whether there is *complete* crowd out, in which case, the changes in public spending due to elections would result in no change in the provision of public goods – i.e., when public spending increases, private spending declines such that provision remains the same.[40] We are able to proxy for the provision of two public goods that together approximately constitute a quarter of our expenditure data; we proxy for irrigation with the amount of arable land in a village and for schooling with primary school enrollment rates. This is based on the logic that increases in spending

_____

[40]See Hungerman (2007) and the studies referenced within for empirical evidence on private-expenditure crowd-out in other contexts.

on irrigation should increase the amount of arable land and increases in spending in schooling should increase enrollment rates. Note that in our sample, 83% of the villages have a school and 94% of these are primary schools (the others are middle schools). These data are not available for all years, which will reduce the precision of our estimates. Table 9 columns (2) and (3) show that the estimated interaction effect of religious fractionalization and the introduction of elections on these proxies for provision are negative and the main effects of the introduction of religion are positive. The estimates for schooling in column (3) are statistically significant at the 1% level. The estimates imply that the introduction of elections increased school enrollment rates by 2.3 percentage-points in villages with zero fractionalization. In villages with the mean level of fractionalization, elections increased school enrollment rates by 0.33 percentage points ($2.23 - 26.01 \times 0.08 = 0.33$). Note that the mean enrollment rate is 96.4 percentage-points, which means that a 0.33 percentage point difference in enrollment rate is a large marginal difference since the baseline is so high. These results are inconsistent with complete crowd out.

Second, we investigate whether there is *any* crowd out by examining private expenditure on public goods. For this, we used the household level data on expenditures collected by the NFS. We were only able to obtain this for a subset of the villages and the data are only available for 1993, 95-2005. We use reported household expenditure on fixed assets for agricultural production to proxy for expenditure on irrigation and reported household expenditure for school tuition as a measure of expenditure on schooling. Column (4) shows that the interaction effect of religious fractionalization and the introduction of elections on household expenditure on agricultural production is negative, while the main effect is positive. The interaction effect is statistically significant at the 10% level. The similarity in the signs of the estimates between private spending in column (4) and public spending in column (1) suggests that public spending in low fractionalization villages does not crowd out private spending on irrigation in such villages.

In column (5), we re-estimate the effects on arable land for a restricted sample that only includes observations for which we have household expenditure data. The estimates have similar signs as those using the larger sample in column (2) and are statistically significant at the 1% level.

Column (6) presents the estimates for private expenditure on schooling. The interaction effect is positive and the main effect is negative. The fact that the signs differ between the private expenditure estimates in column (6) and the public expenditure estimates in column (1) suggests

that public spending may crowd out private spending on education. However, the estimates in column (6) are not statistically significant at conventional levels.

In column (7), we re-estimate the effect on enrollment rates using the restricted sample of villages with household expenditure data. The signs are similar to the larger sample estimates in column (3), but they are very imprecise.

The results in this section show that increases in public spending in less fractionalized villages after the introduction of elections are unlikely to have completely crowded out private spending. However, the evidence is inconclusive of data limitations prevent us from measuring total public goods provision and the estimates household expenditure are imprecise.

6 Conclusion

Between 1970 and 2003, the average Polity Index for the world has increased from approximately negative two to three, meaning that the world as a whole has experienced a dramatic increase in democracy. Together with the fact that the rise in democratization has been driven by poor countries, this means that understanding the pre-conditions for successful democratization and the underlying mechanisms must rank amongst the most important questions for researchers and policymakers in development economics and political economy.

This study, along with a companion study on the influences of social capital on democratization (PadróiMiquel et al., 2012), takes a small first step in providing rigorous empirical evidence on the necessary pre-conditions for democratization in the context of rural China and public goods provision. The centrally determined electoral reforms in China provide a stark example of how an identical reform can have very different effects depending on the pre-existing level of voter heterogeneity. Specifically, we find that voter heterogeneity – i.e., religious fragmentation – hinders the ability of an elected government to provide public goods. Consistent with theories that predict that governments of heterogeneous populations have difficulty in raising funds for public goods, we find that our main results on total government public goods expenditure is entirely driven by differences in expenditure financed by villagers. Neither the introduction of elections or its interaction with religious fragmentation has any effect on expenditure financed by other revenue sources. Our results suggest that the dominant force behind the differential effects of elections between heterogeneous and homogeneous villages was driven by the fact that elections increased

the accountability of local governments towards villagers (see Section 3). In particular, the findings support the belief that fragmented populations have lower preference for public goods, and theories which predict that homogeneous populations are better able to monitor politicians and hold them accountable.

The general lesson from our results is that pre-conditions are very important for determining the impact of institutional reforms. These results are particularly striking given that the influence of religion in China has been significantly weakened by the historical presence of a strong state. In other words, our estimates are likely to be lower-bounds of the influences of religious fractionalization for many other contexts.[41]

Generalizations aside, it is worth pointing out that the Chinese electoral reforms are among the largest democratization reforms in history. They have changed the lives of almost one billion individuals from ones with no democratic representation to some representation within the span of a decade. Thus, understanding the effects and the determinants of the effects of the introduction of elections in rural China is important in and of itself. Moreover, for those who are interested in the social organization of rural China, our findings are also interesting in identifying religion as an important dimension for group clustering in rural China. In the context of our analysis, we find that religion has overtaken other important traditional differences such as those across kinship groups.

There are two important caveats to keep in mind for interpreting our results. First, when attempting to extrapolate our results to other contexts, it is important to realize that the estimated sign and magnitude of the interaction effect are specific to our context. For example, that elections improving public goods provision correspond to a positive sign for the main election effect, or that there is less improvement in heterogeneous villages, is a consequence of the severe under provision of public goods prior to the introduction of elections. Had public goods expenditure been excessive prior to the electoral reforms, maybe due to high taxation and elite rent-seeking, the increased accountability caused by elections would reduce public goods expenditure on average, and would cause the interaction with heterogeneity to be positive. Second, although the severe-under provision of public goods prior to the electoral reforms is consistent with elections improving efficiency and heterogeneity reducing it, the inability to measure demand or total public goods provision means

---

[41]This is likely to be true even though we interpret religion loosely as potentially coinciding with differences in ethnicity and language because ethnic and linguistic differences in our context are also muted relative to most others.

that welfare assessments are beyond the scope of this paper. This is an important avenue for future research.

References

Acemoglu, Daron and James A. Robinson, "Why did the West extend the Franchise? Democracy, Inequality and Growth in Historical Perspective," *The Quarterly Journal of Economics*, 2000, *115*, 1167–1199.

_ , **Simon Johnson, James A. Robinson, and Pierre Yared**, "Income and Democracy," *American Economic Review*, June 2008, *98* (3), 808–42.

Alesina, Alberto and Eliana La Ferrara, "Participation In Heterogeneous Communities," *The Quarterly Journal of Economics*, August 2000, *115* (3), 847–904.

_ **and Eliana La Ferrara**, "Who trusts others?," *Journal of Public Economics*, August 2002, *85* (2), 207–234.

_ **and Eliana La Ferrara**, "Ethnic Diversity and Economic Performance," *Journal of Economic Literature*, September 2005, *43* (3), 762–800.

_ , **Arnaud Devleeschauwer, William Easterly, Sergio Kurlat, and Romain Wacziarg**, "Fractionalization," *Journal of Economic Growth*, June 2003, *8* (2), 155–94.

_ , **Reza Baqir, and William Easterly**, "Public Goods and Ethnic Divisions," *The Quarterly Journal of Economics*, November 1999, *114* (4), 1243–1284.

Bandiera, Oriana and Gilat Levy, "Diversity and the Power of the Elites inDemocraticSocieties: A Model and a Test," STICERD - Economic Organisation and Public Policy Discussion Papers Series 018, Suntory and Toyota International Centres for Economics and Related Disciplines, LSE August 2010.

Banerjee, Abhijit and Rohini Pande, "Parochial Politics: Ethnic Preferences and Politician Corruption," Discussion Papers 6381, C.E.P.R. July 2007.

_ **and Rohini Somanathan**, "The political economy of public goods: Some evidence from India," *Journal of Development Economics*, March 2007, *82* (2), 287–314.

_ , **Dilip Mookherjee, Kaivan Munshi, and Debraj Ray**, "Inequality, Control Rights, and Rent Seeking: Sugar Cooperatives in Maharashtra," *Journal of Political Economy*, February 2001, *109* (1), 138–190.

_ , **Lakshmi Iyer, and Rohini Somanathan**, *Public Action for Public Goods: Theory and Evidence*, Vol. 4 of *Handbook of Development Economics*, Elsevier Science and Technology Books,

Berlie, J.A., *Islam in China: Hui and Uyghurs Between Modernization and Sinicization*, White Lotus Press, 2004.

Boix, Carles and Daniel N. Posner, "Social Capital: Explaining its Origins and Effects on Government Performance," *British Journal of Political Science*, 1998, *28* (04), 686–693.

Brandt, Loren and Matthew A. Turner, "The usefulness of imperfect elections: The case of village elections in rural China," *Economics & Politics*, 2007, *19* (3), 453–480.

Cameron, A. Colin, Jonah B. Gelbach, and Douglas L. Miller, "Bootstrap-Based Improvements for Inference with Clustered Errors," *The Review of Economics and Statistics*, August 2008, *90* (3), 414–427.

Cohen, Myron L., *Family Organization in China* Asia: Case Studies in the Social Sciences, Sharpe, Inc., 1992.

_ , "Religion in a State Society : China," *Asia Case Studies in the Social Sciences Armonk NY ME Sharpe*, 1992, p. 17ï¿œ31.

Dayton-Johnson, Jeff, "Determinants of collective action on the local commons: a model with evidence from Mexico," *Journal of Development Economics*, June 2000, *62* (1), 181–208.

Dean, K., *Taoist Ritual and Popular Cults of Southeast China*, Princeton University Press, 1993.

Deglopper, Donald R., *Religion and Ritual in Lukang* Religion and Ritual in Chinese Society, Stanford University Press,

Desmet, Klaus, Ignacio Ortuno-Ortin, and Romain Wacziarg, "The Political Economy of Ethnolinguistic Cleavages," NBER Working Papers 15360, National Bureau of Economic Research September 2009.

Duclos, Jean-Yves, Joan Esteban, and Debraj Ray, "Polarization: Concepts, Measurement, Estimation," *Econometrica*, 2004, *72* (6), pp. 1737–1772.

Easterly, W. and R. Levine, "Africa's growth tragedy: policies and ethnic divisions," *The Quarterly Journal of Economics*, 1997, *112* (4), 1203–1250.

Esteban, Joan and Debraj Ray, "On the Measurement of Polarization," *Econometrica*, July 1994, *62* (4), 819–51.

_ **and** _ , "Conflict and Distribution," *Journal of Economic Theory*, 1999, *87*, 379–415.

_ **and** _ , "A Comparison of Polarization Measures," UFAE and IAE Working Papers 700.07, Unitat de Fonaments de l'Analisi Economica (UAB) and Institut d'Analisi Economica (CSIC) May 2007.

Faure, D. and H.F. Siu, *Down to Earth: The Territorial Bond in South China*, Stanford University Press, 1995.

FernÃ¡ndez, Raquel and Gilat Levy, "Diversity and redistribution," *Journal of Public Economics*, June 2008, *92* (5-6), 925–943.

Feuchtwang, S., *Popular Religion in China: The Imperial Metaphor*, Curzon, 2001.

Gao, Shouxian, *Zhongguo zongjiao liyu [Chinese Religions and Rites].*, Taipei, Taiwan: Zhidao Chuban Youxian Gongsi, 1994.

Glennerster, Rachel, Edward Miguel, and Alexander Rothenberg, "Collective Action in Diverse Sierra Leone Communities," NBER Working Papers 16196, National Bureau of Economic Research July 2010.

Gong, Zhebing and Yetao Zhou, "'90 niandai Hubeisheng zongjiao xianzhuang jiqi fenxi' [The Current Situation and an Analysis of Religions in Hubei Province in the 1990s]," *Shehui zhuyi yanjiu [Research on Socialism]*, 1999, *3*, 70–73.

Gong, Zuezeng, "'Zhongguo zongjiao xianzhuang ji fazhan qushi' [The Current Situation and Developmental Trend of Religions in China]," *Zhongyang shehui zhuyixueyuan xuebao [Journal of Central Socialist College]*, 1998, *6*, 24–27.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, "People's opium? Religion and economic attitudes," *Journal of Monetary Economics*, January 2003, *50* (1), 225–282.

_ , _ , **and** _ , "The Role of Social Capital in Financial Development," *American Economic Review*, June 2004, *94* (3), 526–556.

Habyarimana, James, Macartan Humphreys, Daniel N. Posner, and Jeremy M. Weinstein, "Why Does Ethnic Diversity Undermine Public Goods Provision?," *The American Political Science Review*, 2007, *101* (4), 709–725.

He, Kemin, "'Zhongguo de zongjiao he zongjiao zhengce' [Religions and Religious Policies in China].," *Zhongwai jiaoliu [Sino-External Exchange]*, 1999, *3*, 40–41.

Hungerman, Daniel M., "Diversity and Crowd-out: A Theory of Cold-Glow Giving," NBER Working Papers 13348, National Bureau of Economic Research, Inc August 2007.

Hunter, A. and K.K. Chan, *Protestantism in Contemporary China* Cambridge Studies in Ideology and Religion, Cambridge University Press, 2007.

Israeli, R., *Islam in China: Religion, Ethnicity, Culture, and Politics*, Lexington Books, 2002.

Jiang, Lin, "Changing Kinship Structure and its Implications for Old-Age Support in Urban and Rural China," *Population Studies*, 1995, *49* (1), pp. 127–145.

Kelliher, Daniel, "The Chinese debate over village self-government," *The China Journal*, 1997, pp. 63–86.

Khwaja, Asim Ijaz, "Can good projects succeed in bad communities?," *Journal of Public Economics*, August 2009, *93* (7-8), 899–916.

Lai, Hongyi Harry, "The Religious Revival in China," *Copenhagen Journal of Asian Studies*, 2003, *18*, 40–64.

Le, Guoan and Guoping Jiang, "'Fengjian mixin yu shehui wending' [Feudal Superstitions and Social Stability]," *Gangnan shifan xueyuan xuebao [Journal of the Southern Jiangxi Normal College]*, 1998, *1*, 73–76.

Lipset, Seymour Martin, "Some Social Requisites of Democracy: Economic Development and Political Legitimacy," *The American Political Science Review*, 1959, *53* (1), pp. 69–105.

Lizzeri, Alessandro and Nicola Persico, "Why did the Elites Extend the Suffrage? Democracy and the Scope of Government with an Application to Britain's "Age of Reform"," *The Quarterly Journal of Economics*, 2004, *119*, 707–765.

Luo, Renfu, Linxiu Zhang, Jikun Huang, and Scott Rozelle, "Elections, Fiscal Reform and Public Goods Provision in Rural China," Working Paper, Freeman Spogli Institute for International Studies, Stanford University 2007.

_ , _ , _ , **and** _ , "Village Elections, Public Goods Investments and Pork Barrel Politics, Chinese-style," *Journal of Development Studies*, 2010, *46* (4), 662–684.

Luo, W., *Christianity in China*, China Intercontinental Press, 2004.

Luttmer, Erzo F. P., "Group Loyalty and the Taste for Redistribution," *Journal of Political Economy*, June 2001, *109* (3), 500–528.

MacInnis, D.E., *Religion in China today: policy and practice*, Orbis Books, 1989.

Madsen, Richard, "Religious Renewal," in Richard Madsen Perry Link and Paul Pickowicz, eds., *Unofficial China: Popular Culture and Thought in the People's Republic*, Boulder, Colorado: Westview Press, 1989, pp. 103–120.

_ **and Linzhu Fan**, *The Catholic Pilgrimage to Sheshan* The Politics of Religion in Modern China: Making Religion Making the State, Stanford University Press,

Martinez-Bravo, Monica, Gerard Padro-Miquel, Nancy Qian, and Yang Yao, "The Effect of Democratization on Public Goods and Redistribution: Evidence from China," *Yale Working Paper*, 2012.

_ , **Gerard PadróiMiquel, Nancy Qian, and Yang Yao**, "Do Local Elections in Non-Democracies Increase Accountability? Evidence from Rural China," NBER Working Papers 16948, National Bureau of Economic Research April 2011.

Miguel, Edward and Mary Kay Gugerty, "Ethnic diversity, social sanctions, and public goods in Kenya," *Journal of Public Economics*, December 2005, *89* (11-12), 2325–2368.

Montalvo, Jose and Marta Reynal-Querol, "Ethnic Diversity and Economic Development," *Journal of Development Economics*, 2003, *76*, 293–323.

Mu, Ren and Xiaobo Zhang, "The Role of Elected and Appointed Village Leaders in the Allocation of Public Resources: Evidence from a Low-Income Region in China," IFPRI Working Paper http://www.ifpri.org/publication/role-elected-and-appointed-village-leaders-allocation-public-resources, International Food and Policy Research Institute 2011.

Munshi, Kaivan and Mark Rosenzweig, "The Efficacy of Parochial Politics: Caste, Commitment, and Competence in Indian Local Governments," NBER Working Papers 14335, National Bureau of Economic Research September 2008.

_ **and Nicholas Wilson**, "Identity and Mobility: Historical Fractionalization, Parochial Institutions, and Occupational Choice in the American Midwest," Department of Economics Working Papers 2010-22, Williams College August 2010.

O'Brien, Kevin J., "Implementing Political Reform in China's Villages," *Australian Journal of Chinese Affairs*, 1994, (32), 33 – 59.

_ **and Lianjiang Li**, "The Struggle over Village Elections," in Merle Goldman and Roderick MacFarquhar, eds., *The paradox of China's post-Mao reforms*, Cambridge, MA: Harvard University Press, 1999.

_ **and** _ , *Rightful Resistance in Rural China*, New York, NY: Cambridge University Press, 2006.

Oi, Jean and Scott Rozelle, "Elections and power: The locus of decision-making in Chinese villages," *The China Quarterly*, 2000, *162*, 513–539.

Okten, Cagla and Una Okonkwo Osili, "Contributions in heterogeneous communities: Evidence from Indonesia," *Journal of Population Economics*, December 2004, *17* (4), 603–626.

PadroiMiquel, Gerard, "The Control of Politicians in Divided Societies: The Politics of Fear," *The Review of Economic Studies*, 2007, *74*, 1259–1274.

PadróiMiquel, Gerard, Nancy Qian, Yiqing Xu, and Yang Yao, "Making Democracy Work: The Effect of Social Capital and Elections on Public Goods in China," Technical Report, Yale University 2012.

Persson, Torsten and Guido Tabellini, ": Is It Heterogenous and How Can It Be Estimated?," NBER Working Papers 13150, National Bureau of Economic Research June 2007.

Putnam, Robert D., Robert Leonardi, and Raffaella Y. Nanetti, *Making democracy work: civic traditions in modern Italy* Princeton paperbacks, Princeton, NJ: Princeton University Press, 1994.

Rozelle, Scott, "Decision-Making in China's Rural Economy: The Linkages between Village Leaders and Farm Households," *The China Quarterly*, 1994, (137), 99–124.

Singhal, Monica and Benjamin A. Olken, "Informal Taxation," Technical Report 2009.

Siu, Helen F., "Recycling Ritualst," in Richard Madsen Perry Link and Paul Pickowicz, eds., *Unofficial China: Popular Culture and Thought in the People's Republic*, Boulder, Colorado: Westview Press, 1989, pp. 121–37.

Sweeten, A.R., *Christianity in rural China: conflict and accommodation in Jiangxi Province, 1860-1900* Michigan monographs in Chinese studies, Center for Chinese Studies, University of Michigan, 2001.

Tsai, Lily Lee, "Cadres, Temple and Lineage Institutions, and Governance in Rural China," *The China Journal*, 2002, (48), 1–27.

_ , *Accountability without Democracy: Solidary Groups and Public Goods Provision in Rural China*, New York, NY: Cambridge University Press, 2007.

Unger, Jonathan, *The Nature of Chinese Politics: From Mao to Jiang*, Cambridge, MA: M.E. Sharpe, 2002.

Vigdor, J.L., "Community Composition and Collective Action: Analyzing Initial Mail Response to the 2000 census," *Review of Economics and Statistics*, 2004, *86* (1), 303–312.

Weber, M., *The religion of China: Confucianism and Taoism* Free Press paperback, Free Press, 1968.

Whiting, Susan, "Contract Incentives and Market Discipline in China's Rural Industrial Sector," in John McMillan and Barry Naughton, eds., *Reforming Asian Socialism, The Growth of Market Institutions*, Ann Arbor: University of Michigan Press, 1996.

Yang, C.K., *Religion in Chinese Society: A Study of Contemporary Social Functions of Religion and Some of Their Historical Factors*, University of California Press, 1961.

Youngliang, Du, *Jianming yinghan, hanying shijie zongjiao cidian [A Concise English-Chinese and Chineseï¿œEnglish Dictionary of World Religious Terms]*, Zhongguo Duiwai Fanyi Chuban Gongsi, 1994.

Zhang, Xiaobo, Shenggen Fan, Linxiu Zhang, and Jikun Huang, "Local governance and public goods provision in rural China," *Journal of Public Economics*, 2004, *88*, 2857–2871.

Zhu, Yulie, *Jinri zhongguo zongjiao [Religion in Today's China]*, Beijing: Jinri Zhongguo chuban-she, 1994.

Table 1: Statistics on Religious Populations in China

	Aggregate Measures on the Number of Religious Individuals in China (Lai, 2003)			NFS Data on the Share of Religious Population per Village			Imputed Measures of the Share of Religious Population per Village		
	(1) Official	(2) Non-Official	(3) % Difference	(4) Obs	(5) Mean	(6) Std. Dev.	(7) Obs	(8) Mean	(9) Std. Dev.
Mahayana Buddhism (Han)	90.5	132.7	46.63%	4340	0.029	0.090	4340	0.043	0.132
Theravada Buddhism (Yunnan)	7.6	7.6	0.00%						
Tibetan Buddhism (Tibet)	7.6	7.6	0.00%						
Daoism	3	3	0.00%	4340	0.004	0.012	4340	0.004	0.012
Islam	20.3	20	-1.48%	4340	0.019	0.107	4340	0.019	0.105
Christian	21	35	66.67%	4340	0.012	0.038	4340	0.021	0.064
Protestanism	16	25	56.25%				4340	0.015	0.046
Catholicism	5	10	100.00%				4340	0.006	0.018
Folk Religions							4340	0.200	0.000
Non Religious				4340	0.936	0.157	4340	0.723	0.161
Religious Fractionalization				4340	0.076	0.127	4340	0.218	0.111
Religious Polarization				4340	0.140	0.226	4340	0.670	0.113

Notes: The statistics in columns (1) and (2) are for the year 2003 and are presented in Lai (2003) Table 2. See Lai (2003) for the original sources. The statistics in columns (4)-(9) are for the period of 1982-2005.

Table 2: Descriptive Statistics

	(1)	(2)	(3)	(4)
	Source	Obs.	Mean	Std. Dev.
Village # Households	NFS	4340	414.19	275.47
Fraction of Highschool Graduates	NFS	1882	0.05	0.06
Avg. Pre-Election Pub Goods Exp (10.000 RMB)	VDS	4340	14.28	135.47
Financed by Villagers	VDS	4340	9.77	119.29
Avg. Pre-Election Income -- 10th Percentile	NFS	3778	5080.40	3638.01
Avg. Pre-Election Income -- 50th Percentile	NFS	3778	10512.98	8365.71
Avg. Pre-Election Income -- 90th Percentile	NFS	3778	24427.83	36802.13
Gini	NFS	3550	0.28	0.08
Year of 1st Election	VDS	4340	1988.51	5.24
Year of 1st Haixuan	VDS	2780	1997.45	5.26

The sample uses a panel of 195 villages for the years 1982-2005.

Table 3: The Correlates of Religious Fragmentation

	(1) Religious Fractionalization
Religious Polarization	0.9935*
Social Organization Organized and Funded by Villagers	-0.0312
Village Population	0.1883*
Share of Religious Population (Any Religion)	0.7863*
Christian	0.4407*
Muslim	0.3659*
Buddhist	0.8052*
Other	0.3925*
Fraction of Highschool Graduates	-0.0361
Avg. Pre-Election Pub Goods Exp	0.1742*
Financed by Villagers	0.1997*
Avg. Pre-Election Income -- 10th Percentile	0.1717*
Avg. Pre-Election Income -- 50th Percentile	0.2167*
Avg. Pre-Election Income -- 90th Percentile	0.2522*
Avg. Pre-Election Gini	0.0711*
Year of 1st Election	-0.0215
Year of 1st Haixuan	0.1163*

Observations are at the village level. * indicates that the correlations are statistically significant at the 5% level.

Table 4: The Effect of *Religious Fragmentation* × *the Introduction of Elections*

Dependent Variable: Government Public Goods Expenditure						
	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline					Used Imputed Religious Fractionalization
Post 1st Election x Religious Fractionalization	-154.2 (70.80)			-237.4 (150.7)	-139.0 (39.10)	-161.0 (76.62)
Post 1st Election x Buddhist Pop Share		-115.0 (103.6)		41.34 (100.5)	34.54 (128.9)	
Post 1st Election x Christian Pop Share		-151.6 (248.6)		-151.9 (207.8)	-123.3 (148.0)	
Post 1st Election x Muslim Pop Share		24.74 (44.35)		8.482 (33.03)	-1.504 (28.08)	
Post 1st Election x Other Religion Pop Share		-941.2 (625.3)		-559.5 (450.5)	-620.7 (528.8)	
Post 1st Election x Religious Polarization			-69.96 (31.84)	54.56 (70.73)		
Post 1st Election	26.54 (11.60)	23.20 (11.47)	25.34 (11.01)	27.61 (11.94)	27.98 (12.53)	52.75 (23.25)
Level of Clustering	Village	Village	Village	Village	Province	Village
Observations	4340	4340	4340	4340	4340	4340
R-squared	0.126	0.126	0.126	0.122	0.122	0.123

Note: All regressions control for village population, post-open nomination and its interaction with religious fractionalization, the interaction of religious fractionalization interacted with year FEs, province-year trends, village and year FEs. Columns (1), (3) and (6) also control for the share of all religious individuals interacted with year fixed effects. Columns (1)-(5) also control for the interaction of post open nomination with the same variable that is shown to be interacted with post election.

Table 5: The Effect of *Religious Fragmentation × the Introduction of Elections* on Public Goods Expenditure from Villagers and Election Quality

	Dependent Variables				
	Government Public Goods Exp by Source of Financing				Poor Election Implementation
	(1)	(2)	(3)	(4)	(5)
	All	Villagers	Non-Villagers	All	
Dep Var Mean	**14.279**	**9.769**	**4.422**	**14.279**	**0.85**
Post 1st Election					
x Religious Fractionalization	-154.2	-148.6	-7.146	36.71	0.0259
	(70.80)	(91.54)	(16.15)	(33.39)	(0.324)
Religious Fractionalization				10.96	
				(26.44)	
Post 1st Election	26.54	26.92	-0.155	3.073	-0.207
	(11.60)	(12.88)	(2.186)	(4.910)	(0.0565)
Observations	4340	4340	4340	4340	4196
R-squared	0.126	0.117	0.078	0.042	0.631

Notes: All regressions except column (4) control for the the full set of baseline controls: religious fractionalization*year FEs, the share of religious population*year FE, village population, province-year trends, andvillage and year FEs. Column (4) controls for the share of religious population* year FE, village population, province-year trends, year FEs, and the pre-election levels of income at the 10th, 50th and 90th percentiles of the village income distribution as well as the pre-election village Gini. The standard errors are clustered at the village level.

Table 6: The Effect of *Religious Fragmentation* × *the Introduction of Elections* – Robustness to Alternative Factors (e.g., social capital, lineage groups, income, inequality)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dependent Variable: Total Gov Public Goods Expenditure									
Post 1st Election										
x Religious Fractionalization	-152.5	-209.2	-162.2	-160.5	-152.1	-148.9	-145.3	-129.3	-151.3	-162.2
	(70.50)	(81.50)	(75.38)	(72.67)	(67.01)	(59.42)	(65.48)	(49.54)	(68.72)	(60.89)
x Temple		51.75								-5.789
		(23.21)								(85.27)
x Surname Fractionalization			38.50							48.32
			(31.18)							(22.34)
x Surname Polarization				-7.078						14.35
				(45.99)						(51.96)
x Pop Share of Top 2 Surnames					-16.48					
					(30.34)					
x Lineage Group						40.75				-32.91
						(16.45)				(58.27)
x Avg Pre-Election Tot Gov Pub Goods Exp							2.289			35.49
							(1.163)			(14.28)
x Avg Pre-Election HH Income (10th Percentile)								0.0139		0.0939
								(0.0259)		(1.061)
x Avg Pre-Election HH Income (50th Percentile)								-0.0200		0.0293
								(0.0214)		(0.0298)
x Avg Pre-Election HH Income (90th Percentile)								0.00497		-0.0238
								(0.00376)		(0.0209)
x Avg Pre-Election Gini									34.98	0.00377
									(95.43)	(0.00272)
Post 1st Election	26.46	13.83	1.237	31.76	34.96	6.029	17.90	34.72	16.60	32.32
	(11.58)	(6.338)	(17.07)	(27.44)	(22.88)	(5.816)	(9.122)	(15.44)	(24.78)	(184.1)
Observations	4340	4340	3880	3880	4340	4340	4340	4340	4340	3880
R-squared	0.126	0.133	0.133	0.132	0.126	0.131	0.129	0.132	0.126	0.151

Notes: All regressions control for the the full set of baseline controls: religious fractionalization*year FE, the share of religious population*year FE, village population, province-year trends, and year FE. The standard errors are clustered at the village level.

46

Table 7: The Effect of *Religious Fragmentation* × *the Introduction of Elections* – Robustness to Additional Controls

	Dependent Variable:Total Gov Public Goods Expenditure								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post 1st Election x Religious Fractionalization	-154.2	-141.4	-151.5	-132.7	-166.0	-154.8	-152.1	-154.3	-140.3
	(70.80)	(64.85)	(70.19)	(62.89)	(72.29)	(72.13)	(64.71)	(70.82)	(60.15)
Post 1st Election	26.54	25.79	26.18	25.51	29.39	26.05	28.38	26.53	28.53
	(11.60)	(11.43)	(11.43)	(10.97)	(11.87)	(11.96)	(12.83)	(11.59)	(12.78)
Controls									
Near City * Year FE	N	Y	N	N	N	N	N	N	Y
Post Tax and Fee Reform	N	N	Y	N	N	N	N	N	Y
Lineage * Year FE	N	N	N	Y	N	N	N	N	Y
Temple * Year FE	N	N	N	N	Y	N	N	N	Y
Ever Merged * Year FE	N	N	N	N	N	Y	N	N	Y
Pre-Election HH Income (10th, 50th, 90th) * Year FE	N	N	N	N	N	N	Y	N	Y
Province-Year Squared	N	N	N	N	N	N	N	Y	N
Observations	4340	4340	4340	4340	4340	4340	4340	4340	4340
R-squared	0.126	0.131	0.126	0.135	0.140	0.131	0.154	0.126	0.183

Notes: All regressions control for the the the full set of baseline controls: religious fractionalization*year FE, the share of religious population*year FE, village population, province-year trends, and year FE. The standard errors are clustered at the village level. `Y' indicates additional controls at the bottom of the table.

Table 8: The Effect of *Religious Fragmentation* × *the Introduction of Elections* – Which Villages Drive the Main Results?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Dependent Variable: Total Gov Public Goods Expenditure				
	Full Sample, Baseline	Omit if Religious Share = 0	Few Non-Religious Individuals	Many Non-Religious Individuals	Low Fractionalization Villages	High Fractionliazation Villages	Dep Var is a Dummy for Gov Pub Exp > 0	Omit if Pub Goods Exp=0, Baseline	SE Clustered at Province Level
Post 1st Election x Religious Fractionalization	-154.2	-201.2	-226.4	-712.9	-327.1	-222.0	-0.170	-466.0	-154.2
	(70.80)	(103.0)	(158.3)	(1060)	(859.8)	(180.1)	(0.161)	(401.3)	(82.13)
Post 1st Election	26.54	40.35	48.65	20.84	19.98	46.31	0.0706	81.48	26.54
	(11.60)	(20.41)	(34.97)	(13.46)	(12.00)	(36.77)	(0.0292)	(46.15)	(12.04)
Observations	4340	3280	2057	2283	2118	2222	4340	954	4340
R-squared	0.126	0.114	0.172	0.110	0.106	0.179	0.194	0.381	0.126

Notes: All regressions control for the the full set of baseline controls: religious fractionalization*year FE, the share of religious population*year FE, village population, province-year trends, and year FE. The standard errors are clustered at the village level, except in column (9).

Table 9: The Effect of *Religious Fragmentation* × *the Introduction of Elections* on Public Goods Provision and Private Expenditure

			Dependent Variables				
	Gov Pub Exp Funded by Villagers	Ln Arable Land	Primary School Enrollment Rate	Household Exp on Agric Prod	Ln Arable Land	Household Exp on Schooling	Primary School Enrollment Rate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post 1st Election x Religious Fractionalization	-146.5	-2.514	-26.01	-80.86	-7.618	8.712	-0.754
	(74.03)	(2.172)	(13.23)	(42.38)	(3.517)	(5.562)	(9.595)
Post 1st Election	26.82	0.113	2.298	10.13	0.400	-1.907	0.923
	(11.91)	(0.0850)	(1.174)	(6.638)	(0.198)	(1.354)	(1.438)
Observations	4340	3291	2682	873	769	873	841
R-squared	0.117	0.872	0.310	0.569	0.935	0.829	0.305

Notes: All regressions control for the the full set of baseline controls: religious fractionalization*year FE, the share of religious population*year FE, village population, province-year trends, and year FE. The standard errors are clustered at the village level.

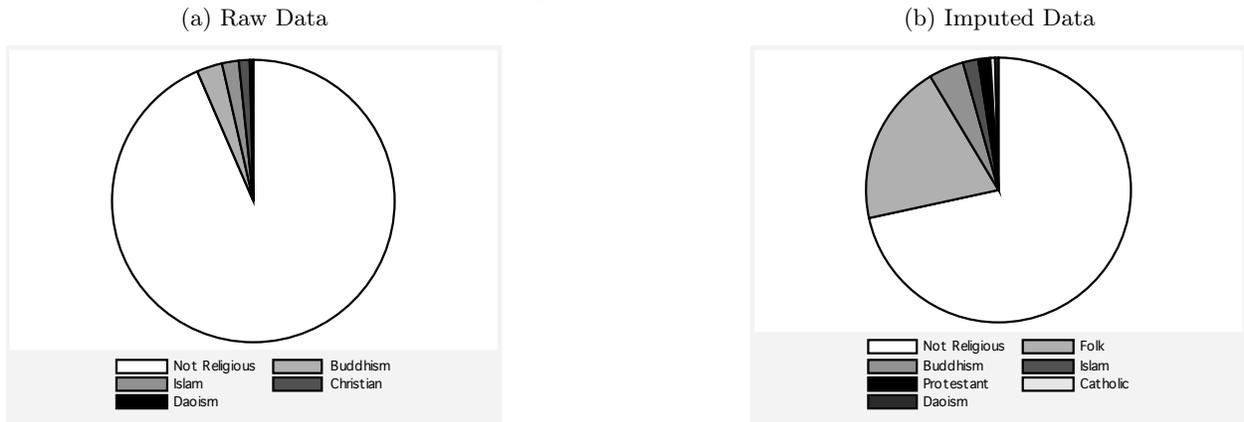49

Figure 1: Average Religious Population Shares

(a) Raw Data

(b) Imputed Data

Figure 2: Histograms of Religious Population Shares Across Villages

(a) Raw Data

(b) Imputed Data
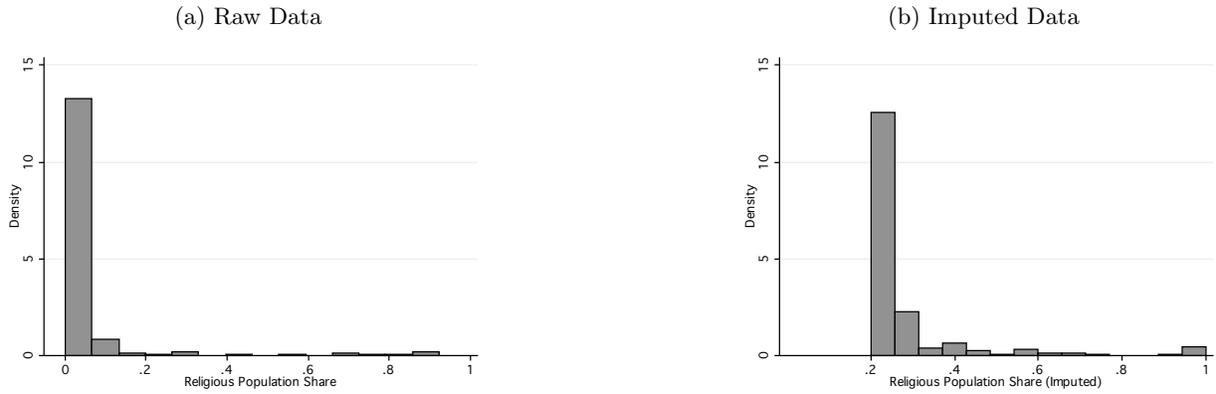
Figure 3: Histograms of Religious Fractionalization Across Villages
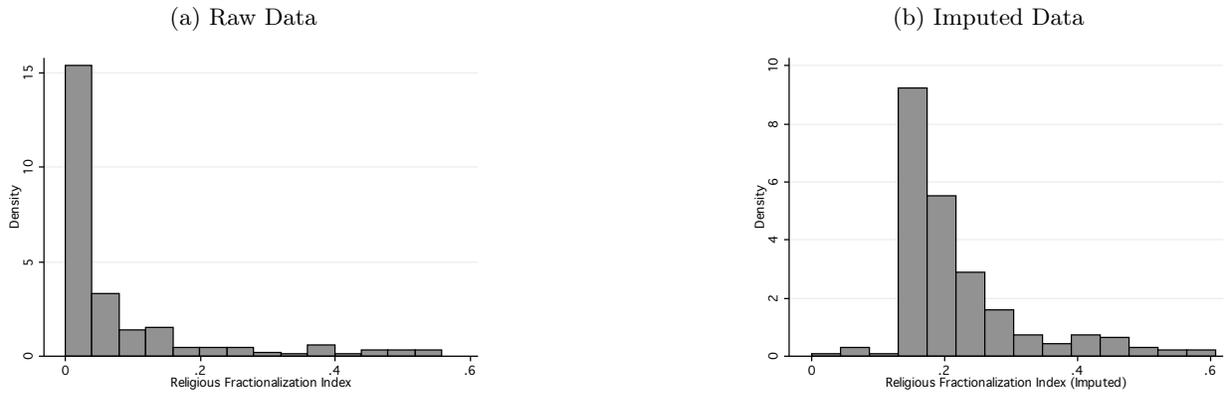
(a) Raw Data

(b) Imputed Data

Figure 4: The Estimated Effects on Government Public Goods Expenditure for Each Year Since the First Election
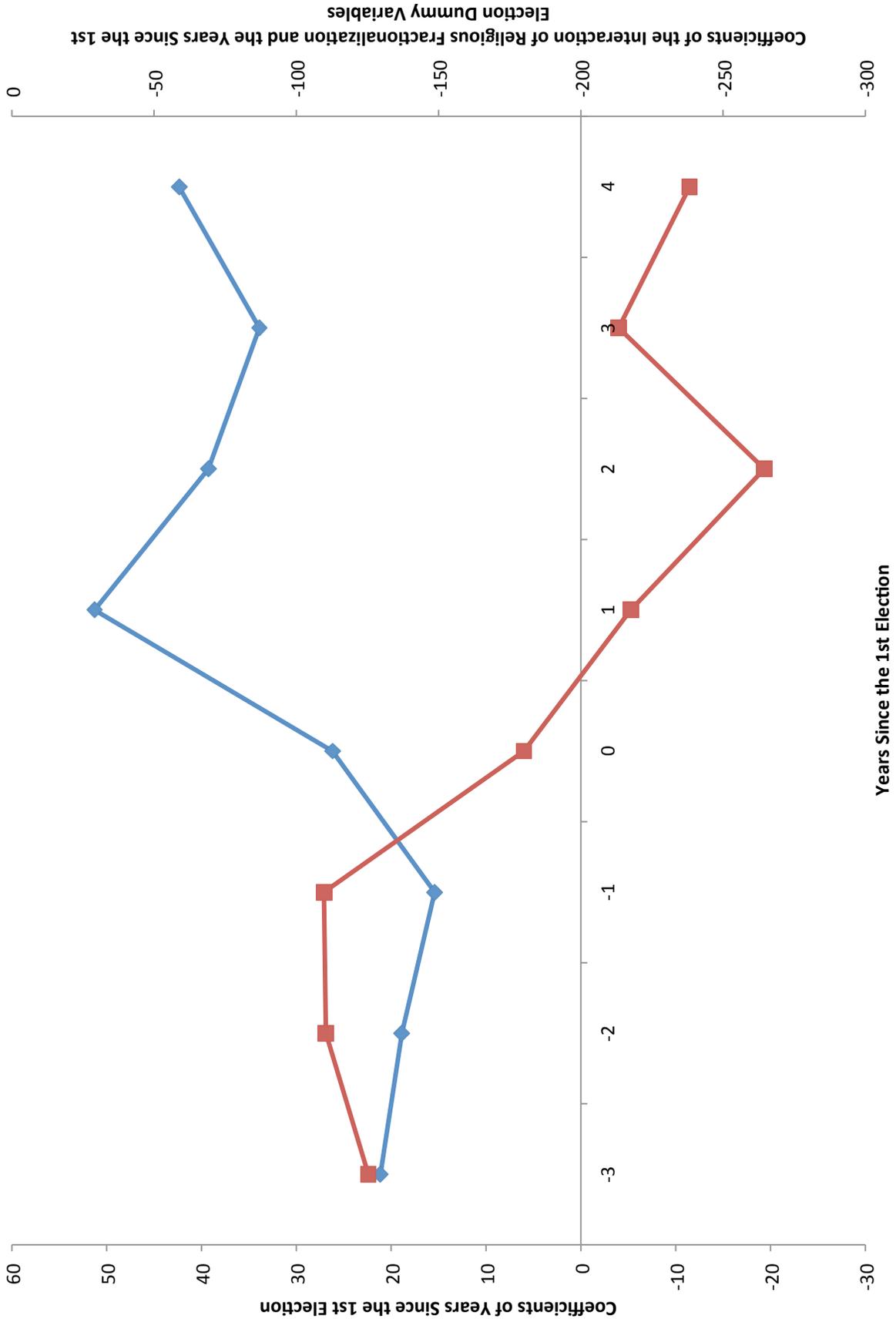
Table A.1: The Effect of Religious Fragmentation for Each Years Since the Introduction of Elections

	Dependent Variable: Gov Public Goods Exp (Funded by Villagers)				
	(1) coef	(2) se		(3) coef	(4) se
Post 1st Election			Post 1st Open Nomination		
x Years Since Election = -3	-125.3	(95.86)	x Years Since Open Nomination = -3	-17.66	(48.76)
x Years Since Election = -2	-110.4	(103.7)	x Years Since Open Nomination = -2	-28.54	(49.16)
x Years Since Election = -1	-109.7	(107.2)	x Years Since Open Nomination = -1	-87.34	(97.80)
x Years Since Election = 0	-180	(111.1)	x Years Since Open Nomination = 0	-4.652	(38.02)
x Years Since Election = 1	-217.5	(132.6)	x Years Since Open Nomination = 1	-18.89	(53.77)
x Years Since Election = 2	-264.5	(119.0)	x Years Since Open Nomination = 2	-19.25	(61.95)
x Years Since Election = 3	-213.3	(126.1)	x Years Since Open Nomination = 3	-109.7	(124.3)
x Years Since Election = 4	-238.2	(123.2)	x Years Since Open Nomination = 4	-122.7	(101.2)
Years Since Election = -3	21.13	(11.13)	Years Since Open Nomination = -3	-4.071	(4.779)
Years Since Election = -2	18.87	(12.10)	Years Since Open Nomination = -2	-6.605	(4.446)
Years Since Election = -1	15.41	(13.53)	Years Since Open Nomination = -1	12.9	(23.79)
Years Since Election = 0	26.2	(13.79)	Years Since Open Nomination = 0	-7.213	(5.230)
Years Since Election = 1	51.28	(33.69)	Years Since Open Nomination = 1	19.89	(32.07)
Years Since Election = 2	39.27	(15.96)	Years Since Open Nomination = 2	-13.14	(10.44)
Years Since Election = 3	33.89	(19.43)	Years Since Open Nomination = 3	29.39	(26.35)
Years Since Election = 4	42.37	(20.78)	Years Since Open Nomination = 4	3.733	(18.35)
Observations				4340	
R-squared				0.129	

Notes: The regression controls for the the full set of baseline controls: religious fractionalization*year FE, the share of religious population*year FE, village population, village population FE, province-year trends, and year FE. The standard errors are clustered at the village level.

Figure A.1: Fractionalization versus Polarization – Using Raw Data