Oilfields, Mosques, and Violence: Is There a Resource Curse in Xinjiang?*

Ji Yeon Hong† Wenhui Yang‡

April 5, 2016

Abstract

How does resource extraction affect ethnic violence in a strong authoritarian state? This article investigates the effects of natural resource development on violent incidents in Xinjiang, using data from its 84 counties. Contrary to the resource curse claim, we find that areas with larger quantities of oil and gas production have lower rates of violence. Nevertheless, this soothing effect of natural resources subsides in areas with a large number of mosques. While we find no supporting evidence for drastic ethno-demographic changes or strengthening of security associated with oil and gas extraction, the analysis shows that oil and gas development contributes positively to the economic conditions of producing counties. Our findings imply that the cause of violence in Xinjiang is embedded in historical and cultural cleavages, but that economic benefits from resource development may help make the region less vulnerable to violence.

*Prepared for the 2016 Annual Meeting of Midwest Political Science Association, Chicago. Preliminary draft. Please do not cite or circulate. We would like to thank to Xun Cao, Enze Han, Yue Hou, James Kung, Yuhua Wang, and Xiaogang Wu for helpful comments and discussion. This project is supported by a grant from the Early Career Scheme sponsored by the Research Grants Council, Hong Kong (Reference No. ECS26600915).

†Division of Social Science, Hong Kong University of Science and Technology, jyhong@ust.hk

‡Division of Social Science, Hong Kong University of Science and Technology, wyangai@ust.hk

1 Introduction

Xinjiang Autonomous Region is typically described as one of most contentious regions in China. A distinctive feature of China from many other contentious areas is the presence of strong and stable authoritarian regime possessing asymmetric repressive power. The Chinese government prioritizes political stability and generally minimizes such contention, which also serves as a major criterion in the cadre evaluations of local political leaders (Edin 2003; Whiting 2004; Xu 2011). In recent years in particular, the central government has increasingly stressed the importance of social stability (Wang 2014; Wang and Minzner Forthcoming). Since the 1990s, however, two conspicuous political and economic changes have coincided in Xinjiang: an unprecedented increase in oil and natural gas production, and an increasing number of violent confrontations, particularly related to Xinjiang's largest ethnic minority, the Uighurs. Scholars and observers have cited economic tensions between ethnicities resulting from natural resource development and migration by the Han population as the major causes.[1] Yet, while a number of scholars have suggested potential links between natural resources and ethnic tensions (Wayne 2007), little systematic evidence has been presented to support such a relationship in the context of Xinjiang. This research is among the first attempts to provide a systematic explanation for the violence in Xinjiang over the past two decades.

To examine the causes of this violence, we carefully test whether and how oil and gas production have affected levels of violence in Xinjiang. With regard to natural resource development, we further analyze three potential changes in Xinjiang due to resource development, all of which have been discussed as causes of ethnic conflict: economic growth, changes in the ethno-demographics within the region, and the quality of local governance. For empirical analysis, we collect novel data at the county level on natural resource production and the location of religious centers. The data on natural resources include accurate locations of all

[1]For example, the Economist, "Wooing Islamists with a beer festival," available at http://www.economist.com/news/leaders/21656184-chinas-government-wonders-how-stop-terrorism-xinjiang-try-treating-muslims-more (Accessed March 17, 2015).

oil and gas fields in the region, and precise production information from 1998 to 2005. The data on religious centers consists of the locations of all religious buildings (mosques) surveyed since 1949, when Xinjiang was integrated into the People's Republic of China. We also incorporate data on demography, local government performance, and economic performance within the region.

Methodologically, our approach enables us to circumvent potential endogeneity issues between the outcome - the location of violence - and the causes, which are the locations where economic growth is occurring and the locations that stand out as culturally and religiously more distinctive. Building a causal relationship between causes and outcomes is a fundamental difficulty in violence research. For instance, low growth can be both a cause and a result of violence. Therefore, finding exogenous factors that affect violence but that are not affected by violence has been a major concern among scholars (Brückner and Ciccone 2010; Edward Miguel and Sergenti 2004). The same difficulty exists with regard to religious identity and violence. It is hard to prove whether strong ethnic or religious identities intensify violence or vice versa (Chandra 2006). In this study, we use two sources of spatial variation that are largely exogenous to recent violent events in Xinjiang. One is the location of natural resource reserves. Unlike other types of economic production, particularly manufacturing, on which most Chinese cities are dependent for development, the locations of natural resource production are unaffected by political factors. Furthermore, since natural resource development is monopolized by national state-owned enterprises in China, the effect of the local capacity for resource development should be marginal in our case.[2] The other source of exogenous effects that we employ in this study is the location of mosques built before

[2]Scholars have claimed that although the location of revenue is exogenous, the production of such resources is not exogenous to political economic factors (Cotet and Tsui 2013; Haber and Menaldo 2011). In our case, however, concerns over endogeneity are mitigated to a considerable extent since production decisions are not closely connected to the level of our analysis (the county). Instead, oil and gas production decisions are largely determined by the leadership of PetroChina, one of the largest conglomerates in China. Our claim is also supported by production data from oilfields in Xinjiang. Although the areas surrounding three major oilfields in Xinjiang - Karamay, Talim and Tuha - face different levels of ethnic violence, we find that the quantity of production is highly correlated with the quantity of reserves as of 2005. See Table A8 in the Online Appendix for further reference.

1949. This was the year that Xinjiang first fell under the rule of the Chinese Communist Party. Thus, the location of mosques built before 1949 cannot be affected by ethnic violence that has emerged in the region since then. We use the distribution of mosques before 1949 as an instrumental variable to estimate how historical gaps in culture and religion affect the incidence of violence.

Our findings reject several popular beliefs regarding Xinjiang's political economy and the resource curse. We find that contrary to popular expectations, an increase in oil and gas production significantly decreases the probability of ethnic violence. Nevertheless, the mitigating effect of natural resources is conditional on the historical presence of Muslim religious sites. Xinjiang is a unique region in China in many respects, including its geography, ethnic composition, and religious beliefs. As of 2014, approximately 63% of the mosques in China were located in Xinjiang, while only 1.6% of the Chinese population resides there.[3] We find evidence that areas of historical and cultural distinctiveness in Xinjiang, identified as having higher numbers of historic mosques, have a higher probability and frequency of violent events. We also find that the soothing effects of natural resource abundance decrease in places where the density of mosques is high. Oil and gas production promotes political economic factors that are known to reduce instability; in particular, resource production helps the local economy, mainly by increasing the employment rate. Importantly, however, oil and gas production is not related to population increases or changes in ethnic composition. All in all, our findings suggest that natural resource production has little direct facilitating effect on ethnic violence in Xinjiang.

This paper makes several contributions to the literature. To the best of our knowledge, our study is one of the first to analyze violence in Xinjiang using statistical methods. Our study is also relevant to the comparative study of natural resources, religion and conflict in a subnational context. It adds to a growing body of literature that rejects the resource curse argument (Haber and Menaldo 2011; Cotet and Tsui 2004; Michaels 2011; Olsson

[3]Chinese Islamic Association. 2015. "The newest number and distribution of mosques in China," available at http://www.chinaislam.net.cn/cms/news/media/201503/03-8001.html(Accessed March 17, 2016).

and Valsecchi 2012; Mahdavi 2015). Scholars have found empirical evidence contradicting the resource curse claims with regard to democratization, economic growth and social welfare provision. This paper provides new evidence that contradicts the conventional wisdom linking resource endowments to ethnic grievances and thus violence. At the same time, it confirms the importance of historical religious and cultural gaps in shaping ethnic violence (Iannaccone and Berman 2006; Berman 2011; Zhukov and Toft 2015).

2 Resources, Religion, and Ethnic Violence

Political scientists and economists have devoted significant effort to understanding the link between natural resources, religion and ethnic conflict in various settings. In this section, we discuss the existing literature on ethnic conflict, in particular with regard to resource endowment and religious fundamentalism, in order to approach violence in Xinjiang from a comparative perspective.

The resource curse discourse, which has been endorsed by the most studies on natural resources and violence, suggests that resource abundance provides stronger incentives for conflict (Ross 2004; Humphreys 2005; Ross 2006; Lujala 2009). Primary commodities increase ethnic separatist movements, and lootable resources are especially prone to capture by rebel groups (Collier and Hoeffler 2004; Ross 2004, 2006; Sorrens 2011). However, the exact mechanism by which resource production affects ethnic conflict is not straightforward. A general notion in the literature is that economic growth reduces civil conflict as it increases the opportunity cost of participation in violent events (Collier and Hoeffler 1998, 2004; Edward Miguel and Sergenti 2004; Fearon 2005). Natural resources boost a country's economy, which, in line with these studies, should reduce violence rather than increasing it. Yet, most studies have not found such evidence.

Three approaches address why that evidence may be lacking. One is an investment-side explanation. In theory, natural resource development and related investment should

provide more economic opportunities. However, studies of natural resources raise the opposite possibility, that local employment may be restricted due to the resource development. One of the well-known predictions of the "Dutch Disease" is the crowding-out effect (Corden 1984; Van der Ploeg 2011). Resource development leads to a large influx of capital and consequently price inflation, and thus crowds out other industrial investments, resulting in de-industrialization, especially in volatile countries with weak institutions. The second is a labor-side approach. Scholars have shown that economic growth may affect conflict propensity differently depending on the labor-capital intensity of the commodities at stake (Dal B E and P 2011; Dube and Vargas 2013). They find that income growth in labor-intensive industries reduces conflict, whereas income growth in non-labor-intensive industries increases conflict. The production of oil, one of the least labor-dependent commodities, is likely to increase conflict behaviors according to this perspective (Dube and Vargas 2013). The final approach is the institution-side approach. Fearon and Laitin (2003); Fearon (2005) argues that oil exporting countries are more likely to engage in civil war because they tend to have weaker state institutions than other countries with the same level of per capita income. Following this logic, the effects of resources on conflict are confounded by the effects of institution quality; oil-rich countries capable of extensive distributive policies and public security expenditures tend to experience less conflict than oil-rich counties with weak state capacity (Basedau and Lay 2009; Van der Ploeg 2011). In other words, in states with weak institutions, lootable resources provide larger incentives to rebel groups, especially separatist activists, as they increase the reward when the rebellion succeeds (Ross 2006; Sorrens 2011).

While most studies, especially those employing cross-national analysis, support the resource curse claim with regard to resource abundance and violence, it is also noteworthy that an increasing number of studies offer countervailing evidence that undermines this relationship, arguing that oil abundance *per se* does not "cause" conflict (Di John 2007; Cotet and Tsui 2004). Di John (2007) finds the two principal resource curse theories, rent-seeking theory and rentier state theory, unconvincing with regard to their capacity to predict the

onset of civil conflict. Similarly, Cotet and Tsui (2004) find no empirical link between oil wealth and civil war onset using oil reserves data.

Ethnic, religious and cultural differences have been a focus of the civil conflict literature, especially with regard to ethnic violence. Among the 709 minority ethnic groups in the data set, at least 100 had members in an ethnically based rebellion against the state between 1945 and 1998 (Fearon 2006). Islam in particular has played a role in many long-lasting and ongoing civil conflicts according to Huntington, who makes reference to the "bloody borders of Islam" (Huntington 1996). For this reason, cross-national studies often use the Muslim share of the population as a key control variable (Fearon and Laitin 2003; Bohlken and Sergenti 2010; Crost, Felter and Johnston 2014). Fearon and Laitin (2003), however, caution that other regional factors coincide with the presence of Muslim populations, and thus it is not certain whether Islam itself or another omitted variable embedded in the Middle East or North African regions generates these statistically significant findings. Berman's work, on the other hand, claims that religious beliefs can effectively provide organizational cohesion and justification for radical terrorists, especially those who rebel against a strong state force (Iannaccone and Berman 2006; Berman and Laitin 2008). Importantly, Mähler and Pierskalla (2015) claim that high-value natural resources trigger the politicization of ethnic identity, leading to the intensification of social conflicts.

In conclusion, despite the large volume of evidence that links natural resources to ethnic violence, numerous scholars continue to debate the relationship and to test the causal links with careful attention to detailed data. This study seeks to contribute to the literature by evaluating the precise mechanisms linking resource extraction and ethnic conflict, using the case of Xinjiang. We also aim for an empirical contribution by focusing our research on the Xinjiang area, where the resource-conflict relationship has been studied with quantitative data far less frequently than other areas with similar issues. Furthermore, while most studies on resources and conflict employ cross-national data, we aim to deliver precise estimations of the causal link by relying on micro-level data from a subnational region. Using detailed

county-level data, we can effectively avoid the omitted variable bias that frequently plagues similar studies, as the counties in Xinjiang share provincial- or higher-level political economic factors, including historical background, institutions, and policy.

3 The Political Context of Xinjiang

While the claims, evidence and implications of the existing literature vary, it is crucial to understand the idiosyncratic political and economic circumstances of Xinjiang. Since 2000, Xinjiang's GDP per capita has surpassed the average per capita income of China (China Statistics Bureau 2013). However, many scholars have argued that not all citizens in Xinjiang have an adequate income. For instance, a significant gap exists in the average income of Uighurs compared to Han Chinese, which scholars suggest has led to a rise in ethnic consciousness and violent activities (Wu and Song 2014). Although scholars have pointed to natural resource development in Xinjiang as a major contributor to the increasing income gap between these two major ethnic groups in Xinjiang, a direct relationship among oil and natural gas development, regional ethnic composition and political economic consequences has not been systematically examined. In this study, we identify localities that are directly affected by natural resource development. In doing so, we are able to test the direct effects of resource extraction on various political, social and economic outcomes including ethnic composition, income levels, local government finances and violent events.

Chinese policies that favor non-Han ethnicities offer a unique research opportunity for the study of global civil conflict, where preferential policies toward ethnic minorities have not always been considered a significant factor. Institutionally, numerous policy programs exist in Xinjiang that are meant to benefit ethnic minorities. Ethnic minorities are entitled to preferential treatment in family planning, college admissions, job recruitment and promotions, and representation in legislative and other government bodies (Sautman 1998; He 2005). Fiscal transfers from the central government to Xinjiang local governments have

been substantial, especially since 2001, when the central government introduced more intergovernmental transfers to minority counties. Fiscal transfers from the central government to local governments in Xinjiang have increased drastically: in 1996, the total transfer amount was RMB 5.91 billion, which tripled over the next five years to RMB 18.4 billion in 2001.[4] Finally, the head of each autonomous area government must, by law, be a member of the regional ethnic group. Therefore, each locality is governed by a head of government selected from an ethnic minority group and a party secretary selected from the Han ethnicity.

Why, then, is Xinjiang particularly vulnerable to ethnic tensions, which have even intensified into terrorist attacks against civilians? Why has violence increased since the 1990s? Popular beliefs on the matter fall into two camps. The first explanation is that ethnic tensions intensified as a function of relative economic deprivation. Natural resource extraction that began in the late 1990s created a large influx of Han, and it is often said that Uighurs have been discriminated against and marginalized in terms of economic opportunities. In keeping with this argument, despite various efforts by the central government to prevent ethnic inequality, scholars have revealed that economic gaps and social cleavages between people of the Han and Uighur ethnicities are substantial and increasing (Hopper and Webber 2009; Wu and Song 2014; Zang 2011).[5]

Another common explanation hinges on the salient ethnic distinction between Uighurs and Han Chinese, and the historical differences in their religion and culture (Han 2010; Bovingdon 2013; Hann 2013). According to this view, ethnic violence in Xinjiang is caused by mutual distrust and social discrimination based on the rigid ethnic boundary between the Uighur and Han Chinese populations (Han 2010; Hann 2013). Other studies also support this theory of ethnic grievance based on the Uighurs' unique cultural, religious and historical

[4]State Council Information Office of China. "White Paper on Xinjiang's History and Development 2003," available at http://www.china-embassy.org/eng/zt/zfbps/(Accessed October 9, 2015).

[5]Wu and Song (2014) state that "In all sectors except for government and public institutions, Uighurs faced fierce competition from Han Chinese and earned much less. In public enterprises, the Uighur must compete with Han locals, whereas in the booming private enterprises, their main rivals were Han migrants from other provinces. No wonder Uighurs in Xinjiang felt that Han Chinese had dominated the economic opportunities."

background that distinguishes them from Han Chinese and other ethnic minorities in China (Bovingdon 2013).[6] The Chinese government has frequently stated that terrorist connections to Islamic insurgent groups active in conflicts in the Middle East are the main reason for the recent rise in ethnic violence in Xinjiang (Reed and Raschke 2010). Some argue that Xinjiang's connection to external insurgents began as early as the Soviet-Afghan war, as a number of young Uighur males fought in conflicts related to the war and then returned to Xinjiang (Wayne 2007). These statements also highlight the role of the ethnic and religious cleavage between the Uighur population and the Han Chinese population and the influence of external circumstances in increasing inter-ethnic tensions in Xinjiang.[7]

4 Data and Descriptive Statistics

4.1 Data

Estimating violent events in or related to Xinjiang is difficult, as many go unreported. In collaboration with other scholars, we have collected evidence of more than 200 violent events within Xinjiang. The sources of this information include academic research by Bovingdon (2013) and Hierman (2007), newspaper articles, and postings by activists. Given the scarcity of data, we adopt a broad definition of violence. We code violent incidents as 1 if armed or collective action was taken by non-Han Chinese and non-state actors within Xinjiang. Frequent types of action include insurgency, armed uprisings, riots and bombings. Using

[6] In China, freedom of religious belief is granted by the Constitution (Article 36). However, religious groups and religious sites are required to be registered with the State Administration for Religious Affairs (SARA), and the bureau and its local branches closely monitor religious activities.

[7] The mechanisms that link ethnic and religious cleavages to physical violence have not been clearly analyzed to this point. One of the potential sources is that mosques function as places where the influences from outside converge. Although the details of external connections across Xinjiang's border have not yet been accurately established, a few transnational fundamentalist groups have been singled out as having connections to Xinjiang. For instance, the East Turkistan Islamic Movement (ETIM) is a fundamentalist Islamic organization based in Xinjiang, known for its connection to Al-Qaeda and other fundamentalist groups such as the Taliban. The ETIM is reportedly active in neighboring Islamic countries including Afghanistan, Pakistan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, and Chechnya (Reed and Raschke 2010). This type of transnational organization might serve as a mechanism linking external terrorist movements to violence in Xinjiang.

various sources, we collect all available violence information resulting in 186 violent events identified at the county level.[8]

The data show that violent events are widely scattered. It is apparent from the data that the increase in ethnic violence corresponds with the period of expansive resource extraction in Xinjiang and also with the period of escalating tensions among Middle Eastern countries, both of which have occurred since the late 1990s. Forty-two of the 84 counties in Xinjiang have experienced violence since 1997 (See Figure 1). Figure A1 shows that violent events occurred intermittently since 1949, increased in frequency in the late 1980s, and peaked in 1997. In 1999, the number of violent events decreased and then rebounded again in 2008, despite various preventative measures taken by the Chinese government.

Xinjiang has vast reserves of natural resources, accounting for 22 percent of China's oil reserves and 28 percent of its natural gas reserves. Since the late 1990s, China's dependence on oil and gas production in Xinjiang has sharply increased: while in 2000, the quantity of oil and gas production from Xinjiang was 18 million tons and 3.5 billion m^3, by 2012 the numbers had increased to 27 million tons and 25 billion m^3. We collect detailed oil and gas production data from the China Oil and Gas Field Development Report, an official series of reports on all oil and gas fields in China. Each report covers one of 20 large oil and gas fields in China. There are three major oil and gas fields in Xinjiang: Karamay, Tuha and Talim. The reports contain accounts of the history of each oil and gas field and data on its past and current status. These data include maps and production quantities of small oil and gas fields within large oil fields beginning in 1997, which we have converted into digitized data for statistical analysis. Our period of observation ranges from 1997 to 2005 because of the availability of oil and natural gas extraction data. Figure 2 describe the distribution of oil and gas sales from1997-2005.

Xinjiang had around 29,500 mosques in 1949. The majority were then demolished or transformed to other uses during the religious reform and anti-feudalism campaigns of the

[8]Our method excludes violent events that occurred outside of Xinjiang, as the location of violence in Xinjiang is the key information of our analysis.

1950s and 1960s; prior to the Cultural Revolution, the number of mosques had dropped to 14,100. During the Cultural Revolution, a large number of mosques and other religious sites were destroyed as part of the campaign to purge the "Four Olds." Only 2,930 mosques were left by the end of the Cultural Revolution. Starting in the late 1970s, when the religion policy was relaxed and economic conditions improved, many mosques were rebuilt. The number of mosques in Xinjiang reached 22,949 in 1990, an eightfold increase in less than two decades. Local governments expressed concern that the construction of mosques had exceeded acceptable limits and normal religious needs, and the construction of mosques was halted (Bovingdon, 2013). Since 1990, the total number of mosques has been stable, with approximately 23,900 operating in 2004. Figure A2 and Figure A3 show trends in the number of mosques in the Xinjiang region over the last 60 years.

Detailed information on religious sites is collected from two sources. Time variant mosque data are incorporated from the China Data Online.[9] The raw dataset reports each mosque's year of establishment, which enables us to report the yearly distribution of mosques. Figure 3 illustrates the distribution of mosques based on this dataset. The other source is the county gazetteers (xianzhi) of Xinjiang's counties. Local gazetteers in China are published by local governments intermittently. The merit of this dataset is the availability of historical mosque data, tracing back to 1949 when Xinjiang was incorporated into the PRC. All counties in Xinjiang have published at least one gazetteer since 1949 except Pishan county, which has not yet published a gazetteer. The gazetteers contain information on the number of mosques including their long-term trends. We code the oldest and newest reports of mosques in each gazetteer, which yields the number of mosques surveyed approximately in 1949 and again in the 1990s. According to the local gazetteers, the total number of mosques in Xinjiang in the 1990s was 21,328, and we confirm that this number is close to the official count of 22,949 in the 1990s. As a robustness check, we also use the mosque density, instead of the number of mosque. Figure A4 describes the distribution of mosques before 1950 and in the 1990s.

[9]http://chinadataonline.org/

We also control for the distribution of Xinjiang Production and Construction Corps (often called *bingtuan*). Bingtuan is a unique economic, administrative and semi-military government settlement structure in Xinjiang, broadly autonomous from the local government and inhabited since 1954. The major goal of bingtuan is agricultural settlement in the frontier areas and military protection of Xinjiang's border (Zhu and Blachford 2016). Bingtuan contains strong armed forces, including military and police autonomous from the local government to safeguard the borders, who together play a special role in reinforcing Xinjiang's social stability (State Council Information Office of China 2014). Since the strong military presence and anti-terrorist measures taken by bingtuan may affect violence in the region, we control for the size of bingtuan in each county, measured by the proportion of the population residing in bingtuan.

Data on government performance are collected from *Xinjiang Statistical Yearbooks*. These yearbooks provide county-level data on various public goods and services and government revenue and spending. We also incorporate economic variables such as local GDP, inflation indicators, unemployment rates and urbanization rates from the same source. The ethnic composition of each county is also collected from the statistical yearbooks. All variables employed in our analyses are summarized in Table A1. All data sources are listed in Table A8 in the Appendix.

4.2 Empirical Strategy

In the empirical analysis, we focus on the effects of natural resource extraction on violent events in Xinjiang. To analyze the event count data, we employ a negative binomial model as the main specification. An ordinary least squares (OLS) model does not take into account heteroscedasticity and the distribution of errors for event count data, possibly resulting in biased estimates (King 1988). Violence often has a contagion effect (Krain 1998; Selway and Templeman 2012), and the distribution of violence has the possibility of time and spatial

dependence (), which raises the concern of overdispersion.[10] Recently, a growing body of conflict literature has adopted a negative binomial model (Early, Fuhrmann and Li 2013; Mähler and Pierskalla 2015; Toha 2016; Weidmann 2016). Our main analysis is based on the following model.

$$Violence_{i,t} = Resource_{i,t-1}\beta + X_{i,t-1}\delta + G_i\lambda + y_t,$$

where $Violence$ is the outcome of interest. $Resource$ refers to resource extraction, for which we use the logarithmic number of oil, natural gas and the sum of oil and natural gas sales revenue. We use a one-year lagged variable to prevent the possibility of reverse causality. For instance, we cannot rule out the possibility that a violent event reduces the quantity of resource production if we use the observations from the same year for violent events and resource extraction. To minimize the effects of confounding factors that might affect our dependent variables, we control for demographic and geographic factors such as the share of Uighur population, population density, and distance to borders. We also include economic variables such as the level of economic development, government revenue size, and the size of transfers from the central government, where no concerns about multicolinearity or overestimation exist. To explain the yearly trend, we also include year fixed effects. Although controlling for confounding variables is necessary to estimate the impact of oil and gas production and religious sites, it is worth noting that controlling for variables that are also affected by oil and gas production may result in a masking effect (Ross 2012). For instance, if oil production increases both conflict and per capita income, including per capita income as a control variable will produce a biased result for the true effect of oil production on conflict. To address potential bias due to over-controlling, we report results from analyses

[10] An alternative specification for event count data is the poisson model. The poisson model assumes that each event is independent with equal probability of occurrence at any point, which does not account for overdispersion (King 1989). The negative binomial model allows for overdispersion in the counts (Cameron and Trivedi 1986), and thus is more appropriate for the analysis of violence.

with and without those economic control variables. $X_{i,t-1}$ is a vector of control variables, which is a subset of the share of Uighur population, population density, GDP per capita (log), local government revenue (log), special grants from the central government (log), and the population proportion of bingtuan. G_i is a vector of time-invariant geographic variables including distance to the border and average slope and latitude in each county. Time-variant confounding variables are also lagged one year due to the concern of reverse causality.

We also test conditional effects of religious sites to examine whether the effects of resource extraction differ when the county is religiously and culturally distinctive.

$$\begin{aligned} Violence_{i,t} = \quad & Resource_{i,t-1}\beta_1 + Mosque_{i,t-1}\beta_2 + (Mosque_{i,t-1} \times Resource_{i,t-1})\,\beta_3 \\ & X_{i,t-1}\delta + G_i\lambda + y_t, \end{aligned}$$

where $Mosque_{i,t-1}$ is the number of mosques in each county. β_3 denotes the interactive effects of resources and religious sits.

To understand the channels through which resource extraction affects the odds of violence, we also analyze whether resource production affects the political economic factors that have been cited as relevant to social violence. Resource extraction may affect the probability of violence by, for instance, changing income levels, transforming demographic composition, or affecting the size of government finances. For the mechanism analysis, we use a GLS model employing county and year fixed effects and standard errors clustered at the county level.[11] For the mechanism test, we estimate the following equation.

$$y_{i,t} = Resource_{i,t-1}\beta + X_{i,t-1}\delta + G_i\lambda + y_t + \varepsilon_{i,t}, \tag{1}$$

where y_{it} are the outcome of interest, which includes three sets of political economic variables: security spending of the local government, ethnic demographics, and economic

[11] Additionally, we report the panel-corrected standard error (PCSE) model (Beck and Katz 1995) in the Appendix as a reference.

prosperity. β is our estimate of interest, which indicates the impact of oil production in county i in year $t-1$ on outcome variable in t. When the dependent variable is an economic variable such as GDP, employment rate, or government revenue, we do not lag the independent variable, as the dependent variables are immediately affected by the resource production and the concern of reverse causality is relatively trivial.

We additionally use an instrumental variable approach, since religious sites are long-term cultural features that cannot be eradicated or expanded for political or economic reasons in a short period. In this regard, we use the 1949 mosque data as an instrument to examine the recent distribution of mosques. We measure historical, religious and culturally distinct areas in Xinjiang, using the number of mosques built before 1949 as an instrumental variable for the number of mosques surveyed in the 1990s. As stated earlier, by using the number of mosques built before 1949 as an instrument, we can effectively avoid an endogeneity problem if CCP rule and subsequent violence within Xinjiang counties affected the distribution of mosques in the later period. We use two-stage least square (2SLS) estimates to estimate the impact of the presence of religious sites on the onset of violent events. The number of mosques before 1949 is used as an instrument for the number of mosques in the 1990s in the first stage, with and without other county characteristics.

Finally, in the analyses of religious sites, we include Muslim population instead of Uighur population to explain the social demand for mosque construction. Although Uighurs make up the majority of the Muslim population in Xinjiang, they are not the only Muslim ethnic group. Other Muslim ethnic minorities in China include the Hui, Kazakhs, Dongxiang, Kyrgyz, Salar, Tajiks, Uzbeks, Bonan and Tatars, and all of these ethnic groups are represented in Xinjiang. We also consider the possibility that religious tensions may intensify ethnic violence, and we thus use the number of other religious sites such as churches and temples as a control.

4.3 Main Results

Table 1 and Table 3 present the main findings of our empirical analyses. Table 1 shows whether oil and/or gas production are associated with a larger number of conflicts within a county. Many scholars of conflict have argued that resource wealth is positively related to conflict occurrence and duration (Collier and Hoeffler 2004; Fearon 2005; Ross 2004, 2006). With the increasing number of conflicts and expanding resource development in Xinjiang, reporters and scholars have thus argued that resource development attributes to increasing grievances and violence in the region.[12] Contrary to that perspective, we find that oil and gas development does not exacerbate the intensity of ethnic violence. Rather, oil and gas extraction are likely to reduce the intensity of violence, and oil and gas production and sales also reduce the frequency of violent events, controlling for other factors. Comparing oil and gas, the impact of oil is more clearly apparent in the data, potentially as a result of the size and distribution of oil and gas production: although natural gas production has increased sharply in Xinjiang, the quantity of oil production has been much larger within the period of our analysis. Furthermore, while oil production sites are widely scattered within Xinjiang, gas production was more concentrated in the northern oilfields, particularly Karamay oilfield.

[Table 1 here]

Among the control variables, we find several outcomes that contradict conventional wisdom. First, a higher proportion of Uighurs in the county population is not linked to a higher probability of ethnic violence, contrary to what is often argued. Special transfers from the central government are not associated with the frequency of violence. The revenue of the local government in the previous year appears to have a significant impact on violent events, although caution is necessary in the interpretation because of the potential endogeneity issue between economic production, natural resource extraction and government revenue. The

[12]For instance, a New York Times in-depth report "China Invests in Region Rich in Oil, Coal and Also Strife" available at http://www.nytimes.com/2014/12/21/world/asia/china-invests-in-xinjiang-region-rich-in-oil-coal-and-also-strife.html

share of the population residing in bingtuan does not have a significant impact on violence in any of our analyses.

We then examine whether the soothing effects of resource production on violent events are conditional on historical and religious features of areas in Xinjiang. Although we found the presence of a large Uighur population does not affect the occurrence of violent incidents, the results presented in Table 3 indicate that the presence of a large number of mosques increases the probability of ethnic violence. More importantly, we find that the mitigating effects of natural resource extraction subside with the number of mosques in a county. An interpretation of the interaction term in Model (9) indicates that when the number of mosques within a county exceeds approximately 550, the soothing effects of oil and gas production disappear. Given that the average number of mosques is 220 and the standard deviation is 280 in our data, the results indicate that the tempering effects of resource extraction disappear when a county has a number of mosques larger than one standard deviation above the mean. Indeed, as the Figure A2 in the Appendix illustrates, a few counties, predominantly in southeast Xinjiang - Kizilsu Kirghiz Autonomous Prefecture prefecture and Kashgar Prefecture, in particular - have a very high number of mosques as well as a notable degree of ethnic violence.

Given these distinguishing features that are specific to certain prefectures, one may question whether our findings are driven by unobserved omitted variables underlying each prefecture's different historical and cultural background. To address this possibility, we reanalyze the statistical equation used in Table 3 with prefecture fixed effects (Table A2). We confirm that the negative effects of natural resources prevail, with a larger coefficient than in Table 3. The robustness check using the density of mosque confirms the previous findings that the mitigating effects of resource production on violence diminishes as the density of Islam religious sites is high in a county (Table A3).

[Table 3 here]

To understand what the number of mosques represents, we conduct an instrumental variable analysis using mosques prior to 1949 as the instrument. This approach prevents the possibility of a reverse causality story in which the occurrence of ethnic violence and the PRC's ethnic and religious policy since 1949 have shaped the current distribution of religious sites. Table 3 presents the results from a two-stage regression model, employing negative binomial regression at the second stage regression. The results confirm the findings in Table 3. The presence of a large number of mosques in the 1990s, instrumented by the distribution of mosques in 1949, counters the soothing effects of oil and gas production. When a county is historically distinctive in terms of religious culture, it is more likely to experience violence in the current period. Again, an alternative measure of religious sites, the density of mosque lead to the same conclusion (Table A4).

[**Table 3 here**]

To this point, we have used the logarithmic number of resource sales revenue aggregated at the county level as the independent variable. Table A5 in the Appendix presents the results from an alternative measure of local resource wealth measured by per capita income from natural resource production following Ross (2012). Ross (2012) strongly recommends using per capita income from natural resources to measure oil wealth, and a large number of studies have adopted his measure. Although per capita measures of resource wealth do not change our findings, we maintain the aggregate measure of resource sales revenue as our main independent variable as it is a more appropriate measure of local oil wealth for our research. Most importantly, Ross (2012)'s suggestion is based on the cross-national time-series context where temporal effects of resource production on the dynamics of demography is rather limited. Given the national boundaries, the size and composition of the population does not change drastically in the short run with the extraction of natural resources. Nonetheless, in a subnational set-up, the denominator of the measure, local population, is not stable due to migration. In particular, Xinjiang's resource development is said to be related to a large size relocation of local and external population.

We also test for the possibility of a non-linear relationship between natural resources and violence as a robustness check. The findings in Table A6 in the Appendix provide evidence that the effects of resources, particularly those of oil, are negative but non-linear: as oil production increases, the marginal negative impact becomes smaller. Nevertheless, the vertex occurs when oil sales (log) equal approximately 11, while the average level of oil sales is 2 and standard deviation is 7.8. The test of non-linearity confirms that the overall negative impact of oil is robust over most ranges of oil production, although the tempering effects of oil appear smaller in the largest oil producing counties in Xinjiang.

Another possibility is that resource production may intensify inter-county inequality and economic deprivation, leading to increased violence in neighboring counties rather than in the producing county. Table A7 presents results from analyses where we employ resource sales of neighboring counties as the independent variable. We find no significant effects of natural resources produced in neighboring counties on a county's probability of having a violent event. These analyses demonstrate that the effects of resource development are indeed spatially identifiable. If there were no space-specific effect of resource production, we would find a similar impact using resource production data from neighboring counties. Moreover, the results suggest that while resource production deters violence within resource-producing counties, the spill-over effect is limited. In other words, resource development does not deter violence in neighboring counties, leaving inter-county inequality due to uneven resource development as a potential explanation for the increase in violent events.

In short, thus far we find that oil and gas production reduces violent incidents, but that the effect subsides when a county is historically religiously distinctive, measured by the number of mosques. A critical question at hand concerns the mechanism. If natural resources reduce the probability of violence, how does it occur? In line with the previous literature on natural resources, we examine several potential mechanisms.

The first mechanism we test is local government finances, in particular local expenditures for repression. It is possible that resource extraction provides an expanded source of gov-

ernment revenue collection and reshapes local government finances. We use GLS regression employing both county and year fixed effects, with robust standard errors clustered at the county level. In particular, we focus on the effect of resource production on local government expenditures for public security, which is closely related to the local government's repressive power. Models (1)-(2) in Table 4 rejects this possibility: no significant relationship is found between resource production and government security spending. We also find that security spending is not caused by a significant change in government revenue. Government revenue is also not significantly influenced by oil and gas extraction. Finally, we reexamine models (7) and (9) in Table 1, adding local government's public security spending as a control variable. The negative effects on resource extraction remain almost identical with the inclusion of security spending, confirming that the effects of resource extraction do not occur through government finances, including spending on public security.

[**Table 4 here**]

The lack of detailed data limits us from further investigating our null findings. Our null finding on government revenues may result from the fact that the local governments of Xinjiang do not need to exert excessive effort to maximize revenue collection. In autonomous regions such as Xinjiang, Tibet and Ningxia, where the challenge lies in maintaining stability, local cadres face less pressure for fiscal extraction (Lü and Landry 2014). It might be the case that the revenue from oil and gas extraction are not shared by the local governments, as the oil and natural gas companies are state-owned enterprises (SOEs). Our finding that public security spending is not systemically linked to resource production implies that the reduced probability of ethnic violence in resource counties does not reflect tightened security. We also examine whether specific types of government expenditure increase due to oil production. We find no evidence that oil or gas extraction increases specific expenditures. No evidence is found in regard to enhanced social welfare, education or infrastructure construction.

The following table, Table 5, presents estimates from demographic analyses. Table 5 shows that oil and gas extraction does not induce a statistically significant population influx from

outside into resource producing counties. Several observers claim that resource production offers jobs mainly to non-local Han ethnic group members, inducing substantial immigration from outside into resource cities. Our finding does not support this argument, as neither the Uighur nor Han populations increase in oil and gas producing areas. We also examine ethnic fractionalization and polarization, which the literature suggests is closely associated with ethnic violence (Alesina et al. 2003; Posner 2004; Montalvo and Reynal-Querol 2005).[13] We find that resource extraction does not affect either measure of ethnic composition.

[Table 5 here]

Finally, we test the impact of resource extraction on the local economy. In previous cross-national analyses, natural resources, especially crude oil, have been argued to hamper economic growth in the endowed country (Sachs and Warner 1995; Karl 1997). Yet, a subnational study in China, (Hong 2014), finds that oil production clearly increases local GDP. In the case of counties in Xinjiang, our finding is less conclusive. Models (1) to (3) in Table 6 show that county economies in Xinjiang do not clearly benefit from oil and gas industries. Part of the reason may lie in the industrial structure of Xinjiang's oil industry, particularly the period of our observation. Oil and gas industries in Xinjiang are mostly an upstream industry; companies produce crude oil and send it outside the province for downstream refinery and processing. While upstream industries are certainly profitable, even larger profitability often comes from the petrochemical process coming after the crude oil extraction. What, then, is the benefit that goes to the residents of Xinjiang? Indeed, a concern pervasive in regard to Xinjiang is that the natural resource boom in Xinjiang may not actually benefit the residents there. Models (4) to (6) in Table 6 partially respond to this question. The dependent variables in these analyses are employment rates. We find that

[13]Ethnic fractionalization (also called ELF) is calculated as one minus the Herfindahl index of ethnic group shares. This formula measures ethnic heterogeneity, reflecting the probability that two randomly selected individuals from a population belong to different ethnic groups (Alesina et al. 2003, p.158-59). On the other hand, ethnic polarization measures how skewed the ethnic distribution is. In other words, polarization measures how far the distribution of the ethnic groups is from the bipolar distribution, which represents the highest level of polarization (Montalvo and Reynal-Querol 2005, p.798).

oil and gas production lead to a larger number of jobs and a higher employment rate. A 1% increase in oil and/or gas extraction leads to a 0.5 to 0.6% higher employment rate. These findings to some extent reject the expropriation argument that the oil and gas producer simply extracts natural resources without contributing to local economy.

[**Table 6 here**]

5 Conclusion

In this paper, we study the causes of violence in Xinjiang using statistical analyses. We focus on two popularly discussed claims: one that economic deprivation of ethnic minorities due to resource development in Xinjiang causes violence, and the other that the historical and cultural distinctiveness of Xinjiang makes it vulnerable to external violence. We find evidence supporting the latter but not the former hypothesis. We find no evidence that natural resource development has a direct effect on ethnic violence in Xinjiang. On the contrary, an increase in oil and gas production lowers the probability of violence. In contrast to resource extraction, we find that the historical presence of religious sites are correlated with ethnic violence in Xinjiang. An instrumental variable approach also indicates that counties that had a greater number of mosques before the inclusion of Xinjiang in the PRC in 1949 were more likely to experience violence in the period under study. Furthermore, the mitigating effects of oil and natural gas decrease significantly with the presence of a large number of mosques.

Our additional analysis reveals other effects of resource development that may affect violence. We find some evidence that resource production increases income levels, employment and government revenues. We find no clear evidence that an influx of Han Chinese is associated with increasing resource production.

A couple of noteworthy caveats should be addressed. As a pioneering attempt to systematically assess the causes of violence in Xinjiang, this study relies solely on official statistical

data. Due to the lack of detailed systematic data, we do not examine inter-ethnic inequality in employment and income from oil and gas production sites. For instance, data on salaries, the ethnicities of employers, and the employment status of Han workers versus Uighur workers in the mining sector in Xinjiang would help to illuminate possible ethnic discrimination in the labor market, which other studies have pointed to as an important source of ethnic tension (Zang 2008; Wu and Song 2014). Furthermore, it is possible that we are omitting other factors or mechanisms that may affect violence in Xinjiang. In particular, we find no significant correlation between social expenditures and violence, nor between public education and violence, within the range of our data. We leave these alternative mechanisms to be explored in future research.

Some policy implications can be drawn from our analyses. Despite the Chinese government's dominant military capacity and various preemptive and repressive measures meant to curb ethnic violence in Xinjiang, the violence has not declined. Rather, the pattern of violence approximates the pattern described in the literature with regard to religious extremism facing strong oppression. There have been suicide attacks, underground networks, and terrorist attacks against civilians (Berman and Laitin 2008; Iannaccone and Berman 2006; Zhukov and Toft 2015). Our study provides empirical evidence that religious and cultural distinctiveness is indeed related to the violence in Xinjiang. Some scholars explicitly argue that improving social services and encouraging private enterprise are critical components of a counter-religious militancy policy (Iannaccone and Berman 2006). Oil and gas development may offer an opportunity, as it could support local economic growth and potentially social welfare services. However, resource development and related local development should not proceed in ethnically exclusive ways, but should engage Xinjiang's ethnic minority groups proactively. Recently, Xinjiang was the first province to reform the resource tax, introducing a 5 percent tax rate per sales volume instead of production volume, starting midway through 2010. Further steps toward offering more direct benefits such as increased employment, privatization, and social welfare services will increase the opportunity cost of instability and

likely reduce the possibility of violence in Xinjiang.

References

Alesina, Alberto, Arnaud Devleeschauwer, William Easterly, Sergio Kurlat and Romain Wacziarg. 2003. "Fractionalization." *Journal of Economic Growth* 8:155–94.

Basedau, Matthias and Jann Lay. 2009. "Resource Curse or Rentier Peace? The Ambiguous Effects of Oil Wealth and Oil Dependence on Violent Conflict." *Journal of Peace Research* 46(6):757–776.

Beck, Nathaniel and Jonathan Katz. 1995. "What to Do (and Not to Do) with Time-Series Cross-Section Data." *American Political Science Review* 89(3):634–647.

Berman, Eli. 2011. *Radical, religious, and violent: the new economics of terrorism.* Cambridge: MIT press.

Berman, Eli and David D. Laitin. 2008. "Religion, Terrorism and Public Goods: Testing the Club Model." *Journal of Public Economics* 92(10):19421967.

Bohlken, Anjali Thomas and Ernest John Sergenti. 2010. "Economic growth and ethnic violence: An empirical investigation of Hindu-Muslim riots in India." *Journal of Peace Research* 47(5):589–600.

Bovingdon, Gardner. 2013. *The Uyghurs: strangers in their own land.* Columbia University Press.

Brückner, Markus and Antonio Ciccone. 2010. "International Commodity Prices, Growth and the Outbreak of Civil War in SubSaharan Africa." *Economic Journal* 120(544):519–534.

Cameron, A Colin and Pravin K Trivedi. 1986. "Econometric models based on count data. Comparisons and applications of some estimators and tests." *Journal of applied econometrics* 1(1):29–53.

Chandra, Kanchan. 2006. "What is ethnic identity and does it matter?" *Annual Review of Political Science* 9:397–424.

China Statistics Bureau. 2013. *China statistical yearbook*. Beijing: China Statistics Press.

Collier, Paul and Anke Hoeffler. 1998. "On Economic Causes of Civil War." *Oxford Economic Papers* 50(4):563–573.

Collier, Paul and Anke Hoeffler. 2004. "Greed and Grievance in Civil War." *Oxford Economic Papers* 56(4):563–595.

Corden, Warner Max. 1984. "Booming sector and Dutch disease economics: survey and consolidation." *oxford economic Papers* pp. 359–380.

Cotet, Anca M. and Kevin K Tsui. 2004. "Oil and Conflict: What Does the Cross Country Evidence Really Show?" *American Economic Journal: Macroeconomics* 5(1):49–80.

Crost, Benjamin, Joseph Felter and Patrick Johnston. 2014. "Aid under Fire: Development Projects and Civil Conflict." *American Economic Review* 104(6):1833–1856.

Dal B E, Ernesto and Pedro Dal B P. 2011. "Workers, Warriors and Criminals: Social Conflict in General Equilibrium." *Journal of the European Economic Association* 9:646–677.

Di John, Jonathan. 2007. "Oil Abundance and Violent Political Conflict: A Critical Assessment." *Journal of Development Studies* 43(6):961–986.

Dube, Oeindrila and Juan F. Vargas. 2013. "Commodity Price Shocks and Civil Conflict: Evidence from Colombia." *Review of Economic Studies* 80(4):1384–1421.

Early, Bryan R, Matthew Fuhrmann and Quan Li. 2013. "Atoms for Terror? Nuclear Programs and Non-Catastrophic Nuclear and Radiological Terrorism." *British Journal of Political Science* 43(04):915–936.

Edin, Maria. 2003. "State capacity and local agent control in China: CCP cadre management from a township perspective." *China Quarterly* 173:35–52.

Edward Miguel, Shanker Satyanath and Ernest Sergenti. 2004. "International Commodity Prices, Growth and the Outbreak of Civil War in SubSaharan Africa." *Journal of Political Economy* 112(4):725–753.

Fearon, James D. 2005. "Primary Commodity Exports and Civil War." *Journal of Conflict Resolution* 49(4):483–507.

Fearon, James D. 2006. Ethnic Mobilization and Ethnic Violence. In *The Oxford Handbook of Political Economy*, ed. Barry R. Weingast and Donald A. Wittman. Oxford and New York: Oxford University Press p. 85268.

Fearon, James D and David D Laitin. 2003. "Ethnicity, insurgency, and civil war." *American political science review* 97(01):75–90.

Haber, Stephen and Victor Menaldo. 2011. "Do Natural Resources Fuel Authoritarianism? A Reappraisal of the Resource Curse." *American Political Science Review* 105(1):1–26.

Han, Enze. 2010. "Boundaries, Discrimination, and Interethnic Conflict in Xinjiang." *International Journal of Conflict and Violence* 4(2):244–256.

Hann, Chris. 2013. The universal and the particular in rural Xinjiang: ritual commensality and the mosque community. In *Articulating Islam: anthropological approaches to Muslim worlds*. Springer pp. 171–191.

He, B. 2005. Minority Rights with Chinese Characteristics. In *Multiculturalism in Asia*, ed. Will Kymlicka and Baogang He. Oxford University Press pp. 56–79.

Hierman, Brent. 2007. "Asymmetric Power: The Pacification of Xinjiang Uighur Protest and the Chinese State, 1988-2002." *Problems of Post-Communism* 54(3):48–62.

Hong, Ji Yeon. 2014. "How Natural Resource Endowments Affect the Provision of Local Public Goods and Services: Evidence from Chinese Prefectural Cities." *Working Paper* .

Hopper, Ben and Michael Webber. 2009. "Migration, Modernization and Ethnic Estrangement: Uyghur migration to Urumqi, Xinjiang Uyghur Autonomous Region, PRC." *Inner Asia* 11:173–203.

Humphreys, Macatan. 2005. "Natural Resources, Conflict, and Conflict Resolution Uncovering the Mechanisms." *Journal of Conflict Resolution* 49(4):508–537.

Huntington, Samuel P. 1996. *The Clash of Civilizations and The Remaking of World Order*. New York: Simon and Shuster.

Iannaccone, Laurence R. and Eli Berman. 2006. "Religious Extremism: The Good, the Bad, and the Deadly." *Public Choice* 128(1-2):109–129.

Karl, Terry Lynn. 1997. *The Paradox of Plenty: Oil Booms and Petro-States*. Berkeley: University of California Press.

King, Gary. 1988. "Statistical models for political science event counts: Bias in conventional procedures and evidence for the exponential Poisson regression model." *American Journal of Political Science* 32(3):838–863.

King, Gary. 1989. "Variance specification in event count models: From restrictive assumptions to a generalized estimator." *American Journal of Political Science* 33(3):762–784.

Krain, Matthew. 1998. "Contemporary Democracies Revisited Democracy, Political Violence, and Event Count Models." *Comparative Political Studies* 31(2):139–164.

Lü, Xiaobo and Pierre F. Landry. 2014. "Show Me the Money: Interjurisdiction Political Competition and Fiscal Extraction in China." *American Political Science Review* 108(3):706–22.

Lujala, Paivi. 2009. "Deadly Combat over Natural Resources Gems, Petroleum, Drugs, and the Severity of Armed Civil Conflict." *Journal of Conflict Resolution* 53(1):50–71.

Mahdavi, Paasha. 2015. "Explaining the Oil Advantage: Effects of Natural Resource Wealth on Incumbent Reelection in Iran." *World Politics* 67(2):226–267.

Mähler, Annegret and Jan H Pierskalla. 2015. "Indigenous Identity, Natural Resources, and Contentious Politics in Bolivia A Disaggregated Conflict Analysis, 2000-2011." *Comparative Political Studies* 48(3):301–332.

Michaels, Guy. 2011. "The long-term Consequences of Resource-based Specialisation." *Economic Journal* 121(551):31–57.

Montalvo, José G. and Marta Reynal-Querol. 2005. "Ethnic Polarization, Potential Conflict, and Civil Wars." *American Economic Review* 95(3):796–816.

Olsson, Ola and Michele Valsecchi. 2012. "Resource Windfalls and Public Goods: Evidence From a Policy Reform." *Working paper,* University of Gothenburg.

Posner, Daniel N. 2004. "Measuring Ethnic Fractionalization in Africa." *American Journal of Political Science* 48(4):849–863.

Reed, J. Todd and Diana Raschke. 2010. *The ETIM: China's Islamic Militants and the Global Terrorist Threat.* Santa Barbara: ABC-CLIO.

Ross, Michael L. 2004. "What Do We Know about Natural Resources And Civil War?" *Journal of Peace Research* 41(3):337–356.

Ross, Michael L. 2006. "A Closer Look at Oil, Diamonds, And Civil War." *Annual Review of Political Science* 9:265–300.

Ross, Michael L. 2012. *The Oil Curse: How Petroleum Wealth Shapes the Development of Nations.* NJ: Princeton University Press.

Sachs, Jeffrey D and Andrew M. Warner. 1995. "Natural Resource Abundance and Economic Growth." *National Bureau of Economic Research* .

Sautman, Barry. 1998. "Preferential Policies for Ethnic Minorities in China: The Case of Xinjiang." *Nationalism and Ethnic Politics* 4(1-2):86–118.

Selway, Joel and Kharis Templeman. 2012. "The myth of consociationalism? Conflict reduction in divided societies." *Comparative Political Studies* 45(12):1542–1571.

Sorrens, Jason. 2011. "Mineral Prodiction, territory, and ethnic rebellion: The Role of Rebel Constituencies." *Journal of Peace Research* 48(5):571–585.

State Council Information Office of China. 2014. "White Paper on the History and Development of the Xinjiang Production and Construction Corps.".

Toha, Risa J. 2016. "Political Competition and Ethnic Riots in Democratic Transition: A Lesson from Indonesia." *British Journal of Political Science* forthcoming.

Van der Ploeg, Frederick. 2011. "Natural Resources: Curse or Blessing?" *Journal of Economic Literature* pp. 366–420.

Wang, Yuhua. 2014. "Empowering the police: how the Chinese Communist Party manages its coercive leaders." *China Quarterly* 219:625 – 48.

Wang, Yuhua and Carl Minzner. Forthcoming. "The Rise of the Security State." *China Quarterly* .

Wayne, Martin I. 2007. *China's War on Terrorism: Counter-Insurgency, Politics and Internal Security*. New York: Routledge.

Weidmann, Nils B. 2016. "A closer look at reporting bias in conflict event data." *American Journal of Political Science* 60(1):206–218.

Whiting, Susan. 2004. The cadre evaluation system at the grass roots: the paradox of party rule. In *Holding China together: Diversity and national integration in the post-Deng era*, ed. B. Naughton and D. Yang. New York: Cambridge University Press.

Wu, Xiaogang and Xi Song. 2014. "Ethnic Stratification amid China's Economic Transition: Evidence from the Xinjiang Uyghur Autonomous Region." *Social Science Research* 44:158–172.

Xu, Chenggang. 2011. "The fundamental institutions of China's reforms and development." *Journal of Economic Literature* 49(4):1076–151.

Zang, Xiaowei. 2008. "Market reforms and HanMuslim variation in employment in the Chinese state sector in a Chinese city." *World Development* 36(11):2341–2352.

Zang, Xiaowei. 2011. "Uyghur-Han Earnings Differentials in Urumchi." *China Journal* 65:141–155.

Zhu, Yuchao and Dongyan Blachford. 2016. "Old Bottle, New Wine? Xinjiang Bingtuan and China's ethnic frontier governance." *Journal of Contemporary China* 25(97):25–40.

Zhukov, Yuri M. and Monica Duffy Toft. 2015. "Islamists and Nationalists: Rebel Motivation and Counterinsurgency in Russia's North Caucasus." *American Political Science Review* 109(2):222–238.

Table 1 Natural Resource Extraction and Ethnic Violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Oil Sales	-0.094*			-0.115**			-0.132***		
	(0.056)			(0.055)			(0.051)		
Gas Sales		-0.091			-0.105*			-0.098*	
		(0.062)			(0.060)			(0.057)	
Oil and Gas Sales			-0.096*			-0.116**			-0.132***
			(0.055)			(0.055)			(0.050)
Proportion of Uighur				1.018	0.944	0.997	0.278	-0.306	0.270
				(0.630)	(0.640)	(0.630)	(1.456)	(1.355)	(1.450)
Population Density				0.368	0.420	0.366	-0.740	-0.662	-0.738
				(0.608)	(0.652)	(0.603)	(0.456)	(0.479)	(0.456)
Distance to Border				0.666**	0.599**	0.673**	-0.033	-0.202	-0.027
				(0.296)	(0.288)	(0.295)	(0.361)	(0.349)	(0.360)
Fiscal Revenue							1.025***	0.886***	1.024***
							(0.276)	(0.270)	(0.274)
Central Transfer							-0.659	-0.452	-0.657
							(0.417)	(0.415)	(0.415)
GDP Per Capita							0.272	0.222	0.263
							(0.272)	(0.276)	(0.272)
Bingtuan							-0.118	0.473	-0.065
							(1.739)	(1.713)	(1.708)
Latitude							-0.400**	-0.443***	-0.398**
							(0.161)	(0.151)	(0.161)
Slope							0.012	-0.177	0.012
							(0.492)	(0.528)	(0.491)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	597	597	597	584	584	584	534	534	534

Notes. Regression results are based on negative binomial model. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, proportion of Uighur and Bingtuan are logarithmic values. Estimates of constant and year fixed effects are not reported. + p < 0.1; ∗ p < 0.05; ∗∗ p< 0.01; ∗ ∗ ∗ p < 0.001.

Table 2 Natural Resources, Mosques and Violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Oil Sales	-8.904*			-9.834**			-7.709*		
	(3.574)			(3.600)			(3.105)		
Oil Sales× Mosque	1.395*			1.539**			1.211*		
	(0.559)			(0.563)			(0.487)		
Gas Sales		-8.979**			-9.793**			-8.132**	
		(2.932)			(3.364)			(2.511)	
Gas Sales × Mosque		1.407**			1.533**			1.282**	
		(0.459)			(0.526)			(0.394)	
Oil and Gas Sales			-8.827*			-9.824**			-7.619*
			(3.525)			(3.573)			(3.023)
Oil & Gas Sales × Mosque			1.383*			1.537**			1.197*
			(0.551)			(0.559)			(0.474)
Mosque	1.415***	1.418***	1.403***	1.580***	1.606***	1.581***	1.154**	1.370***	1.146**
	(0.411)	(0.351)	(0.406)	(0.413)	(0.401)	(0.410)	(0.387)	(0.348)	(0.381)
Proportion of Uighur				-0.408	-0.605	-0.445	-1.526	-2.522	-1.539
				(0.897)	(0.917)	(0.894)	(1.694)	(1.655)	(1.689)
Population Density				0.318	0.367	0.317	-0.644	-0.567	-0.642
				(0.645)	(0.692)	(0.641)	(0.452)	(0.490)	(0.453)
Distance to Border				0.746**	0.680**	0.756**	-0.075	-0.230	-0.067
				(0.274)	(0.258)	(0.273)	(0.406)	(0.402)	(0.404)
Fiscal Revenue							0.732**	0.532*	0.731**
							(0.262)	(0.262)	(0.260)
Central Transfer							-0.861+	-0.736	-0.860+
							(0.460)	(0.448)	(0.458)
GDP Per Capita							0.423	0.447	0.412
							(0.266)	(0.272)	(0.266)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	597	597	597	584	584	584	534	534	534

Notes. Regression results are based on negative binomial model. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, proportion of Uighur and Bingtuan are logarithmic values. Due to the space limit, estimates of slope, latitude, bingtuan, constant and year fixed effects are not reported. + p < 0.1; ∗ p < 0.05; ∗∗ p< 0.01; ∗ ∗ ∗ p < 0.001.

Table 3 Natural Resources, Mosques and Violence (Instrumental Variable Analysis)

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Second Stage (Negative Binomial Regression)					
Oil Sales	-10.579**		-11.349**		-9.112*	
	(3.818)		(3.534)		(4.062)	
Oil Sales × Mosque	1.660**		1.774**		1.397*	
	(0.599)		(0.553)		(0.626)	
Oil and Gas Sales		-10.479**		-11.296**		-8.987*
		(3.774)		(3.502)		(4.007)
Oil & Gas Sales × Mosque		1.644**		1.765**		1.378*
		(0.592)		(0.548)		(0.618)
Mosque	1.209**	1.199**	-0.024	0.019	-1.209	-1.097
	(0.420)	(0.417)	(1.140)	(1.114)	(1.157)	(1.099)
Proportion of Uighur			2.709	2.564	7.472	7.007
			(2.530)	(2.466)	(5.882)	(5.642)
Population Density			1.007	0.989	-0.636	-0.629
			(0.646)	(0.639)	(0.432)	(0.432)
Distance to border			1.517**	1.521**	1.182	1.159
			(0.579)	(0.578)	(0.796)	(0.783)
Fiscal Revenue					2.168**	2.100**
					(0.779)	(0.743)
Central Transfer					-1.123*	-1.104*
					(0.503)	(0.499)
GDP Per Capita					0.271	0.262
					(0.449)	(0.446)
Bingtuan					-3.099	-2.903
					(2.162)	(2.091)
Latitude					0.163	0.144
					(0.458)	(0.446)
Slope					0.742	0.711
					(1.004)	(0.984)
Year FE	Y	Y	Y	Y	Y	Y
	Panel B: First Stage (OLS)					
Mosque in 1949	0.253***	0.255***	0.093**	0.094**	0.061+	0.063+
	(0.028)	(0.028)	(0.033)	(0.033)	(0.035)	(0.035)
Controls	Y	Y	Y	Y	Y	Y
N	588	588	577	577	527	527

Notes. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, proportion of Uighur and Bingtuan are logarithmic values. Estimates of constant and year fixed effects are not reported. + p < 0.1; ∗ p < 0.05; ∗∗ p< 0.01; ∗ ∗ ∗ p < 0.001.

Table 4 Mechanism I: Public Security Expenditure

	(1)	(2)	(3)	(4)	(5)	(6)
	Security Expenditure		Government Revenue		Violence	
Oil Sales	-0.002		0.014		-0.140*	
	(0.003)		(0.012)		(0.055)	
Oil and Gas Sales		-0.002		0.014		-0.139*
		(0.004)		(0.013)		(0.055)
Proportion of Uighur	0.062	0.059	-0.369	-0.342	0.410	0.393
	(1.842)	(1.842)	(2.379)	(2.377)	(1.442)	(1.433)
Population Density	0.042	0.042	0.027	0.027	-0.663	-0.662
	(0.036)	(0.036)	(0.027)	(0.027)	(0.468)	(0.468)
Bingtuan	0.009	0.009	0.103	0.103	-0.545	-0.512
	(0.067)	(0.067)	(0.131)	(0.131)	(1.645)	(1.613)
Fiscal Revenue	0.080+	0.080+			1.211**	1.207**
	(0.040)	(0.040)			(0.417)	(0.414)
Central Transfer	-0.043*	-0.043*			-0.625	-0.624
	(0.020)	(0.020)			(0.422)	(0.420)
GDP Per Capita	-0.030*	-0.030*			0.276	0.268
	(0.012)	(0.012)			(0.278)	(0.277)
Distance to Border					-0.011	-0.005
					(0.348)	(0.346)
Security Expenditure					-0.402	-0.399
					(0.639)	(0.637)
Latitude					-0.381*	-0.379*
					(0.160)	(0.159)
Slope					0.077	0.076
					(0.498)	(0.496)
County FE	Y	Y	Y	Y	N	N
Year FE	Y	Y	Y	Y	Y	Y
	Year and county fixed effects				Negative Binomial	
N	539	539	591	591	534	534

Notes. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, Bingtuan and proportion of Uighur are logarithmic values. Estimates of constant, county fixed effects and year fixed effects are not reported. + p < 0.1; ∗ p < 0.05; ∗∗ p< 0.01; ∗ ∗ ∗ p < 0.001.

Table 5 Mechanism II: Ethnic Composition Changes

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Population		Han Population		Uighur Population	
Oil Sales	0.000		0.000		-0.001	
	(0.002)		(0.002)		(0.003)	
Oil and Gas Sales		-0.001		-0.000		-0.002
		(0.001)		(0.002)		(0.003)
Population Density	-0.032*	-0.031*	-0.005	-0.005	-0.042***	-0.042***
	(0.013)	(0.013)	(0.008)	(0.008)	(0.007)	(0.007)
Mosque	-0.080	-0.081	0.020	0.019	0.000	0.001
	(0.122)	(0.122)	(0.255)	(0.255)	(0.118)	(0.116)
Bingtuan	-0.028	-0.027	-0.022	-0.021	0.081	0.082
	(0.046)	(0.046)	(0.029)	(0.029)	(0.078)	(0.079)
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
N	591	591	588	588	588	588

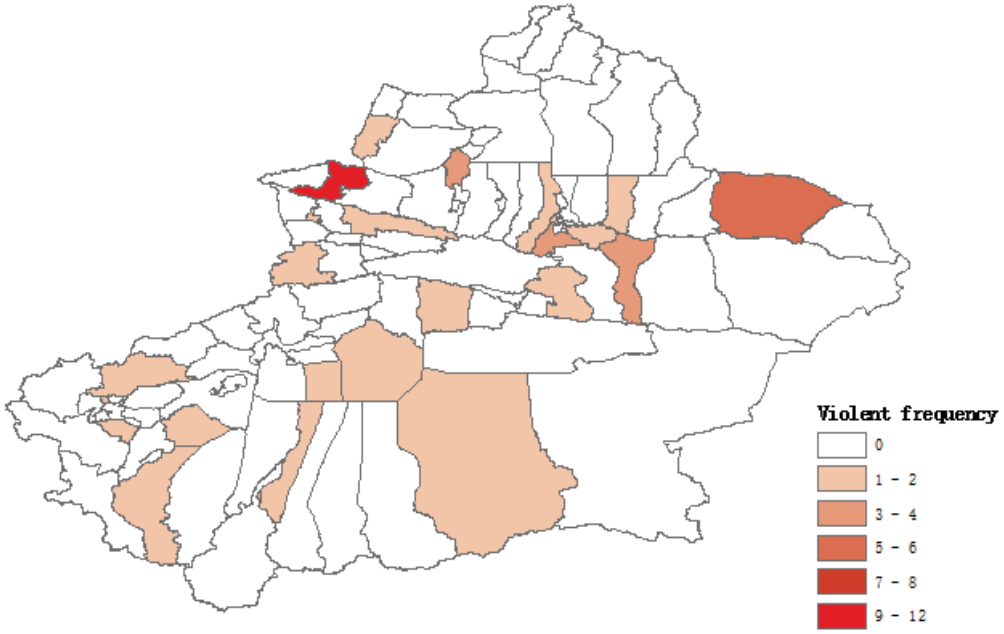
Notes. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, Bingtuan and proportion of Uighur are logarithmic values. Estimates of constant, county fixed effects and year fixed effects are not reported. + p $<$ 0.1; $*$ p $<$ 0.05; $**$ p$<$ 0.01; $***$ p $<$ 0.001.

Table 6 Mechanism III: Economic Opportunity

	(1)	(2)	(3)	(4)	(5)	(6)
	GDP per capita			Employment rate		
Oil Sales	0.002			0.461*		
	(0.004)			(0.206)		
Gas Sales		-0.000			0.606***	
		(0.007)			(0.075)	
Oil and Gas Sales			0.002			0.564**
			(0.005)			(0.199)
Proportion of Uighur	9.098*	9.096*	9.096*	40.047	41.170	41.016
	(4.042)	(4.043)	(4.040)	(55.125)	(54.895)	(54.932)
Population Density	0.193+	0.193+	0.193+	0.348	0.311	0.324
	(0.097)	(0.097)	(0.097)	(0.922)	(0.917)	(0.914)
Bingtuan	0.001	0.003	0.001	-2.639	-3.010	-2.782
	(0.146)	(0.148)	(0.146)	(3.150)	(3.058)	(3.030)
county FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
N	560	560	560	507	507	507

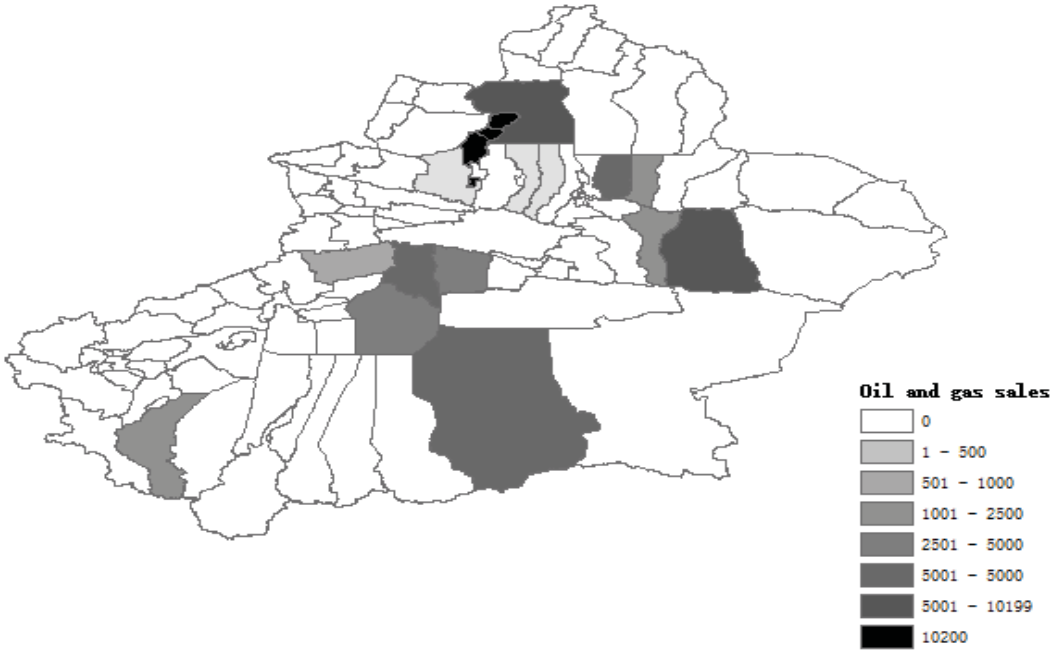
Notes. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, Bingtuan and proportion of Uighur are logarithmic values. Estimates of constant, county fixed effects and year fixed effects are not reported. + p $<$ 0.1; $*$ p $<$ 0.05; $**$ p$<$ 0.01; $***$ p $<$ 0.001.

Figure 1: Accumulated violence distribution (1998-2005)



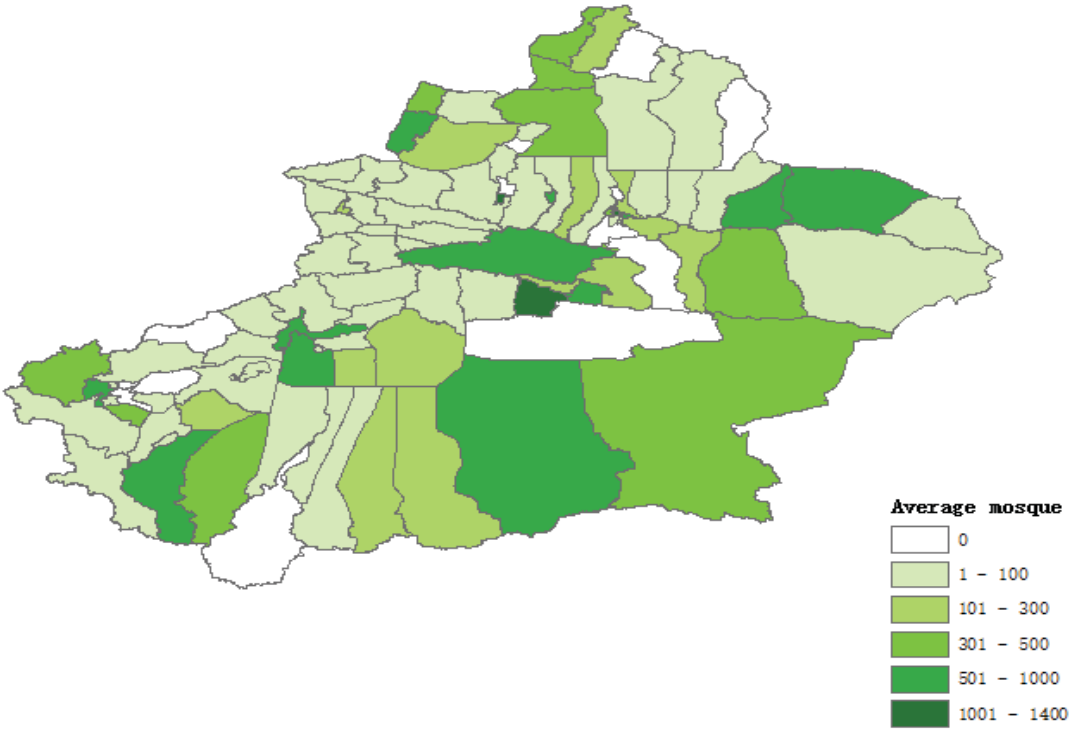
Notes. Accumulated violence refers to the total number of violent events in the period

Figure 2: Oil and gas sales(1998-2005)



Notes. Accumulated violence refers to the total number of violent events in the period

Figure 3: Number of mosques (1998-2004)



Notes. Displayed number is average number of mosques within a county during the period 1998-2004.

APPENDIX

Table A1 Summary statistics

Variable	N	Mean	Std. Dev.	Min.	Max.
Violence	597	0.069	0.453	0	9
Oil Sales (log)	597	2.959	7.829	-0.693	22.87
Gas Sales (log)	597	1.907	6.414	-0.693	21.34
Oil Gas Sales(log)	597	3.073	8.000	-0.693	22.926
Proportion of Uighur	595	0.421	0.387	0	0.995
Population Density	593	0.073	0.307	0.000	3.619
Distance to Border (log)	590	0.334	0.897	-2.046	1.908
Fiscal Revenue (log)	597	8.019	1.158	4.5	10.982
Central Transfer (log)	575	7.157	0.666	3.219	9.308
Security Expenditure (log)	576	6.564	0.665	4.22	8.965
GDP Per Capita (log)	564	-0.657	0.75	-4.055	2.254
Proportion of Bingtuan Population	595	0.102	0.156	0	0.975
Latitude	597	42.163	3.008	36.86	47.88
Slope	590	1.83	0.667	1	3.66

Table A2 Robustness I: Effect of Resource Extraction and Mosque with Prefecture Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Oil Sales	-9.215**			-9.407**			-11.677*		
	(3.555)			(3.429)			(5.527)		
Oil Sales× Mosque	1.453**			1.480**			1.841*		
	(0.556)			(0.536)			(0.861)		
Gas Sales		-8.960**			-9.406**			-11.778*	
		(3.311)			(3.310)			(5.836)	
Gas Sales × Mosque		1.413**			1.481**			1.856*	
		(0.517)			(0.517)			(0.908)	
Oil and Gas Sales			-9.088**			-9.339**			-11.458*
			(3.506)			(3.381)			(5.471)
Oil and Gas Sales × Mosque			1.433**			1.470**			1.806*
			(0.548)			(0.529)			(0.853)
Mosque	1.269***	1.239***	1.255***	1.420***	1.437***	1.414***	1.695*	1.862**	1.674*
	(0.364)	(0.337)	(0.358)	(0.349)	(0.332)	(0.341)	(0.666)	(0.705)	(0.660)
Proportion of Uighur				-2.052	-2.375	-2.069	0.332	-1.711	0.281
				(1.709)	(1.593)	(1.712)	(2.212)	(1.893)	(2.208)
Population Density				0.056	0.050	0.058	-0.877*	-0.835+	-0.871*
				(0.535)	(0.534)	(0.535)	(0.444)	(0.475)	(0.444)
Distance to Border				0.580	0.592	0.594	-0.774	-0.268	-0.753
				(0.469)	(0.466)	(0.470)	(0.718)	(0.692)	(0.718)
Fiscal Revenue							1.003**	0.728+	0.991**
							(0.327)	(0.430)	(0.328)
Central Transfer							-1.960***	-1.632**	-1.938***
							(0.536)	(0.539)	(0.535)
GDP Per Capita							0.364	0.564	0.364
							(0.363)	(0.484)	(0.364)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Prefecture effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	597	597	597	584	584	584	534	534	534

Notes. Regression results are based on negative binomial model. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, bingtuan and proportion of Uighur are logarithmic values. Due to the space limit, estimates of slope, latitude, bingtuan, constant and year fixed effects are not reported. + p < 0.1; ∗ p < 0.05; ∗∗ p< 0.01; ∗ ∗ ∗ p < 0.001.

Table A3 Robustness II: Natural Resources, Mosque Density and Violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Oil Sales	-12.111***			-11.496***			-10.016***		
	(1.739)			(1.723)			(1.952)		
Oil Sales× Mosque	3.278***			3.112***			2.721***		
	(0.470)			(0.466)			(0.532)		
Gas Sales		-12.532***			-11.900***			-10.179***	
		(1.867)			(1.830)			(2.018)	
Gas Sales × Mosque		3.392***			3.222***			2.769***	
		(0.505)			(0.495)			(0.548)	
Oil and Gas Sales			-11.944***			-11.383***			-9.894***
			(1.720)			(1.706)			(1.903)
Oil & Gas Sales × Mosque			3.233***			3.081***			2.687***
			(0.465)			(0.462)			(0.519)
Mosque Density	2.691***	2.776***	2.657***	2.938***	3.044***	2.915***	2.504***	2.583***	2.482***
	(0.355)	(0.377)	(0.351)	(0.403)	(0.418)	(0.398)	(0.473)	(0.466)	(0.463)
Proportion of Uighur				-1.553^{+}	-1.754^{+}	-1.586^{+}	-1.932	-2.277	-1.962
				(0.922)	(0.929)	(0.918)	(1.613)	(1.507)	(1.613)
Population Density				-1.277*	-1.302*	-1.272*	-1.543**	-1.598**	-1.542**
				(0.533)	(0.532)	(0.528)	(0.563)	(0.569)	(0.561)
Distance to Border				0.852**	0.830**	0.861**	0.217	0.191	0.232
				(0.305)	(0.298)	(0.304)	(0.391)	(0.387)	(0.391)
Fiscal Revenue							0.254	0.186	0.253
							(0.340)	(0.318)	(0.335)
Central Transfer							-0.717	-0.678	-0.714
							(0.462)	(0.463)	(0.459)
GDP Per Capita							0.613	0.631	0.590
							(0.373)	(0.395)	(0.365)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	570	570	570	563	563	563	513	513	513

Notes: Regression results are based on negative binomial model. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, proportion of Uighur and bingtuan are logarithmic values. Due to the space limit, estimates of slope, latitude, bingtuan, constant and year fixed effects are not reported. $+$ p $<$ 0.1; $*$ p $<$ 0.05; $**$ p$<$ 0.01; $***$ p $<$ 0.001.

Table A4 Robustness III: Natural Resources, Mosque Density and Violence (Instrumental Variable Analysis)

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Second Stage (Negative Binomial Regression)					
Oil Sales	-12.696***		-12.233***		-11.458***	
	(1.819)		(1.887)		(1.822)	
Oil Sales × Mosque	3.441***		3.321***		3.122***	
	(0.491)		(0.509)		(0.491)	
Oil and Gas Sales		-12.518***		-12.103***		-11.256***
		(1.802)		(1.876)		(1.807)
Oil & Gas Sales × Mosque		3.393***		3.286***		3.068***
		(0.486)		(0.506)		(0.487)
Mosque Density	2.686***	2.650***	2.906***	2.880***	2.492***	2.461***
	(0.426)	(0.424)	(0.455)	(0.449)	(0.395)	(0.391)
Proportion of Uighur			-1.594	-1.632	-2.241	-2.305
			(1.106)	(1.091)	(1.633)	(1.620)
Population Density			-0.821	-0.816	-1.262+	-1.259+
			(0.813)	(0.808)	(0.753)	(0.746)
Distance to border			0.840**	0.851**	-0.035	-0.014
			(0.289)	(0.288)	(0.409)	(0.409)
Fiscal Revenue					0.355	0.351
					(0.407)	(0.400)
Central Transfer					-0.667	-0.662
					(0.486)	(0.481)
GDP Per Capita					0.654	0.619
					(0.543)	(0.537)
Bingtuan					-0.644	-0.572
					(1.316)	(1.283)
Latitude					-0.419+	-0.413+
					(0.231)	(0.229)
Slope					-0.160	-0.170
					(0.619)	(0.610)
Year FE	Y	Y	Y	Y	Y	Y
	Panel B: First Stage (OLS)					
Mosque Density in 1949	0.468***	0.468***	0.256***	0.257***	0.240***	0.243***
	(0.029)	(0.029)	(0.034)	(0.034)	(0.035)	(0.035)
Controls	Y	Y	Y	Y	Y	Y
N	563	563	556	556	506	506

Notes: Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, proportion of Uighur and bingtuan are logarithmic values. Estimates of constant and year fixed effects are not reported. + p < 0.1; ∗ p < 0.05; ∗∗ p< 0.01; ∗ ∗ ∗ p < 0.001.

Table A5 Robustness IV: Alternative Measure of Resources (Rents Per Capita)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Oil Sales	-19.247**			-20.091**			-24.963+		
	(7.408)			(7.750)			(14.631)		
Oil Sales × Mosque	3.038**			3.164**			3.939+		
	(1.157)			(1.211)			(2.277)		
Gas Sales		-22.711***			-23.811***			-25.358+	
		(5.826)			(6.179)			(12.967)	
Gas Sales × Mosque		3.582***			3.747***			4.002*	
		(0.909)			(0.962)			(2.005)	
Oil & Gas Sales			-18.436**			-19.428**			-23.726+
			(6.879)			(7.382)			(14.259)
Oil & Gas Sales ×Mosque			2.910**			3.060**			3.745+
			(1.075)			(1.153)			(2.219)
Mosque	2.368**	2.743***	2.280**	2.587**	3.009***	2.516***	3.150+	3.350*	3.017+
	(0.770)	(0.615)	(0.714)	(0.796)	(0.638)	(0.755)	(1.625)	(1.435)	(1.585)
Proportion of Uighur				-2.052	-2.363	-2.068	0.328	-1.657	0.284
				(1.709)	(1.587)	(1.712)	(2.212)	(1.866)	(2.208)
Population Density				0.056	0.053	0.058	-0.877*	-0.835+	-0.871*
				(0.535)	(0.534)	(0.535)	(0.444)	(0.477)	(0.444)
Distance to Border				0.580	0.604	0.594	-0.776	-0.242	-0.752
				(0.469)	(0.467)	(0.470)	(0.719)	(0.687)	(0.718)
Fiscal Revenue							1.003**	0.740+	0.992**
							(0.326)	(0.430)	(0.328)
Central Transfer							-1.959***	-1.636**	-1.937***
							(0.536)	(0.533)	(0.535)
GDP Per Capita							0.364	0.558	0.363
							(0.364)	(0.474)	(0.363)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Prefecture effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	595	595	595	584	584	584	534	534	534

Notes. Regression results are based on negative binomial model. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, Bingtuan and proportion of Uighur are logarithmic values. Due to the space limit, estimates of slope, latitude, bingtuan, constant and year fixed effects are not reported. + p < 0.1; ∗ p < 0.05; ∗∗ p< 0.01; ∗ ∗ ∗ p < 0.001.

Table A6 Robustness V: Non-linear Specification of Natural Resources and Violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Oil Sales	-0.892***			-0.907***			-0.463*		
	(0.211)			(0.215)			(0.204)		
Oil Sales^2	0.041***			0.040***			0.017		
	(0.010)			(0.011)			(0.010)		
Gas Sales		-0.094			-0.135			-0.052	
		(0.115)			(0.122)			(0.119)	
Gas Sales^2		0.003			0.004			-0.002	
		(0.005)			(0.006)			(0.006)	
Oil & Gas Sales			-0.958***			-0.983***			-0.491*
			(0.229)			(0.237)			(0.215)
Oil & Gas Sales^2			0.044***			0.044***			0.018+
			(0.011)			(0.011)			(0.011)
Proportion of Uighur				1.030	1.335+	1.003	0.217	1.004	0.203
				(0.636)	(0.691)	(0.636)	(1.433)	(1.587)	(1.429)
Population Density				0.360	0.134	0.358	-0.741	-0.928	-0.740
				(0.606)	(0.477)	(0.602)	(0.451)	(0.664)	(0.450)
Distance to Border				0.656*	0.557	0.665*	-0.029	-0.506	-0.022
				(0.293)	(0.388)	(0.292)	(0.352)	(0.470)	(0.351)
Fiscal Revenue							1.009***	1.171**	1.007***
							(0.270)	(0.394)	(0.268)
Central Transfer							-0.649	-0.185	-0.649
							(0.416)	(0.589)	(0.413)
GDP Per Capita							0.265	0.329	0.258
							(0.277)	(0.303)	(0.276)
Bingtuan							-0.371	1.388	-0.344
							(1.713)	(2.367)	(1.679)
Latitude							-0.394*	-0.453**	-0.391*
							(0.160)	(0.152)	(0.160)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	597	512	597	584	502	584	534	462	534

Notes. Regression results are based on negative binomial model. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, bingtuan and proportion of Uighur are logarithmic values. Due to the space limit, estimates of slope, constant and year fixed effects are not reported. + p $<$ 0.1; $*$ p $<$ 0.05; $**$ p$<$ 0.01; $***$ p $<$ 0.001.

Table A7 Robustness VI: Spatial Lag to Account for Potential Spill-over Effects

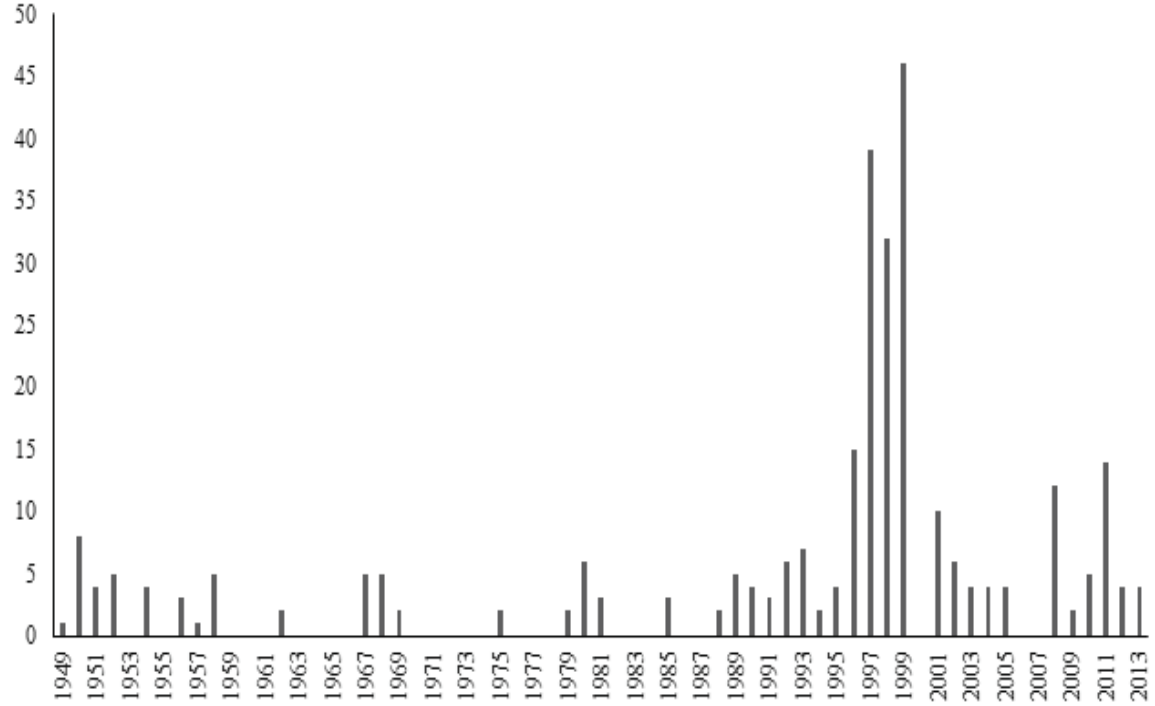
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Neighboring Effect	-0.400	-0.390	-0.409	-0.662	-0.609	-0.674	-0.222	-0.050	-0.240
	(0.570)	(0.572)	(0.569)	(0.537)	(0.536)	(0.539)	(0.534)	(0.533)	(0.535)
Oil Sales	-0.094^{+}			-0.117*			-0.135**		
	(0.055)			(0.054)			(0.052)		
Gas Sales		-0.091			-0.106^{+}			-0.098^{+}	
		(0.063)			(0.058)			(0.057)	
Oil and Gas Sales			-0.096^{+}			-0.119*			-0.135**
			(0.055)			(0.054)			(0.051)
Proportion of Uighur				1.170^{+}	1.077	1.151^{+}	0.304	-0.367	0.299
				(0.661)	(0.668)	(0.659)	(1.480)	(1.370)	(1.475)
Population Density				0.309	0.370	0.305	-0.776^{+}	-0.670	-0.778^{+}
				(0.611)	(0.648)	(0.607)	(0.451)	(0.474)	(0.451)
Distance to Border				0.655*	0.584*	0.663*	-0.019	-0.193	-0.011
				(0.300)	(0.290)	(0.300)	(0.352)	(0.343)	(0.350)
Fiscal Revenue							1.016***	0.873***	1.015***
							(0.268)	(0.265)	(0.266)
Central Transfer							-0.661	-0.456	-0.659
							(0.403)	(0.404)	(0.401)
GDP Per Capita							0.276	0.230	0.267
							(0.273)	(0.275)	(0.272)
Bingtuan							-0.524	0.124	-0.493
							(1.686)	(1.663)	(1.650)
Latitude							-0.383*	-0.438**	-0.379*
							(0.152)	(0.143)	(0.152)
Slope							0.018	-0.184	0.019
							(0.503)	(0.536)	(0.502)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	595	595	595	584	584	584	534	534	534

Notes. Regression results are based on negative binomial model. Robust standard errors clustered at county level are in parentheses. All time variant variables are lagged one year. All time variant variables except population density, bingtuan and proportion of Uighur are logarithmic values. Constant and year fixed effects are not reported. $+$ p < 0.1; $*$ p < 0.05; $**$ p< 0.01; $***$ p < 0.001.

Table A8 Data sources

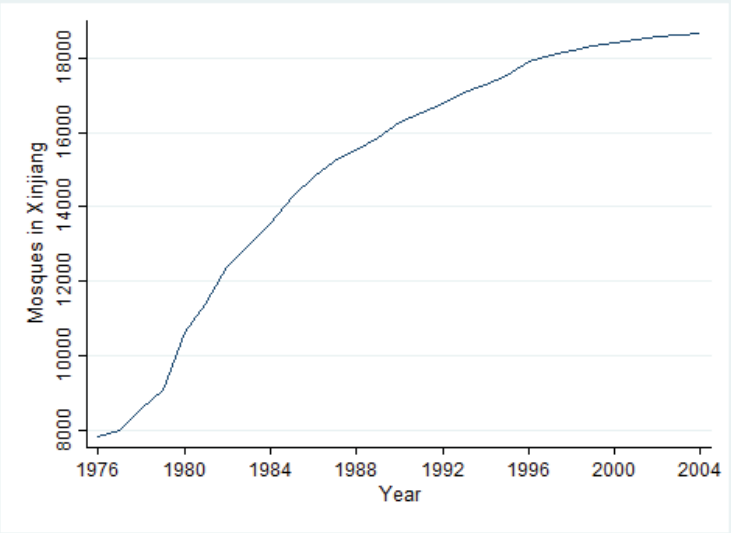
Variable	Period	Data Source
Violence	1998-2005	Bovingdon (2010) and public media reports
Population density	1997-2005	Xinjiang Statistic Yearbook
Proportion of Uighur	1997-2005	Xinjiang Statistic Yearbook
GDP Per Capita	1997-2005	Xinjiang Statistic Yearbook
Bingtuan	1997-2005	Xinjiang Production and Construction Corps Statistic Yearbook
Oil production	1997-2005	China Oil and Gas Field Development Report (Xinjiang, Tuha, Talimu)
Gas production	1997-2005	China Oil and Gas Field Development Report (Xinjiang, Tuha, Talimu)
Employment	1997-2005	China County Statistical Yearbook
Fiscal Revenue	1997-2005	China Local Finance Statistic Yearbook
Fiscal Expenditure	1997-2005	China Local Finance Statistic Yearbook
Special Grants	1997-2005	China Local Finance Statistic Yearbook
Public Security Expenditure	1997-2005	China Local Finance Statistic Yearbook
Slope	—	Digital Elevation Model (DEM)
Mosque (time variant)	1997-2004	China Data Online, University of Michigan
Mosque (time invariant)	1990s	Local gazetteers in each county of Xinjiang
Mosque1949	Before 1949	Local gazetteers in each county of Xinjiang

Figure A1: Frequency of violence in Xinjiang from 1949 to 2013



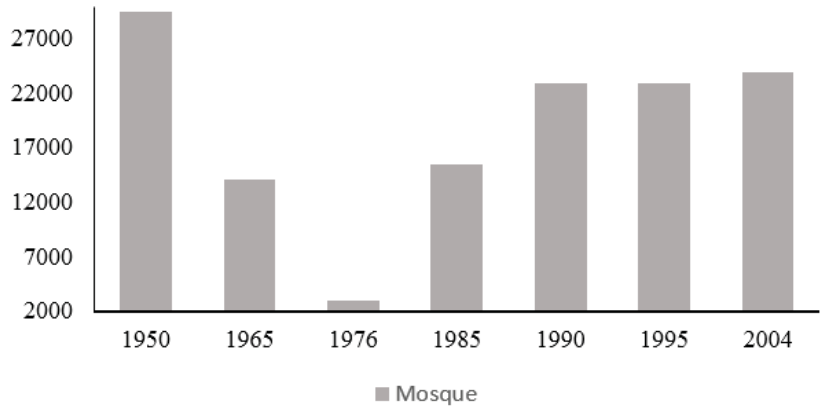
Notes. Frequency of violence refers to the number of violent events that occurred in Xinjiang.

Figure A2: The number of mosques from 1976 to 2004 in Xinjiang



Note: The data is from *China Data Online*, University of Michigan.

Figure A3: The number of mosques from 1950 to 2004 in Xinjiang



Notes. Numbers are from Li (2014) which collects the data from multiple official sources.

Figure A4: Distribution of mosques in the 1990s (up) and in 1949 (down)