ABHANDLUNGEN / ARTICLES

Nuclear Power and the Mob

Extortion in Japan

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The journalist had landed a job on the Fukushima cleanup crew (Suzuki, 2011: 9–10). As he chatted with the other workers, one of them explained his financial connection:

There's nothing special here. A huge public project comes to a tiny town. That's really all there is to it. Dams and highways are exactly the same. It's just that this one involves a nuclear power plant, and that's something no one understands.

[The local politicians] represent the town, and negotiate with the power company. They cut the deal with a general contractor. They spread the work to the local construction firms.

But that would never get them enough workers.

So they talk to my brothers in the other cities. They use companies owned by sympathetic [mob] bosses. It's a huge job, so without help from the mob the work would never get completely spread around. It'd never make any progress. ...

Information about this kind of work comes straight to our place. We're the ones who assemble the votes for the elections. You could call it returning a favor, but it's just a case of relying on supporters to survive. ... Take the town council around here. Anyone we support will get elected.

The man switched tacks, and offered the journalist a suggestion:

You – you're short of money, right? Why don't you move here? You could work a few years at our construction firm, and then run for office.

The mob (known colloquially as the "yakuza") had made enormous profits building nuclear plants, the informant insisted. But it did not just build the plants. It also smoothed the approval process (Suzuki, 2011: 24):

Why did we make so much money when a nuclear plant came to town? It's obvious. We made money because we could make anyone who threatened to complain shut up.

In the article that follows, I trace some of these connections between nuclear power and the mob. In Japan as elsewhere, firms in the organized-crime industry invest in the personnel, skills, and technology needed to deliver violence. With that investment, they protect their activities in illegal sectors. By simple economies of scope, however, they can also exploit those investments to other ends. Relevant here, they can extort funds from firms that compete in legal markets. If a developer invests heavily in preparation for a large and disruptive construction project, they can extort funds by manipulating (or threatening to manipulate) the local opposition.

To explore the connections between organized crime and disruptive projects, I focus on (i) levels of known extortion cases and (ii) announcements of siting decisions for nuclear reactors. More specifically, I construct a prefecture-level panel dataset covering the years 1980 to 2010 (the 47 prefectures in Japan comprise the entire country). With this dataset, I then study the relationship between extortion rates and the planning, construction, and operation of nuclear power plants.

The results are consistent with a straightforward account: When news of a power company's plans to build a new reactor leaks, the mob arrives and the

level of reported extortion cases climbs. After a few years, that level plateaus. In part, it plateaus because the company has cleared regulatory hurdles and begun construction. In part, it probably also plateaus either because local firms capitulate and pay the mob (and no longer report the extortion to the police), or because the mob focuses on more compliant firms.

I first survey the literature on organized crime generally (Sec. I.1., 2.) and in Japan specifically (Sec. I.3.). I examine the peculiar ties between organized crime and the nuclear power industry (Sec. II.). Finally, I turn to the empirical results (Sec. III.).

I.   ORGANIZED CRIME

1.   *The Genesis of the Mob*

a)   *Introduction*

Mob members everywhere extort money from firms in the legal sector. They do so because – often for other reasons – they invest heavily in the personnel, skills, and technology necessary to deliver violence. With that investment sunk, they exploit economies of scope and use the violence to extort.

On why mob firms invest in violence, scholars propose two explanations. Some suggest that they grow by selling property-rights protection in societies where the state enforces those rights only weakly. Others suggest that they grow by selling goods and services in illegal sectors and invest in the violence necessary to protect these other investments. Given that the state does not protect property rights in sectors it defines as illegal, the two theories overlap. They also may just describe historical trajectories in different societies. The Sicilian mafia dates from a time when the Italian state lacked the power to protect property rights on the island. The American mob grew by selling alcohol during Prohibition.

Consider each explanation in turn.

b)   *Where the State Is Weak*

The Sicilian mafia "produces, promotes, and sells private protection," writes Diego Gambetta (1993: 1). It protects property and enforces contracts for a fee. In the words of Stergios Skaperdas (2001: 174; see Kumar/Skaperdas, 2008; Anderson, 1995), it holds protection as its "defining economic activity." Historically, it began in the market for protection and expanded into other industries over time. Analytically, it invested in resources crucial to the protection industry and exploited economies of scope to expand into industries adjacent to it.

Mobs everywhere protect property rights and enforce contracts; what distinguishes Sicily is the way they so consistently supply this service across the market for a fee. Elsewhere (as in the U.S., below), firms in illegal industries tend to build their own private enforcement capacity within their firm. In Sicily, the mob sells that protection to other firms. Its customers buy and sell goods and services on their own, but hire the mob to enforce the contractual terms they negotiate.

The economies of scale follow from the nature of violence itself. To enforce a contract effectively, a mob firm must be able to out-muscle the other party to its client's contract. It must be able to out-muscle any rival firm that the other party might hire for its own protection. And it must be able to hold the state at bay. Toward these ends, it will need a large capacity for violence.

For reasons peculiar to the transition from a feudal to openly competitive economy in western Sicily, the late 19th century Italian government failed to extend its control into the area. Residents took title to land, but could not trust the government to protect their lots. They developed businesses, but could not rely on it to enforce their claims. Into that vacuum, men with a comparative advantage in violence sold protective services.[1]

The demand for protection in a world of weak state power explains the rise of the mob in several other societies too (see Sung, 2004, for a comparative study). The Chinese triads, for instance, thrived during the decades of war. When foreign countries began to dismember China during the last half of the 19th century, the Manchu dynasty disintegrated. Within the resulting vacuum, the triads amassed their often-brutal power (Wakeman, 1996).

The Russian mob similarly grew in the post-Soviet vacuum. Entrepreneurs in the new environment needed a way to protect their property and enforce their contracts. Some had obtained their assets "from illegal shadow dealings in the Soviet era" and "were naturally unwilling to have any relations with the state police" (Volkov, 1999: 742). Even those without that dubious ancestry found the new state hard to trust (Varese, 1994). Rather than rely on it, they hired their enforcement services privately (Skaperdas, 2001: 179).

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1   Gambetta (1993: ch. 4). See also, e.g., Arlacchi (1986: 26); Konrad / Skaperdas (2012); Hess (1996: 16); Andvig / Fjeldstad (2001); Catanzaro (1992: x, 19); Anderson (1995). Some scholars (e.g., Gambetta, 1993: 77; Verese, 1994) have added that the mafia emerged not just because of a low level of state power, but because of the low level of trust among private residents. Trust is unusually low in southern Italy, they write. The mafia developed in response to that distrust. Of course, the level of local trust is obviously endogenous to what a mob chooses to do. Trust may be low in Sicily, but – as Gambetta himself notes – it is low in part because the mafia works to keep it that way.

c) Where the Market Is Illicit

The American "mafia" traces its origins to different historical patterns. The U.S. is not Sicily. The state is not weak, but even a strong state will not enforce property rights to transactions it declares illegal. When it bans a set of contracts, some participants to those transactions will acquire private protection services. Hence the contrast: the Sicilian mafia arose in a world where the state did not enforce any property rights, legal or illegal; the U.S. mob developed within the illegal sectors of a world with a strong state.[2]

Effective 1920, American voters amended the Constitution to ban the sale of alcohol. Finding their drinks illegal, consumers turned to smuggled foreign liquor and domestic moonshine. Whether legal or illegal, alcohol will pass through several firms before reaching a consumer. The distiller will buy supplies. He will consign his product with a trucker who will deliver it to a wholesaler. The wholesaler will entrust it to another trucker who will transport it to a retailer. And the retailer will sell it to the consumer. Some parties will skip a step or two: a distiller may integrate vertically into shipping; a bar may buy directly from wholesaler. Other parties will add a few extra steps.

Because the U.S. government had declared the underlying product illegal, the participating firms needed ways to enforce their contracts privately. At each transactional node, they negotiated a contract. Virtually all their deals, however, were ones the state would not enforce. Necessarily, they needed a private force strong enough to enforce their claims to property and contract.

Some of the best-known members of the American mob did come to prominence in Sicilian fashion by selling bootleggers protection by contract. Meyer Lansky and Benjamin "Bugsy" Siegel began in the gambling industry, for example, but soon moved into contract enforcement in the alcohol distribution network. They bought equipment; they hired men willing to use it to maim and kill; they organized those men into teams; and they bribed state agents (Messick, 1971: 23–31; Montague, 2005: 30–55). They then

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2   The Sicilian-U.S. contrast extends to a subsidiary question as well. The Sicilian mafia sold enforcement services to independent firms across the market. In the U.S., many of the early organized crime syndicates expanded by vertical integration from the market for the original illegal goods into that enforcement services industry. In other words, the Sicilian-U.S. contrast does not just concern the historical origins of the mob. It also concerns a question basic to industrial organization more generally: whether to buy or build – whether to buy protection (as a requisite input to production) on the open market (as in Sicily), or to produce it within the firm (as in the U.S.) (see Dyck (1995), Garoupa (1999), and Fiorentini/Peltzman (1995) for some of the transactions-cost considerations involved).

marketed their services to firms in the alcohol industry. Only several years later did they expand into their own narcotics operations (Lacey, 1991: chs. 5–6; Messick, 1971: ch. 5).

More typically, firms in the American mob developed backwards. They began in illegal services and products, and expanded internally into contract and property enforcement. Arnold Rothstein, for instance, started in the gambling industry. To protect his investments, he built a private security service. From this base, he exploited his capacity for violence to expand into alcohol and, eventually, narcotics (May, 2009: ch. 8).

Alphonse "Scarface Al" Capone similarly developed a capacity for violence to protect his primary investments in illegal service industries. For Capone, those illegal sectors had involved (here too) gambling, but also prostitution (Bergreen, 1994: ch. 2; Pasley, 1931: Pt. 1). There, he had acquired a reputation for an impulsive brutality extreme even by the standards of the Prohibition-era underworld. Exploiting the economies of scope to violence, from these early investments he expanded into alcohol (Bergreen, 1994: ch. 3; Pasley, 1931: Pt. 7).

Modern inner-city gangs operate by much the same economic principles, albeit at a less sophisticated level. For the most part, they specialize in the retail narcotics market. To enforce contract and property rights, they invest in reputations for violence. To date, they only lightly diversify into other industries. When Steven Levitt and Sudhir Venkatech (2000) explored the finances of a major Chicago gang, they found both that the gang competed in few peripheral markets, and that it did not bribe city and state officials. It earned only trivial revenue from unrelated protection services, and apparently spent nothing on corrupting local police and politicians.

2. Extortion

From their roots in protection or various illegal industries, many mob firms diversify into extortion. After all, once a firm invests in a capacity for violence, it can as effectively extort as protect.[3] Economies of scope transfer directly between the two activities. A well-run mob can use its equipment and personnel plausibly to promise to protect its clients from those who would harm them. It can use exactly the same equipment and personnel plausibly to extort pay-offs from non-clients in exchange for its agreeing not to harm them itself.

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3   E.g., Konrad / Skaperdas (2012); Skaperdas (2001); Skarbeck (2012). Konrad /
    Skaperdas (1997, 1998: 462) nicely model the way mob firms use their investment
    in the equipment and personnel necessary for violence to make credible extortionate
    threats.

Extortion need not involve the mob. Government officials can and do extort funds from legitimate businesses. They routinely do this in the third world (e.g., Olken/Barron, 2007). More subtly they can do so in the wealthy first-world as well (e.g., Hindriks, Keen/Muthoo, 1999; McChesney, 1997). A wide variety of scholars have studied the ties between industrial organization and patterns of extortion (e.g., Olken/Barron, 2007; the many studies collected in Fiorentini/Peltzman, 1995).

Yet in most societies, the mob does indeed extort. Gambetta (1993) placed protection at the heart of the mob, but identified extortion as another activity in which it routinely engaged.[4] Thomas Schelling (1967; 1971: 647) placed extortion at its heart, and identified protection as another activity in which it routinely engaged. No doubt it is a crucial distinction for some purposes; it is not one that matters here.[5]

3. *The Japanese Mob*

a) *Genesis*

The Japanese mob reached its current power through a path similar to that in the U.S. This was not the Sicilian path. The state in Japan is not weak – it is not weak now, and was not weak in the early post-war years. As under the U.S. Prohibition, the mob in Japan grew in the illegal sector. Before World War II, it had limited itself mostly to gambling. During the early post-war years, however, government bureaucrats intervened heavily in the economy. They had intervened rigidly during the war, and they did the same after its end. With their own New Deal bias, American occupation officials blithely encouraged them along (Miwa/Ramseyer, 2005).

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4   Konrad/Skaperdas (1998: 462) described extortion as "arguably, the defining activity of organized crime."

5   In most societies, the mob operates not just in illegal industries, but in several legal sectors as well – and most commonly in sectors like construction that use low-skilled male labor and that turn on government contacts. To recruit workers, the mob can exploit its ties to the population from which it recruits its own members. To obtain government-related projects, it can exploit its investments (made to facilitate its illegal activities) in corrupting public officials. Fiorentini/Peltzman (1995: 22) stress the mob's frequent "control over key input markets such as the labour market" in a variety of societies. Arlacchi (1986: 62–67, 96), Anderson (1995: 43), and Gambetta/Reuter (1995: 122) discuss the mafia's ties to the construction industry in Sicily. Others show how the mob uses its control over American unions to manipulate the labor market more broadly (Skaperdas, 2001: 176; Gambetta/Reuter, 1995). Fiorentini/Peltzman (1995: 22) refer to the mob's ability to "manipulate the public procurement mechanism." And as Suzuki's (2011) account at the start of this article shows, the mob brokers labor services to construction projects in Japan as well.

Initially, Japanese voters complied. They elected a Socialist prime minister in 1947, and let him implement the elaborate controls he wanted. The ensuing disasters followed textbook economics. Facing pervasive price controls, firms did not invest. They did not expand. They did not even sell. Instead, sellers hoarded. Massive shortages ensued, and sales shifted to the inevitable black market. On that illegal market the mob obtained its first stronghold (Hessler, 2012).

From this start, the mob moved quickly into methamphetamines. In the chaos of the early post-war years addiction ran rampant. The military had issued methamphetamines to its soldiers to induce them to fight. It had issued them to employees in support industries to induce them to work. When the war ended, the remaining stock shifted quickly onto the black market (Suwaki / Fukui / Konuma, 1997: 201; Wada, 2011: 63).

Amid the pandemonium, methamphetamine abuse soared. At first, consumers took it in tablet form. Soon, they injected it intravenously. By 1954, abusers numbered 550,000, and increasingly committed high profile crimes. When methamphetamine usage fell in the mid-1950s, heroin abuse took its place and continued into the 1960s (Suwaki / Fukui / Konuma, 1997: 201–202; Wada, 2011: 63).

As with alcohol during Prohibition, consumers obtained their methamphetamine and heroin through an elaborate contractual chain: firms manufactured or imported the drugs and sold them to wholesalers; the wholesalers shipped them and distributed them to retailers; the retailers offered and sold them to consumers. At every step, a contracting partner could default, renege, or cheat. At every step, rival market players could steal or disrupt.

The mob grew by dominating this industry. Vertically integrated as in the U.S., mob firms in Japan manufacture, refine, ship, distribute, sell – and enforce contractual terms through violence. Sicilian mafia firms sold enforcement (protection) to private parties on the market. Japanese mob firms produced enforcement services internally to protect their own contracts.

b) Current Status

(a) Numbers. Police put mob membership at 25,600. Under Japanese law, prefectural public safety commissions can and do designate the principal syndicates as organized crime firms. This results in the (misleadingly) precise tallies of group membership.[6] Add unreported affiliates and hangers-on and the 25,600 number doubles, and perhaps grows even more (Keisatsu-chō, *Hanzai hakusho*, 2014, tab. 4-3-1-1). Of those members, half work for

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6   *Bōroyku-dan-in ni yoru futō na kōi no bōshi-tō ni kansuru hōritsu* [Act Concerning the Prevension of Improper Conduct by Organized Crime Members], Law No. 77 of 1991.

one of the three largest firms. Indeed, over 40 percent work for the biggest of them all, the infamous *Yamaguchi-gumi* (Table 1, Panel A).

Table 1: Organized Crime – Selected Statistics

*A. Largest Criminal Organizations**		
	Headquarters	*Formal Membership*
Yamaguchi-gumi	Kōbe	11,600
Sumiyoshi-kai	Tōkyō	4,200
Inagawa-kai	Tōkyō	3,300
Matsuba-kai	Tōkyō	910
Kyokutō-kai	Tōkyō	880
Dōjin-kai	Kurume, Fukuoka	630
Kudō-kai	Kita-kyūshū, Fukuoka	560

*B. Crimes with Largest Fraction of Arrests Involving Mob***		
	Mob Arrests	*Total Arrests*	*%*
Horse racing	14	14	100
Bicycle racing	34	35	97.1
Gambling	511	876	58.3
Stimulants	6,285	11,379	55.2
False imprisonment	201	424	47.4
Blackmail	1,334	3,050	43.7
Opiates	543	1,576	34.5
Extortion	617	2,145	28.8

*   The panel gives the formal membership of the principal organized crime syndicates in 2014.
SOURCE: Keisatsu-chō, *Heisei 26-nen kami-hanki no bōryoku-dan jōsei* [The Situation of Organized Crime in the First Half of 2014] (Tōkyō: Keisatsu-chō, 2014), p. 21.
**   The panel gives the arrests (total, and mob-members and affiliates) for which mob arrests were the largest fraction in 2012.
SOURCE: Hōmu-shō, *Hanzai hakusho* [Crime White Paper] (Tōkyō: *Hōmu-shō*, 2013), Tab. 4-2-2-2.

These firms apparently still earn the largest share of their revenues from methamphetamines. According to a now-dated 1989 police survey (Kei-satsu-chō, 1989: tab. 1-9), they earned 34.8 percent of their money from stimulants, and another 16.9 percent from gambling. They earned 8.7 per-cent from protection fees, and smaller amounts from prostitution. From legal sectors, they generated 19.7 percent.

   Mob affiliates also find themselves arrested most often for crimes tied to this methamphetamine market. Police enforce the methamphetamine ban aggressively. A hapless American who arrives with prescription Adderall can find himself surrounded by the airport police. In 2013, police arrested 6,045 mob affiliates on methamphetamine-related charges. They also ar-

rested 2,807 for battery, 2,470 for theft, 2,321 for fraud, and 1,084 for extortion (Keisatsu-chō, Heisei 26: 3, 6).

Mob affiliates dominate the arrests for some crimes. Police may arrest 2,470 affiliates for theft, but the affiliates do not dominate theft arrests. After all, police arrest huge numbers of people for theft who have no ties to the mob. But of the people they arrest on amphetamine-related charges, a majority comes from the mob. A majority of those they arrest for gambling-related charges comes from the mob. And a large fraction (though not majority) of those they arrest for blackmail and extortion has ties to the mob as well (Table 1, Panel B).

Table 2: OLS Regression Correlations Between Crime Incidence and Mob Membership

	Extortion	*Stimulant Crimes*	*Gambling Crimes*	*Theft*
Mob membership	0.119***	0.059**	0.037***	1.151
	(0.038)	(0.024)	(0.013)	(0.974)
Population	5.26***	1.40***	0.752***	110.0***
	(0.352)	(0.221)	(0.116)	(8.95)
Adj. R2	0.96	0.86	0.88	0.94

Notes: The panel gives the results of an OLS regression showing the correlation (or lack of correlation) between the incidence of various crimes and mob membership. Coefficients, followed by standard errors in parentheses. Data are at the prefectural level, with *n* = 47. Crime data are from 2010; mob membership is as of 2011. Extortion is "sobō" crimes, as discussed in the text. Population is /10,000.

SOURCES: Crime data are from Keisatsu-chō, *Hanzai tōkei* [Crime Statistics] (Tōkyō: Keizaichō, 2011), available from *estat.go.jp*. Mob membership is from *Todō fuken-betsu bōryoku-dan kōsei-in-tō rankingu* [Ranking of Mob Members by Prefecture] (2013) (data as of 2011), available at: *http://www.nicotwitter.com/watch/nm19944499*.

As a result, for certain crimes, arrest data signal mob location. To be sure, police do not arrest everyone who commits a crime, and do not choose the criminals they arrest randomly. If under political pressure to suppress the mob, they will focus their efforts on mob members. If bribed to ignore the mob (though by all accounts police corruption is low in Japan), they may focus on non-mob criminals. But subject to those caveats, arrest data for some crimes will identify the cities and towns where the mob operates most intensively. The point matters for this study, because the police release prefecture-level crime data every year, but local mob membership only occasionally. They did release that membership data for 2011. In Table 2, I regress the number of crimes at the prefecture-level on mob membership and general population. Given the potential endogeneity, consider these results a simple measure of correlation. As expected, the numbers of extor-

tion, methamphetamine, and gambling crimes in a prefecture correlate strongly with the number of mob members. The number of thefts does not.

(b) Membership. Most members of the Japanese mob are young, unskilled men who never took to schooling. According to the 1989 police white paper (Keisatsu-chō, 1989), over 80 percent of mob members did not finish high school – this in a country with a graduation rate over 95 percent. Of the members surveyed, 17 percent held regular jobs, 25.9 percent had irregular jobs, and 52.3 percent held no jobs at all.

Most mob members come either from the long-time underclass known as the *buraku-min* (see Upham, 1987: ch. 3) or from the Korean resident alien community. In 1986, one pair of U.S. journalists cited the police for an estimate that 70 percent of the *Yamaguchi-gumi* came from the underclass, and 10 percent from among the Koreans (Kaplan/Dubro, 1986: 145; see also Kingston, 2013: 244). Twenty years later, a former official from the Public Security Intelligence Agency reported that 60 percent of the mob came from the underclass, and 30 percent from the Korean community.[7] For years, observers studiously avoided mentioning the tie between the mob and the underclass. Increasingly, however, as police arrest prominent underclass leaders (including leaders of the famed Buraku-min Liberation League), they disclose that the men concurrently worked in the mob (Mori, 2009; Kadooka, 2012). The ties between the two groups are simply too dense any longer to ignore.

The Japanese mob supplies some services that unwind dysfunctional government policy. Curtis Milhaupt and Mark West (2000) nicely identify several. Where tenant protection law stops developers from evicting tenants, for example, the mob helps them skirt those legal restrictions. Where the bankruptcy regime introduces inefficiencies, the mob streamlines the process. That it sometimes remedies bad policy, however, should not distract from the essentially predatory nature of most of what it does.

II. Nuclear Power and the Mob

1. Introduction

To extort large amounts, mob firms pursue companies that make heavy site-specific investments whose economic value can be expropriated through the political process. Of such investments, nuclear reactors constitute the quintessential example. I explain the logic in this Section II, and test it empirically in III.

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7   Lecture by Mitsuhiro Suganuma, available at: *http://www.youtube.com/watch?v=w NAJVnjlR2g.*

2. Manipulating the Opposition

a) Introduction

Nuclear plants-in-planning require a utility (a heavily regulated but fundamentally private corporation) to make massive site-specific investments: surveys, political and regulatory goodwill, licenses, and ton after ton of reinforced concrete. These investments entail huge costs. They do not transfer. And susceptible always to political nullification, they are regulatorily fragile. Table 3 details the facilities involved.

Take just the costs. Of all reactors in Japan, the cheapest has been Kansai Electric's first reactor at Mihama. Placed in service in 1970, it cost ¥31.2 billion (at the close of 1970, $1.00 = ¥358). The most expensive was the Monju fast breeder reactor, placed in service in 1991 for ¥588.6 billion (at the close of 1991, $1.00 = ¥125). The mean cost of construction for all reactors has been ¥247 billion. The seven reactors at Tōkyō Electric's massive Kashiwazaki complex on the Japan Sea cost a total of ¥2,576 billion (Denryoku, 2013).

At stake, therefore, are the quasi-rents that these large site-specific investments necessarily create. Given those quasi-rents, the mob can take two steps. First, it can extort: it can threaten to fan public opposition to levels that will block the planned construction. Second, it can protect: it can offer to silence opponents who might otherwise threaten construction.

Rumors about extortion and protection have circulated for decades, but prominently hit the news post-Fukushima. As Suzuki (2011) noted at the start of this article, the mob sold protection by offering to silence the utility's opponents. The *Yamaguchi-gumi* and *Sumiyoshi-kai* allegedly extracted large sums from Tōkyō Electric by threatening to disclose safety problems.[8] And according to one journalist, a Tōkyō Electric subcontractor testified in court that "it was standard practice to pay off local yakuza groups and politicians to obtain construction projects, including those in the nuclear industry."[9]

b) Regulatory and Political Threats

If adamant enough, local residents can substantially hike the cost of a reactor, delay its operation, and potentially even kill it. Consider the time elapsed from when a utility announced its plans for a reactor, to when it began operating it (see Table 3). For the first 10 reactors, the delay averaged 5.5 years. Primarily because of public opposition, by the time of the last 10 reactors that delay had climbed to 8.1 years (see also Lesbirel, 1998: 30 tab. 3).

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8   Adelstein (2012c) (*Yamaguchi-gumi* payoff); Adelstein (2012b) (*Sumiyoshi-kai* payoff); Adelstein (2011).
9   Adelstein (2011).

Table 3: Nuclear Reactors

Reactor	Plans Announced	Construction Began	Operation Commenced
Tōkai, Ibaraki	1959	1961	1966[a]
Tsuruga 1, Fukui	1965	1967	1970
Mihama 1, Fukui	1966	1967	1970
Fukushima Dai-ichi 1, Fuk'ma	1966	1967	1971
Fukushima Dai-ichi 2, Fuk'ma	1968	1969	1974
Mihama 2, Fukui	1968	1968	1972
Takahama 1, Fukui	1969	1970	1974
Fukushima Dai-ichi 3, Fuk'ma	1969	1970	1976
Hamaoka 1, Shizuoka	1969	1971	1976
Shimane 1, Shimane	1969	1970	1974
Ōi 1, Fukui	1970	1972	1979
Ōi 2, Fukui	1970	1972	1979
Unkai 1, Saga	1970	1971	1975
Takahama 2, Fukui	1970	1971	1975
Onagawa 1, Miyagi	1970	1971	1984
Mihama 3, Fukui	1971	1972	1976
Fukushima Dai-ichi 5, Fuk'ma	1971	1971	1978
Fukushima Dai-ichi 4, Fuk'ma	1971	1972	1978
Hamaoka 2, Shizuoka	1972	1973	1978[b]
Ikata 1, Ehime	1972	1973	1977
Fukushima Dai-ichi 6, Fuk'ma	1972	1973	1979
Fukushima Dai-ni 1, Fukushima	1972	1975	1982
Tōkai 2, Ibaragi	1972	1973	1978
Unkai 2, Saga	1974	1976	1981
Kashiwazaki 1, Nīgata	1974	1978	1985
Fukushima Dai-ni 2, Fukushima	1975	1979	1984
Ikata 2, Ehime	1975	1977	1982
Kawauchi 1, Kagoshima	1976	1978	1984
Fukushima Dai-ni 3, Fukushima	1977	1980	1985
Kawauchi 2, Kagoshima	1978	1981	1985
Takahama 3, Fukui	1978	1980	1985
Takahama 4, Fukui	1978	1980	1985
Fukushima Dai-ni 4, Fukushima	1978	1980	1987
Hamaoka 3, Shizuoka	1978	1982	1987
Tsuruga 2, Fukui	1979	1982	1987
Kashiwazaki 2, Nīgata	1981	1983	1990
Kashiwazaki 5, Nīgata	1981	1983	1990
Shimane 2, Shimane	1981	1984	1989
Unkai 3, Saga	1982	1985	1994
Unkai 4, Saga	1982	1985	1997
Oki 1, Hokkaidō	1982	1984	1989
Oki 2, Hokkaidō	1982	1984	1991
Monju, Fukui	1983	1985	1994
Ikata 3, Ehime	1983	1986	1994

Table 3: Continued

Kashiwazaki 3, Nīgata	1985	1987	1993
Kashiwazaki 4, Nīgata	1985	1987	1994
Ōi 3, Fukui	1985	1987	1991
Ōi 4, Fukui	1985	1987	1993
Hamaoka 4, Shizuoka	1986	1988	1993
Shiga 1, Ishikawa	1987	1988	1993
Onagawa 2, Miyagi	1987	1989	1995
Kashiwazaki 6, Nīgata	1988	1991	1996
Kashiwazaki 7, Nīgata	1988	1991	1997
Onagawa 3, Miyagi	1994	1996	2002
Totsu 1, Aomori	1996	1998	2005
Hamaoka 5, Shizuoka	1997	1999	2005
Shiga 2, Ishikawa	1997	1999	2006
Ōma, Aomori	1999	2008	
Oki 3, Hokkaidō	2000	2003	2009
Shimane 3, Shimane	2000	2005	
Kamiseki 1, Yamaguchi	2001		
Kamiseki 2, Yamaguchi	2001		
Tsuruga 3, Fukui	2002		
Tsuruga 4, Fukui	2002		
Totsu 1, Aomori	2006	2011	
Totsu 2, Aomori	2006		

a. Decommissioned 2001.
b. Decommissioned 2009.
NOTES: The table gives the dates of plan announcement, construction, and commissioning of nuclear reactors.
SOURCE: Genshi-ryoku anzen kiban kikō, ed., *Genshi-ryoku shisetsu unten kanri nenpō* [Supervision of Nuclear Facilities Operation Annual] (Tōkyō: Genshi-ryoku anzen kiban kikō, 2013).

For decades, the Ministry of Economy, Trade & Industry (METI; formerly MITI) licensed the reactors.[10] After choosing a site, a utility produced an environmental impact statement and assembled technical plans. It contacted METI, and the ministry consulted with the Nuclear Power Commission and

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10   See generally Cohen/McCubbins/Rosenbluth (1995: 182–183); Genshi-ryoku (2003); Lesbirel (1998: ch. 2). The process follows statutes relating to the electrical power industry generally and to the nuclear power industry specifically: primarily, the *Kaku-genryō busshitsu, kaku-nenryō busshitsu oyobi genshi-ro no kisei ni kansuru hōritsu* [Law Regarding the Regulation of the Quality of Nuclear Raw Materials, Nuclear Fuel and Nuclear Reactors], Law No. 166 of 1957, Secs. 23, 24, 37, and the *Denki jigyō-hō* [Electrical Business Act], Law No. 170 of 1964, Secs. 47, 49, 51, 52, 54, 107, and the *Kankyō eikyō hyōka-hō* [Environmental Impact Evaluation Act], Law No. 81 of 1997. The process is still very much like the early 1990s process that Cohen/McCubbins/Rosenbluth (1995) described.

the Nuclear Safety Commission. Once it obtained the necessary approvals, it started building. When finished, it submitted to still more inspections.

In order to convince residents to welcome a reactor, the national government offered lavish subsidies, jobs, and tax revenues (Aldrich, 2008: 119; Dusinberre/Aldrich, 2011; Lesbirel, 1998: 32–39). Take a 2004 pamphlet METI published to generate support for new nuclear plants (Keizai, 2004). From the initial environmental impact statement to operation ten years later, it promised a community subsidies (in addition to jobs) of ￥39.1 billion. Once a plant went operational, it projected subsidies and revenues over the next ten years of 50.2 billion. To communities that agreed to accept nuclear waste sites, it offered even more.

Determined residents could sometimes kill a planned reactor. Obviously, they could protest and demonstrate. Assorted violent Trotskyite groups stood always ready to help (Keisatsu-sho, *Keisatsu hakusho*, 2013). They (e.g., the Revolutionary Marxist Faction, or *Kakumaru-ha*) had their roots in the New Left student groups of the 1960s. During the 1970s, they had fought the new airport at Narita. More recently, they have turned to nuclear power. Throughout, however, they brought to their efforts a level of anarchic violence rarely seen in Japan.

Residents could elect anti-nuclear candidates to local office. The national government might control the reactor license itself, but determined mayors, governors, and prefectural assemblies could stymie development in nearly endless ways. When Tōkyō Electric built its Fukushima reactors, the governor held a veto (which he did not use) – since the utility needed his permission to fill part of the local bay.[11] When Tōhoku Electric planned a reactor in Maki (Nīgata prefecture), residents elected an anti-nuclear mayor. He promptly sold the site to an ally, and the ally refused to sell to the utility.[12] Tohoku Electric challenged the transfer in court, but the judge sided with the town and the utility abandoned its plans.

Residents could also call plebiscites (Kanbara, 1996). Their votes often did not legally bind, but if strongly enough opposed the residents could – and sometimes did – stop a utility. They halted it, for example, when Tōkyō Electric tried to use plutonium (far more dangerous than uranium) in its Kashiwazaki plant. They held a plebiscite, and voted against plutonium. They had no

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11 The governor did not use the veto, so local opponents challenged the land-fill permit in court. *Onoda v. Matsudaira,* 894 Hanrei jihō 39 (Fukushima D. Ct. June 19, 1978).

12 *Takai v. Sasaguchi,* 217 Hanrei chihō jiji 59 (Nīgata D. Ct. March 16, 2001) (dismissing challenge to sale), affirmed, 237 Hanrei chihō jiji 96 (Tōkyō High Ct. March 28, 2002); see Genpatsu (2003) (Japan Communist Party newspaper); Tōhoku (n.d.).

legal right to tell Tōkyō Electric what fuel to burn, but facing fierce opposition the firm canceled its plans anyway (Jijirō, 2002; see also Saitō, 2011).

c) Litigation

And opponents could embroil utilities in nearly endless litigation. The point is not that the opponents won the cases – they usually lost. The point is not that the mob itself used the courts – most plaintiffs seem to have brought left-leaning political loyalties. The point instead is that the scale of litigation reflected the strength of the opposition. That strength reflected the political vulnerability of the utilities. And that vulnerability, in turn, created the opportunity for the mob to manipulate local opposition and "hold up" the utility.

Anti-nuclear opponents had been fighting the Fukushima reactors in court since the early 1970s.[13] In 1975, 400 local residents challenged Tōkyō Electric's Fukushima operating license. They complained about earthquake risk, but the court declared that the regulators had properly weighed the risk and confirmed the license.[14]

Opponents also bought stock in Tōkyō Electric and filed derivative suits. When the cooling system in one of the Fukushima reactors malfunctioned in 1989, they sued in their capacity as shareholders to shutter it. They lost for what amounted to the business judgment rule.[15] And when Tōkyō Electric modified reactor 3 at the Dai-ichi plant to run on plutonium, opponents sued again.[16]

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13 In addition to the issues cited, opponents can embroil power companies in litigation over a wide range of other questions as well. They sue to block utilities from doing what they need to complete their license application: *Iō-jima gyogyō kyōdō kumi'ai v. Chūgoku denryoku,* K.K., 916 Hanrei taimuzu 237 (Yamaguchi D. Ct. October 11, 1995) (land survey). They sue to block sympathetic governments from helping the utilities: *Hashi v. Nakanishi,* 1429 Hanrei jihō 46 (Kanazawa D. Ct. March 22, 1991) (environmental impact statement); *[No names given],* 45 Gyōsei jiken sai-banrei-shū 1112 (Asahikawa D. Ct. April 26, 1994), affirmed, 48 Gyōsai reishū 393 (Sapporo High Ct. May 5, 1997) (waste disposal study).

14 *Onoda v. Okonogi,* 1124 Hanrei jihō 34 (Fukushima D. Ct. July 23, 1984), affirmed, 1345 Hanrei jihō 33 (Sendai High Ct. March 20, 1990), affirmed, 1441 Hanrei jihō 50 (Sup. Ct. October 29, 1992). The declaration is bizarre, of course, and not just ex post. Tōkyō Electric had built the plant along a coast that regularly brought severe earthquakes and high tsunamis – exactly as happened in 2011. See Ramseyer (2012).

15 *Hirose v. Nasu,* 1591 Hanrei jihō 3 (Tōkyō D. Ct. December 19, 1996), affirmed, 1686 Hanrei jihō 33 (Tōkyō High Ct. March 25, 1999).

16 *[No name given] v. Tōkyō denryoku,* K.K., 1775 Hanrei jihō 114 (Fukushima D. Ct. March 23, 2001) (Fukushima 1).

But opponents did not sue only over Fukushima; claiming threats to local safety, they sued nearly everywhere. Take the Shiga reactor complex on the Japan Sea shore. Anti-nuclear activists first tried to enjoin the operation of reactor 1 at the complex. In 1994, the district court noted the earthquake risk, but held the reactor safe anyway.[17] They then sued over reactor 2. The district court held in their favor in 2006, but the court on appeal reversed: the reactor was safe.[18] Opponents similarly challenged licenses for the Ikata reactor (Ehime prefecture), the Tōkai-mura reactor (Ibaragi), the Takahama reactor (Fukui), the Tomari-mura reactor (Hokkaidō), the Kashiwazaki reactor (Nīgata), the Monju fast breeder reactor (Fukui), and the Onagawa reactor (Miyagi).[19] They challenged the license to a nuclear waste facility.[20] And they challenged the license to an enrichment facility.[21]

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17 *Kawabe v. Hokuriku denryoku,* K.K., 1515 Hanrei jihō 3 (Kanazawa D. Ct. August 25, 1994), affirmed, 1656 Hanrei jihō 37 (Nagoya High Ct. September 9, 1998), affirmed, (Supreme Ct. December 19, 2000).

18 *[No names given],* 1930 Hanrei jihō 25 (Kanazawa D. Ct. March 24, 2006); [No names given], 2045 Hanrei jihō 3 (Nagoya High Ct. March 18, 2009), reversing (Kanazawa D. Ct. March 24, 2006).

19 *Kawaguchi v. Fukuda,* 891 Hanrei jihō 38 (Matsuyama D. Ct. April 25, 1978) (Ikata), affirmed, *Kawaguchi v. Murata,* 1136 Hanrei jihō 3 (Takamatsu High Ct. December 14, 1984), affirmed, *Inoue v. Watanabe,* 1441 Hanrei jihō 37 (Sup. Ct. October 29, 1992); *[No names given],* 1057 Hanrei taimuzu 87 (Matsuyama D. Ct. December 15, 2000) (Ikata); *Aizawa v. Murata,* 1164 Hanrei jihō 3 (Mito D. Ct. June 25, 1985), affirmed in relevant part, 1754 Hanrei jihō 35 (Tōkyō High Ct. July 4, 2001) (Tōkai-mura); *Smith v. Kansai denki, K.K.,* 1480 Hanrei jihō 17 (Osaka D. Ct. December 24, 1993) (Takahama); *Shigeno v. Hokkaidō denryoku, K.K.,* 1676 Hanrei jihō 3 (Sapporo D. Ct. February 22, 1999) (Tomari-mura); *Nagasawa v. Kumagaya,* 1489 Hanrei jihō 19 (Nīgata D. Ct. March 24, 1994), affirmed, 52 Sōmu geppō 1581 (Tōkyō High Ct. Nov. 22, 2005) (Kashiwazaki); *Isobe v. Takeshita,* 1264 Hanrei jihō 31 (Fukui D. Ct. December 25, 1987), reversed, 1322 Hanrei jihō 33 (Nagoya High Ct. July 19, 1989), modified, *Tokioka v. Miyazawa,* 1437 Hanrei jihō 29 (Sup Ct. September 22, 1992) (Monju); *[No name given],* 1727 Hanrei jihō 33 (Fukui D. Ct. March 22, 2000), reversed, 1818 Hanrei jihō 3 (Nagoya High Ct. Jan. 27, 2003), reversed, 1909 Hanrei jihō 8 (Sup. Ct. May 30, 2005) (Monju); *Abe v. Tohoku denryoku, K.K.,* 1482 Hanrei jihō 3 (Sendai D. Ct. Jan. 31, 1994), affirmed, 1680 Hanrei jihō 46 (Sendai High Ct. March 31, 1999) (Onagawa).

These are just the published opinions. News reports indicate that neighbors have sued in other cases as well. The October 26, 2007, decision of the Shizuoka District Court in the litigation over the Hamaoka reactor can be found on the website of the plaintiffs: *www.geocities.jp/ear_tn/.*

20 *[No name given],* 1278 Hanrei taimuzu 97 (Aomori D. Ct. June 16, 2006).

21 *[No names given],* 1102 Hanrei taimuzu 79 (Aomori D. Ct. March 15, 2002), affirmed, Hanrei taikei 28131668 (Sendai High Ct. May 9, 2006).

Opponents raised a wide variety of legal questions. Sometimes they argued that the power company had filed inadequate disclosure statements.[22] Sometimes they claimed procedural irregularities.[23] As at Fukushima, sometimes opponents bought stock and filed derivative suits.[24] Sometimes they (as shareholders) attended the annual meetings, disrupted the proceedings, and then sued to vacate the meeting on the ground that management had paid them insufficient attention.[25] At least once, they argued that using land for nuclear power violated the "public order and good morals" requirement of the Civil Code.[26] And twice they claimed that village members held a utility's planned site "in common," and thus that each resident held a veto over any sale to the utility.[27]

d) Journalistic Accounts

After Fukushima, reporters started to look more closely at the role organized crime played in the nuclear industry. In 2011, for example, freelance journalist Tomohiko Suzuki turned to the Fukushima cleanup. He applied for a job on the crew, and arrived at the site to work (Suzuki, 2011). There, he found the mob involvement he detailed at the start of this article. He spotted some of the men by the famously flamboyant full-body tattoos he noticed as they changed into and out of their protective gear. They explained that they took the Fukushima job for a simple reason: they needed work, and the job paid well. "For women it's sex, and for men it's nuclear

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22 *Abe v. Tōhoku denryoku, K.K.,* 1452 Hanrei jihō 3 (Sendai D. Ct. March 12, 1993) (disclosure required), affirmed, 1460 Hanrei jihō 38 (Sendai High Ct. May 12, 1993), affirmed, Hanrei taikei 28060382 (Sup. Ct. December 19, 2000); *Miki v. Kawaguchi,* 786 Hanrei jihō 3 (Takamatsu High Ct. July 17, 1975) (disclosure required); *Aizawa v. Prime Minister,* 43 Sōmu geppō 1522 (Tōkyō High Ct. December 25, 1996) (disclosure not required).

23 *Oba v. Japan,* 1741 Hanrei jihō 139 (Hakodate D. Ct. July 13, 2000).

24 *Nakagawa v. Abe,* 1652 Hanrei jihō 138 (Nagoya D. Ct. March 19, 1998).

25 *Matsushita v. Kyūshū denryoku, K.K.,* 1392 Hanrei jihō 126 (Fukuoka D. Ct. May 14, 1991); *Nakagaki v. Chūbu denryoku, K.K.,* 116 Shiryō-ban shōji hōmu 188 (Nagoya D. Ct. September 30, 1993); *Shinohara v. Tōhoku denryoku, K.K.,* 109 Shiryō-ban shōji hōmu 64 (Sendai D. Ct. March 24, 1993); *Kobayashi v. Hokkaidō denryoku, K.K.,* 109 Shiryō-ban shōji hōmu 56 (Sapporo D. Ct. February 22, 1993).

26 *Minpō* [Civil Code], Law No. 89 of 1896, Sec. 90; see *Shikoku denryoku, K.K. v. Tamura,* 728 Hanrei jihō 27 (Matsuyama D. Ct. February 2, 1974).

27 *[No names given],* 1918 Hanrei jihō 58 (Aomori D. Ct. May 10, 2005); *[No name given] v. Chūgoku denryoku, K.K.,* 1933 Hanrei jihō 84 (Hiroshima High Ct. October 20, 2005), affirmed, 2007 Hanrei jihō 58 (Sup. Ct. April 14, 2008). See generally Commentary, 1269 Hanrei taimuzu 121 (2008); see also *Shibano v. Tōkyō denryoku, K.K.,* 1361 Hanrei jihō 3 (Nīgata D. Ct. July 18, 1990) (Kashiwazaki reactor; in commons litigation, all villagers are necessary parties).

power," went the apparent aphorism.[28] "When a man has to survive doing something, it's the nuclear industry," explained one journalist. "[F]or a woman, it's the sex industry."[29]

If not themselves members of the mob, the clean-up crew often found their jobs through it (Suzuki, 2011). Usually unemployed, they lived homeless or in a seedy section of large city. They knew their local mob representatives, and the representatives knew them. Those representatives introduced them to Tōkyō Electric, and collected an under-the-table fee for doing so.

Other journalistic stories corroborate Suzuki's account. In 2012, police arrested a member of the *Sumiyoshi-kai* mob for brokering workers to the Fukushima cleanup without a license.[30] They arrested a member of the smaller *Matsuba-kai* mob for the same crime in October 2014 (e.g., Genpatsu (2014a, 2014b).

In fact, the mob had brokered workers to construction projects for years. The phenomenon is not and never was limited to Fukushima. The police arrested a member of the Kyūshū-based *Kudō-kai* in 2012 for brokering labor to Kansai Electric's Ōi nuclear plant. And when in 2011 the President of Hakushin Construction tried to cut the firm's ties to a local Kyūshū crime syndicate, mob members shot him dead outside his home.[31]

III. THE EMPIRICAL INQUIRY

1. *Introduction*

a) *The Project*

I test the following hypothesis:

When a utility announces plans for a new reactor, the level of extortion rises. Because of the massive site specific, regulatorily appropriable investments that the utility has made, the mob arrives to extort money from it. It then stays to extort funds from ordinary firms as well.

To examine this claim, I take for my dependent measure extortion rates per capita. As my principal independent measures, I use dichotomous variables equal to 1 if a prefecture is (a) planning, (b) building, or (c) operating a nuclear plant. I then run fixed-effect regressions on a prefecture-level dataset spanning three decades.

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28 Quoted occasionally on the web. E.g., *http://eulabourlaw.cocolog-nifty.com/blog /2011/05/post-58bd.html.*

29 Adelstein (2011).

30 See Adelstein (2013); Adelstein (2012b); Adelstein (2012a); Adelstein (2011).

31 Adelstein (2012a); see Suzuki (2011: 31); Adelstein (2012b); Adelstein (2011).

b)   Preliminary Qualifications

Note several qualifications. First, this logic does not just apply to nuclear plants. Instead, it covers many large-scale construction projects. Airports, dams, highways, and military bases can raise the same dilemmas. As the mob member noted at the start of the article:

There's nothing special involved. A huge public project comes to a tiny town. That's really all there is to it. Dams and highways are exactly the same.

I nonetheless focus on nuclear plants because of the sheer scale involved. Reactors involve massive outlays, and generate correspondingly large quasi-rents for a utility. They carry spectacular risks, and generate correspondingly fervent opposition. Although similar in many ways to these other construction projects, they differ in scale.

Second, reactors do not appear just anywhere. Utilities do not site them randomly. They build them along the coast for access to water. Communities do not accept them randomly either. Instead, cities and villages accept them when the young families have left, and old residents disproportionately remain. I discuss this more fully in Sec. III.2.a), below.

Third, I do not count extortion claims only against the utility. Instead, I count all extortion claims reported to the police. When a utility chooses a place to build a reactor, it becomes extraordinarily vulnerable to high-priced extortion. The mob moves in to exploit that vulnerability, and once there does what it does everywhere else: extort money from local businesses. The spike in the extortion rate when a utility announces its plans does not only (or even mostly) capture extortion against the utility. Rather, it captures the mob's arrival in town.[32]

Fourth, I cannot distinguish mob from non-mob extortion. Although extortion rates are significantly correlated with the presence of the mob (Table 2), other criminals extort money as well (Table 1 Panel B). Although I cannot disentangle the two types of extortion, readers should note that extortion rises at the same time that the rate of other crimes is falling (Table 7, Regressions (6) and (7)).

Last, because I take the number of extortion cases from the police, I count extortion attempts that failed. If a local business quietly pays the mob, it will not report it to the police. The police will learn about extortion only when a business reports it to them, or when the mob retaliates publicly against a recalcitrant firm.

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32   Given the infeasibility of pre-commitment by the mob community not to extort in the future, Olken/Barron (2007) suggest that the level of extortion against the utility itself should be higher near the end of the process than at the beginning.

2.   Variables

a)   Panel Construction

I run fixed effect regressions (the Hausman test indicates that a random-effects model is inappropriate) on a prefecture-level (municipality-level data do not disaggregate crime statistics by type of crime) panel dataset. The data cover all 47 prefectures (this comprises the entire country) over the 31 years from 1980 to 2010.

b)   Nuclear Plants

I measure the effect of nuclear plants through three key independent variables. They indicate whether the power company has announced its plans for a plant, whether it has begun construction, and whether it has started to operate the reactor. If a prefecture has an operating reactor and announces plans for an additional one, I ignore the new reactor and simply code the prefecture as having an operating plant (see Genshi-ryoku, 2013: 14–17; detail in Table 3). Four prefectures without existing reactors announced plans for nuclear plants during 1980–2010. I include selected summary statistics in Table 4.

Table 4: Selected Summary Statistics

	n	*Min*	*Mean*	*Median*	*Max*
Prefecture-level					
Extortion PC*	1,457	0.103	0.356	0.321	1.03
Gambling PC	1,457	0.007	0.060	0.054	0.188
Drugs PC	1,457	0.004	0.119	0.106	0.410
Other crimes PC	1,457	4.75	12.32	11.36	35.89
Municipality level					
Births PC	54,001	0	9.37	9.20	39.0
Deaths PC	54,001	0	9.10	8.69	69.7
Marriage PC	54,001	0	5.11	5.04	30.8
Divorce rate	53,916	0	0.289	0.266	4.00
Crimes PC	48,592	0	9.85	8.60	122

NOTES: All values other than those for the divorce rate are per 1000 population.
SOURCES: Keisatsu-chō, *Hanzai tōkei* [Crime Statistics] (Tōkyō: Keisatsu-chō, various years); Kōsei rōdō-shō, *Jinkō dōtai tōkei* [Vital Statistics of Japan] (Tōkyō: Kōsei rōdō-shō, various years).

– *Plan announced:* 1 if a power company has announced plans to build a nuclear plant in the prefecture; 0 otherwise
– *Construction begun:* 1 if a power company has begun construction of a nuclear plant in the prefecture; 0 otherwise.
– *Operational:* 1 if a power company has begun operating a nuclear plant in the prefecture; 0 otherwise.

c) Mob Location

To explore the arrival of the mob, I focus on:

– *Extortion PC:* The number of *"sobō"* crimes, per capita: extortion, black-
  mail, assembly with a dangerous weapon, assault, and battery. Data from
  Keisatsu-chō (various years).[33] These crimes are defined by the Criminal
  Code, and heavily associated with the mob (see Table 1 Panel B and Table 2).

For comparative purposes, I add regressions on the following:

– *Gambling PC:* The number of *"fūzoku"* crimes, per capita: literally "mor-
  als" crimes, but primarily gambling, rape, and bigamy. The category does
  not include prostitution. Data from Keisatsu-chō (various years). These
  crimes are defined by the Criminal Code.
– *Drugs PC:* The number of defendants in *"kaku-seizai"* (amphetamine)-re-
  lated prosecutions. Data from Keisatsu-chō, Hanzai (various years). These
  cases fall under a statute separate from the Criminal Code. Note that the vari-
  able counts the number of suspects forwarded to the prosecutors rather than
  the number of cases. The positive coefficients in the Table 6 regressions on
  reactor operation disappear with the use of the number of cases.

Although the statistics about various crimes are available at the prefectural
but not municipality level, this limitation presents less of a problem than
one might think. Mobs will seldom extort funds from a power company in
the coastal village where it actually builds the reactor. They will probably
approach it at its local headquarters instead.

d) Other Variables

In connection with the regressions testing for the presence of the mob, I add
the following prefecture-level variables:

– *Population:* Prefectural population, from Sōmu-shō, Kokusei (various years).
– *Other crimes PC:* All non-traffic-related Criminal Code violations *(keihō-
  han ninchi kensū),* per capita, less Extortion PC and Gambling PC. Data
  from Keisatsu-chō (various years).
– *Police PC:* Number of police officers per capita. Data from Chihō (various
  years).

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33   The data for the crime and control variables – but not the data for the variables on
     nuclear plant siting, construction, and operation – can be downloaded from the
     standard government website *http://www.e-stat.go.jp/SG1/chiiki/ToukeiDataSelect
     DispatchAction.do.*

e) Siting Regression

To explore the siting of nuclear reactors, I assemble several other types of data. Because the variables are available at the municipality level, I use these more finely textured data. For each variable, I calculate the per capita measure by the population statistics given in Sōmu-shō, Kokusei (various years).

– *Crimes PC:* The number of non-traffic-related Criminal Code violations, per capita. Data from Keisatsu-chō (various years). These are overwhelmingly thefts.
– *Births PC:* The number of births, per capita. Data from Kōsei, Jinkō (various years).
– *Deaths PC:* The number of deaths, per capita. Data from Kōsei, Jinkō (various years).
– *Marriages PC:* The number of marriages, per capita. Data from Kōsei, Jinkō (various years).
– *Divorce rate:* The number of divorces, divided by the number of marriages. I measure the divorce rate as divorces/marriages rather than divorces/population simply to follow scholarly custom in the field. Data from Kōsei, Jinkō (various years).

3. Regressions

a) Basic Results

In Table 5, I regress (a) the level of extortion per capita over 1980–2010 on (b) independent variables reflecting reactor siting, construction, and operation. The results suggest that when news about a utility's plan to build a reactor leaks, the mob arrives to extort from the utility. While there, it extorts funds from local businesses as well. According to Table 5, the coefficient on the announcement of a plan is positive and statistically significant in all specifications: a utility announces its plans, and the level of extortion jumps.

Figure 1 implies that the mob learns of the plans before the utility publicly announces them. The Figure traces year-by-year extortion levels. At the prefectures that announced plans for a reactor, the mean extortion rates 5 years prior to that announcement were 0.201 per thousand population. Three years prior, those rates remained at only 0.217. Two years before the announcement, however, they jumped to 0.328, and in the year immediately prior they climbed to 0.393. They stayed at 0.388 in the year of the announcement, and remained above 0.300 for the next half decade.

Table 5: Effect of Nuclear Reactor Siting on Per Capita Extortion Rates, Prefecture-Level Fixed Effect Regressions

	Dependent Variable: Extortion PC			
	(1)	*(2)*	*(3)*	*(4)*
Plan announced	0.148***	0.052**	0.083***	0.085***
	(0.038)	(0.026)	(0.024)	(0.022)
Construction begun	0.049	-0.014	0.010	0.034*
	(0.035)	(0.024)	(0.022)	(0.021)
Operational	0.019	-0.053**	-0.008	0.025
	(0.032)	(0.023)	(0.021)	(0.020)
Population			2.08e-07***	1.53e-07***
			(0.135e-07)	(0.140e-07)
Other crimes PC				17.25***
				(1.032)
F test	24.27	51.49	37.12	32.62
Year f.e.	No	Yes	Yes	Yes
Prefec f.e	Yes	Yes	Yes	Yes

NOTES: The table gives the results of a prefecture-level fixed effect regression showing the effect of nuclear reactor siting on per capita extortion rates.

*, **, ***: significance at 10, 5 and 1 percent levels. Coefficients (x 1000), followed by standard errors (x 1000). *F* test that all Ui = 0. The independent variables are equal to 1 if that prefecture has a reactor. Years 1980–2010.

SOURCES: Keisatsu-chō, *Hanzai tōkei* [Crime Statistics] (Tōkyō: Keisatsu-chō, various years); Genshi-ryoku anzen kiban kikō, ed., *Genshi-ryoku shisetsu unten kanri nenpō* [Supervision of Nuclear Facilities Operation Annual] (Tōkyō: Genshi-ryoku anzen kiban kikō, 2013); *Sōmu-shō, Kokusei chōsa hōkoku* [Population Census] (Tōkyō: Sōmu-shō, various years).

b)   Alternative Specifications

This connection between planned reactors and extortion appears under several different specifications. In Column (1) of Table 5, I regress extortion rates on the reactor variables and prefecture fixed effects. In Column (2), I use both prefecture and year fixed effects. In Column (3), I add controls for population, and in Column (4) for both population and non-mob crime levels.[34] In Table 6 Column (2), I add the fraction of men aged 15–19 and 20–24 as additional demographic controls. For ease of comparison, I repeat the results from Table 5 Column (2) in Table 6 Column (1).

Of these several specifications, Table 5 Columns (1) and (2) capture the logic involved most straightforwardly: when a utility announces plans for a new reactor, the mob arrives and extortion rates climb. In each of the other specifications, however, the coefficient on the announcement of a new

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34   The results are insignificant in the regressions with year fixed effects if I extend the period back to 1975.

reactor remains positive and statistically significant. Once the firm obtains its licenses and starts construction, the extortion rate falls. In Table 5 Column (2), it falls below the initial level – but this result is not robust to other specifications (see Columns (1), (3) and (4)).

Figure 1: Extortion Rates and Plan Announcement
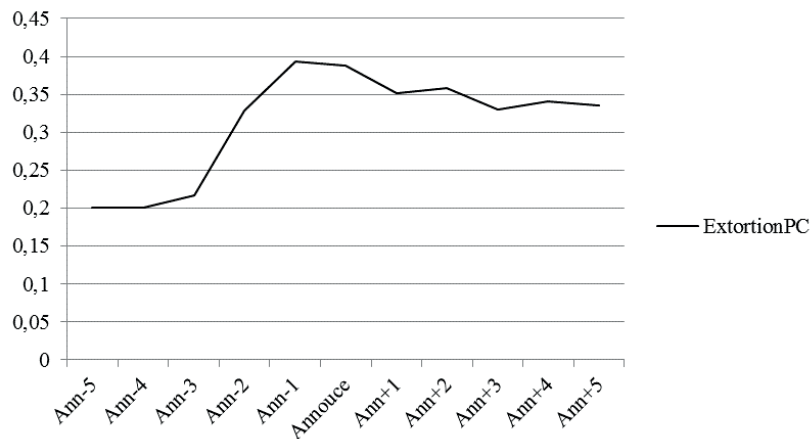
NOTES: The figure shows how prefectural extortion rates move during the five years before and after the year (denominated "Announce") a utility announces plans for a nuclear reactor.
SOURCES: Keisatsu-chō, *Hanzai tōkei* [Crime Statistics] (Tōkyō: Keisatsu-chō, various years); Genshi-ryoku anzen kiban kikō, ed., *Genshi-ryoku shisetsu unten kanri nenpō* [Supervision of Nuclear Facilities Operation Annual] (Tōkyō: Genshi-ryoku anzen kiban kikō, 2013); Sōmu-shō, *Kokusei chosa hokoku* [Population Census] (Tōkyō: Sōmu-shō, various years).

Note that the demographic controls in Columns (3) and (4) of Table 5 and Column (2) of Table 6 are potentially endogenous. As explained in Section D, below, the towns most willing to take a reactor in exchange for promised revenues have been declining communities – towns that the more ambitious young men and women have been leaving for some time. The arrival of a nuclear reactor and the mob will simply accelerate their exodus. Because of these demographic shifts (and because boys and young men commit most crime), the non-mob crime rate in Column (4) may be endogenous as well.

In all regressions, extortion rates rise only during the period between the planned reactor's announcement and the beginning of the construction. This is the time during which the utility has the most basic license applications pending, and when it is most vulnerable to losing its investment through the regulatory process. Necessarily, it is the period during which

the mob can most credibly threaten to manipulate local opposition and expropriate its quasi-rents.

Table 6: Effect of Nuclear Reactor Siting on Per Capita Rates of Extortion, Gambling Crimes, and Amphetamine Defendants, Prefecture-Level Fixed Effect Regressions

Dependent variable	Extortion PC		Gambling PC		Drugs PC	
	(1)	(2)	(3)	(4)	(5)	(6)
Plan announced	0.052**	0.085***	-0.006	0.005	0.004	0.007
	(0.026)	(0.022)	(.006)	(0.006)	(0.009)	(0.009)
Construction begun	-0.014	0.034*	0.002	0.006	-0.011	-0.007
	(0.024)	(0.021)	(0.006)	(0.006)	(0.008)	(0.008)
Operational	-0.053**	0.025	0.005	0.009*	0.004	0.011
	(0.023)	(0.020)	(0.005)	(0.005)	(0.008)	(0.008)
Population		1.53e-07***		-5.84e-09		1.93e-08***
		(0.140e-07)		(3.89e-09)		(0.561e-08)
Other crimes PC		17.254***		2.153***		1.097***
		(1.032)		(.287)		(.414)
F test	51.49	32.62	16.32	11.23	119.92	81.55
Year fe	Yes	Yes	Yes	Yes	Yes	Yes
Prefec fe	Yes	Yes	Yes	Yes	Yes	Yes
Demog controls	No	Yes	No	Yes	No	Yes

NOTES: The table gives the results of a prefecture-level fixed effect regression showing the effect of the nuclear reactor siting on rates of extortion per capita, of gambling crimes per capita, and of amphetimine defendants per capita.

*, **, ***: significance at 10, 5 and 1 percent levels. Coefficients (x 1000), followed by standard errors (x 1000). *F* test that all Ui = 0. The independent variables are equal to 1 if that prefecture has a reactor. Years 1980–2010.

SOURCES: Keisatsu-chō, *Hanzai tōkei* [Crime Statistics] (Tōkyō: Keisatsu-chō, various years); Genshi-ryoku anzen kiban kikō, ed., *Genshi-ryoku shisetsu unten kanri nenpō* [Supervision of Nuclear Facilities Operation Annual] (Tōkyō: Genshi-ryoku anzen kiban kikō, 2013); Sōmu-shō, *Kokusei chōsa hōkoku* [Population Census] (Tōkyō: Sōmu-shō, various years).

c) Does the Mob Leave?

(a) Why do extortion rates fall after construction begins? Whether the mob leaves once the utility obtains its license is less clear. The smaller (and occasionally negative coefficients on reactor construction and operation suggest that it may. Extortion rates rise when the utility announces a new reactor, and then fall. Perhaps the mob simply moves on.

(b) Behavioral equilibrium. Alternatively, however, the fall in extortion rates may merely capture a behavioral equilibrium. At root, Extortion PC does not count successful extortion attempts; it counts only attempts that

failed. Perhaps when the mob first arrives and demands tribute, many local firms balk. They report the threats to the police, and the number of extortion cases rises. Over time, perhaps some of these initially recalcitrant firms decide to pay, and perhaps the mob decides to leave the most adamantly hostile ones alone. The mob does not disappear, and the level of successful extortion does not decline – but local firms report fewer extortion attempts to the police.

Consistent with the latter hypothesis, the mob does earn a profit on many construction projects. Mob firms often broker unskilled labor to the construction industry (as Suzuki's (2011) account at the start of the article reflects), and by one account take a 3 percent cut on public-sector projects (Kingston, 2013: 245). The mob may remain on site if only to earn a cut on the construction.

(c) Other mob crimes. What is more, the level of some (not all) other mob crimes may increase during construction and operation. In Table 6 Columns (3) and (4), I regress the level of gambling crimes on the Columns (1) and (2) independent variables. In Column (3) the coefficients are insignificant, but in Column (4) the coefficient turns weakly significant (at the 10 percent level) once the reactor begins operation. Unlike extortion, gambling cases involve transactions among consenting adults. Extortion rates reflect the mob's failed attempts to extract wealth from unwilling residents; gambling rates reflect its successful efforts to promote an illegal activity. Extortion rates rise during the first period, and then fall. Gambling rates apparently rise over time, and may become weakly significant in the last period.

Perhaps, in short, the mob arrives when the utility announces its plans, and stays. It does what it does everywhere else. It demands pay-offs from local businesses. Initially, many of them balk, and the level of observed extortion spikes. In due course, the mob also develops a network of gambling operations. By the time the utility begins running the reactors, the level of gambling cases reaches weakly significant levels.

In Columns (5) and (6), I regress the number of people arrested on amphetamine-related charges per capita on the Column (1) and (2) independent variables. These coefficients are indeed positive during the operational phase. They do not reach significant levels, however, and if I use the number of amphetamine-related cases (rather than people) are not even positive.

d) Police Presence

Changes in police staffing levels potentially confound this analysis. On the one hand, if additional police deterred criminals, any increase in police presence would push crime levels down. The increased staffing, in other words,

would bias the results against my hypothesis. More troubling, however, if extra police increased the fraction of crimes reported to the government, the increased police staffing would bias the data in the other direction. The significantly positive coefficients in Table 5 would no longer capture higher crime rates. Instead, they would capture higher reporting rates.

Table 7: Effect of Nuclear Reactor Siting on Police Staffing and Joint Effects on Per Capita Rates of Extortion and Non-Mob Crimes, Prefecture-Level Fixed Effect Regressions

Dependent variable	Extortion PC		Police PC		Other Crimes PC	
	(1)	(3)	(4)	(5)	(6)	(7)
Plan announced	0.084***	0.025*	0.001	0.001	-0.564	-0.094
	(0.022)	(0.014)	(0.011)	(0.011)	(0.602)	(0585)
Construction begun	0.033	0.004	-0.014	-0.015	-1.75***	-1.39**
	(0.021)	(0.013)	(0.010)	(0.010)	(0.560)	(0.544)
Operational	0.023	0.009	-0.026***	-0.027***	-2.55***	-1.87***
	(0.020)	(0.012)	(0.010)	(0.010)	(0.531)	(0.519)
Population	10.48e-07***		-1.63e-07***	-1.61e-07***		3.17e-06
	(0.153e-07)		(6.27e-09)	(6.48e-09)	(0.328e-06)***	
Other crimes PC	17.12***			-0.472		
	(1.013)			(0.515)		
Police PC	-32.35					
	(53.068)					
F test	28.80	1864	2027	2022	90.72	45.85
Year fe	Yes	Yes	Yes	Yes	Yes	Yes
Prefec fe	Yes	Yes	Yes	Yes	Yes	Yes

NOTES: Panel gives the results of a prefecture-level fixed effect regression showing the effect of the nuclear reactor siting and police presence on per capita extortion rates; of the effect of reactor siting on police staffing patterns; and of the effect reactor siting on non-mob crime rates.

*, **, ***: significance at 10, 5 and 1 percent levels. Coefficients (x 1000), followed by the standard errors (x 1000). *F* test that all Ui = 0. The independent variables are equal to 1 if that prefecture has a reactor. Years 1980–2010.

SOURCES: Keisatsu-chō, *Hanzai tōkei* [Crime Statistics] (Tōkyō: Keisatsu-chō, various years); Genshi-ryoku anzen kiban kikō, ed., *Genshi-ryoku shisetsu unten kanri nenpō* [Supervision of Nuclear Facilities Operation Annual] (Tōkyō: Genshi-ryoku anzen kiban kikō, 2013); Sōmu-shō, *Kokusei chōsa hōkoku* [Population Census] (Tōkyō: Sōmu-shō, various years).

To explore these questions, in Table 7 Column (1) I add the number of police officers per capita to the Table 5 Column (4) variables. Suppose first that the mob arrived, and the prefecture *responded* to its arrival by strengthening the local police force. This variable would then capture the effect that

those additional officers had on extortion rates.[35] Suppose instead that the prefecture *anticipated* the mob's arrival and added extra police in the same year that the utility announced its reactor plans. The announcement variable itself would now capture the effect of the extra police. Note that the coefficient on Police PC in Column (1) is insignificant: if the prefectures increased police staffing in response to the mob, no evidence of that response appears in Column (1).

The prefectures seem not to have increased police staffing in the reactor prefectures. In Columns (3), (4) and (5), I regress police strength on the three reactor variables, on prefectural population, and on non-mob crime rates. In Column (3), the police strength does increase at the time of plan announcement. The effect is only weakly significant, however, and disappears in Columns (4) and (5). Instead, according to these latter two columns, police strength actually falls significantly once a reactor begins operation. At least by the simple specifications of Columns (4) and (5), prefectures seem not to increase police staffing either in anticipation of the mob or in response to it.[36]

Moreover, if the significantly positive coefficients on plan announcement in Table 5 reflected higher reporting rates caused by additional police, then the non-mob crime rate should increase as well. It does not. In Columns (6) and (7), I regress non-mob crime rates on the reactor variables and prefectural population. The coefficients on the reactor variables are consistently negative. Indeed, once construction begins, the coefficients are significantly negative: once a utility begins constructing a reactor, non-mob crime rates fall.

4. The Social Context

a) Reactor Siting

As noted earlier, power companies do not site their nuclear reactors randomly (see generally Aldrich, 2008, 2012; Dusinberre / Aldrich, 2011; Ando, 2015). To cool their reactors, they need access to water. In France, they build their reactors along the Rhine. In Japan, they build them by the sea.

Neither do communities accept the reactors randomly. In deciding whether to take a proposed reactor, communities face a trade-off (see also Ando, 2015). On the one hand, if they choose to let the utility build the reactor, they receive an enormous infusion of cash: initial subsidies and continuing property tax revenues. With that cash, they can buy facilities

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35 This variable would then be endogenous, of course.

36 Obviously, if the prefectures did anticipate or respond to the mob and increase police staffing in prefectures that planned reactors, the reactor variables would capture an endogenous omitted variable.

and services they could not otherwise afford. On the other, they incur the perceived risk of cancer from the radiation. Given that cancer takes years to develop (if it develops at all – many contest the claim),[37] the costs to these risks decline with age. Disproportionately, they fall hardest on the young.

Table 8: Municipality-Level Characteristics and Nuclear Reactor Siting, Probit Regressions

	Dependent Variable: Reactor Sited				
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Unempl PC	11.89		-21.52	-21.22	-21.43
	(10.53)		(27.68)	(28.45)	(28.56)
Crimes PC		-175.4*	-75.61	-71.32	-75.43
		(99.76)	(116.5)	(126.6)	(128.7)
Births PC			-31.69	-44.84	-45.45
			(86.74)	(109.3)	(109.8)
Deaths PC			224.1**	219.7**	221.2**
			(92.11)	(92.81)	(93.35)
Marriage PC				2.494	2.601
				(191.6)	(192.5)
Divorce rate				-0.919	-0.922
				(3.371)	(3.397)
Population					8.13e-07
					(20.0e-07)
Pseudo R^2	0.31	0.12	0.37	0.38	0.38
n	1724	1514	1514	1512	1512

NOTES: The table shows the way that reactors tend to be sited in locations with older populations. It gives the results of a municipality-level probit regression of the announcement of a plan to build a reactor (over 1980–2010) on various 1980 values. Coefficients are per capita rather than per 1000 capita.

*, **, ***: significance at 10, 5 and 1 percent levels. Coefficient, followed by the standard error.

SOURCES: Keisatsu-chō, *Hanzai tōkei* [Crime Statistics] (Tōkyō: Keisatsu-chō, various years); Kōsei rōdō-shō, *Jinkō dōtai tōkei* [Vital Statistics of Japan] (Tōkyō: Kōsei rōdō-shō, various years).

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37 It is not clear that neighbors to nuclear power plants do incur a cancer risk. The U.S. Nuclear Regulatory Commission (obviously not a disinterested party) suggests not: "Although radiation may cause cancer at high dose rates, public health data do not absolutely establish the occurrence of cancer following exposure ot low doses and dose rates …" (NRC, 2015).

38 This result is also consistent with Aldrich's (2008, 2012) hypothesis that utilities site reactors in the communities lease able to organize. Because people withdraw as they age, elderly couples have fewer ties within the community than younger couples – and (arguably) may find it harder to organize against a planned reactor.

Predictably, the communities that choose to take the subsidies at the cost of the radiation risk are old. In Table 8, I use probit regressions to explore which communities decide to accept a nuclear reactor. The data are at the level of municipality: cities, towns, villages. In each case, the dependent variable is equal to 1 if the municipality accepted a reactor over the course of 1980–2010. The independent variables represent community values as of 1980. The only consistently significant result appears on the fraction of the population that dies in any year – a proxy for fraction that is elderly. In one regression, the coefficient on crime rates is significantly negative as well. The coefficients on the other variables are not statistically significant. The older the community, the more likely it will accept a reactor – beyond that, we cannot say.[38]

b)   Nuclear Power and Social Capital

Nuclear plants seem to take a toll on communities through their effect on young families. Elderly couples with only a decade or two left to live may opt for the revenues and take a reactor. Because the perceived risk from radiation falls hardest on the young, parents with children are far less likely to find those subsidies fair compensation. Obviously, they are also unlikely to want to raise their children in communities now dominated by the mob.

Several apparent consequences follow (I detail the empirics in Ramseyer, 2015). To be sure, the identification is far too tenuous to draw any causal connections. At least preliminarily, however, the data (see Ramseyer, 2015) suggest that young families choose not to move to areas that announce a new reactor. As they disappear, birth rates fall and death rates climb. Because the most stable and committed families disappear, the divorce rate climbs. And as employers start to identify the community as fragile, they locate their plants and offices elsewhere. Unemployment climbs, and – ever so steadily – the community disintegrates.

IV. CONCLUSIONS

Nuclear reactors entail massive non-transferrable site-specific investments. The resulting appropriable quasi-rents offer the mob the ideal target. It can promise to "protect" the utility, and take money for silencing the reactor's local opponents. And it can threaten to "extort" from the utility, and take money for not inciting local opponents. Prefecture-level panel data from 1980 to 2010 confirm this phenomenon. When a utility announces plans to build a reactor, the mob apparently moves in – and the level of extortion climbs.

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SUMMARY

Nuclear reactors entail massive non-transferrable site-specific investments. The resulting appropriable quasi-rents offer the mob a lucrative target. In exchange for large fees, it can either promise to "protect" the utility (and silence the reactor's local opponents) or to "extort" from it (and desist from inciting those opponents). Using prefecture-level Japanese panel data covering the years 1980 to 2010, I find that extortion rates rise when a utility announces plans to build a reactor. The evidence is consistent with a straightforward account: once news about a utility's plans to build a new reactor leaks, the mob moves in to appropriate the large quasi-rents from the utility, and stays to do what it does everywhere else – extort regular payments from local businesses.

ZUSAMMENFASSUNG

Die Errichtung eines Atomkraftwerks bringt hohe unübertragbare investment-spezifische Kosten mit sich. Die daraus entstehenden abschöpfungsgefährdeten Quasi-Renten bilden ein lukratives Ziel für die organisierte Kriminalität. Sie kann gegen ein hohes Entgelt entweder zusagen, die Anlage zu „schützen" (und deren Gegner zum Schweigen zu bringen) oder aber diese „erpressen" (und davon absehen, deren Gegner weiter aufzustacheln). Der Beitrag zeigt auf, dass die Zahl der Erpressungen ansteigt, wenn ein Kraftwerksbetreiber Pläne veröffentlicht, einen neuen Atomreaktor zu bauen. Der Autor hat dafür Präfektur bezogene Daten aus den Jahren 1980 bis 2010 analysiert. Die Ergebnisse bestätigen die Annahme, dass, sobald die Pläne des Betreibers, einen Atomreaktor bauen zu wollen, an die Öffentlichkeit gedrungen sind, die organisierte Kriminalität aktiv wird, um von diesem hohe Quasi-Renten abzuschöpfen, und zugleich das zu tun, was sie überall unternimmt, nämlich von den lokalen Wirtschaftsunternehmen regelmäßige Zahlungen zu erpressen.

(Die Redaktion)