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ABSTRACT

The Los Angeles riot of 1992 resulted in 52 deaths, 2,500 injuries and at least $446 million in property damage; this staggering toll rekindled interest in understanding the underlying causes of the widespread social phenomenon of rioting. We examine the causes of rioting using international data, evidence from the race riots of the 1960s in the U.S., and Census data on Los Angeles, 1990. We find some support for the notions that the opportunity costs of time and the potential costs of punishment influence the incidence and intensity of riots. Beyond these individual costs and benefits, community structure matters. In our results, ethnic diversity seems a significant determinant of rioting, while we find little evidence that poverty in the community matters.

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I. Introduction

On Wednesday, April 29, 1992, at 4:00 p.m., four policemen accused of beating motorist Rodney King were found innocent by an all-white jury in suburban Los Angeles. By 6 p.m., relatively peaceful demonstrations had begun in front of the headquarters of the L.A. police department. These protests escalated into rock throwing. At 6:30 p.m., Reginald Denny, a white truck driver, drove into the intersection of Florence Avenue and Normandie Street, where crowds had already formed. On live television, Los Angeles watched as Mr. Denny was dragged from his truck and beaten. By night fall, Los Angeles was paralyzed by rioters. For three days the riot raged, until the National Guard quelled the violence. Several other cities experienced the spread of urban unrest in the wake of the L.A. outburst (see Appendix 1).

The toll of the riot on Los Angeles was tremendous. As shown in Table 1, 52 people died; 2,499 people were injured; 249 of these injuries were critical. Over 16,000 riot-related crimes were reported and 9,925 of them were categorized as serious; 6,559 people were arrested for riot-related crimes. Over $446 million in property damage was sustained across 1,120 buildings. Of the damaged buildings, 377 were completely destroyed and another 222 were seriously damaged. Overwhelmingly (94%), the damaged buildings were commercial and most (76%) of them were retail stores.

Prior to the 1992 L.A. riot, the last large scale urban riot in the U.S. was the Miami riot of 1980. In Miami on December 17, 1979, Arthur McDuffie, an African-American insurance salesman with a suspended driver's license, was speeding on a motorcycle. Police pursued McDuffie, and after an eight minute chase, McDuffie slowed down, and shouted "I give up." McDuffie was pulled off his motorcycle, and policemen beat him to death with night sticks (*Washington Post*, May 21, 1980). The five white police officers charged in the case were acquitted on Saturday, May 17, 1980, by an all-white, all-male jury in Tampa. The Liberty City section of Miami then erupted in a two-day riot during which 150 fires were set, 17 people were dead, 400 were injured, $50 million was lost in property damage and 1,300 people were arrested (*Washington Post*, June 22 and May 22, 1980).

The most famous riot of the 1960s was the Watts riot of 1965. On August 11, 1965, an

L.A. police officer arrested a young African-American man for drunk driving. A crowd gathered, the discussion became heated, and the young man's mother and brother were arrested. The crowd began to throw rocks and bottles and the Watts riot began. Rioters burned buildings, looted stores and fought with police in the streets. Thousands of National Guard troops were brought into the city. The guardsmen restored order after six days of rioting during which thirty-four people died, 1,032 were injured and 3,952 were arrested. Property damage was estimated at $183 million (1992 dollars). Of the 600 buildings damaged, 200 were completely destroyed. (L.A. Times Staff (1992), pp. 9-10).[1]

Anytime a riot occurs, people ask why. While many disciplines can provide a perspective on this question, in this paper we focus on the economics of rioting. An economic approach to the causes of rioting must begin by asking whether or not rioters are simply responding to the private costs and benefits of rioting. Standard price theory, as presented in Tullock (1971), gives us comparative statics that suggest that rioting should be more common when the financial gains from rioting are high and when the costs of rioting (time costs and the probability and cost of imprisonment) are low.[2] One objective of this paper is to test these neoclassical implications.

However, much of the popular discourse on riots suggests that rioting is also related to community level grievances (e.g., racially prejudiced police officers) or community level benefits (a political response to the riot, see, e.g., Hobsbawm (1957)). The ethnic/racial element often involved in rioting is also hard to understand in a simple neoclassical model of rioting.

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[1] As large as the Watts, Miami and L.A. riots were, they were far less bloody than the 1863 New York City draft riot that followed the passage of the conscription act. Governor Horatio Seymour (and others) predicted that the riot would occur. On the Sunday after the act passed, these expectations began to be realized: local agitators organized a massive demonstration. On Monday at 6:00 a.m., large numbers of employees skipped work and marched up Eighth and Ninth Avenues. The peaceful congregation changed quickly into a massive riot. By Tuesday, the streets were filled with rioters whose biggest interest seemed to be thievery, not political expression. By Thursday the army had quelled the riot and 104 people were dead (Bernstein (1990)).

[2]The economic analysis of rioting is, of course, quite similar to the economic analysis of crime, as in Becker (1968). Banfield (1974) and Tullock (1971) represent the classic works on the basic economics of rioting and revolution.

Standard economics predicts that only private costs and benefits should influence individual behavior. If we do find that community level variables explain some rioting, we must then understand how community benefits become private benefits. One natural explanation is the presence of organizers who solve the free rider problems inherent in getting an individual to riot for community benefits. A second explanation is that somehow tastes or social influences make individuals respond to community level grievances or take into account community level benefits of political unrest.[3] A third explanation is that community level events become focal points and serve to catapult the population from a no riot equilibrium to a rioting equilibrium.

In this paper, we empirically examine riots and try to differentiate between two types of explanatory variables: (1) variables that reflect the purely private or individual financial returns from rioting (measures of the extent of policing, the costs of punishment, property ownership and the value of time), and (2) variables attempting to measure community and social conditions (measures of ethnic composition, racial segregation, relative poverty, and community stability). Our data includes international riots data, evidence from Los Angeles in the 1990s, and cross-city U.S. evidence on race riots from the 1960s.

Our cross-national data show that GDP has a negative effect on rioting. Urbanization is positively correlated with rioting, which perhaps means that political unrest is easier to organize in cities. Our cross-country data also shows a connection between ethnic heterogeneity and rioting, and that this connection is stronger in more urbanized countries such as the U.S. and India. We also find that dictatorships have a lower incidence of riots.[4] While the income and dictatorship results can be understood with a neoclassical view of rioting behavior, the ethnic heterogeneity results require more explanation.

In 1990, Los Angeles did not have a particularly poor African-American community. However, the unemployment of young African-American males in South Central L.A. was unusually high. The Los Angeles data are also consistent with the view that riots are more likely

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[3]Romer (1995) argues that a taste for vengeance might be an evolutionarily dominant characteristic. Some rioting seems strongly connected to vengeful emotions.

[4]There is an issue as to whether dictators simply are able to repress the reporting of riots.

in ethnically diverse cities with weaker community organizations.

Unlike previous investigations of 1960s cross-city race riots data (such as Morgan and Clark (1973) or Spilerman (1976)), we differentiate between riot intensity and riot occurrence, and measure rioting with several physical riot variables, rather than with an index of riotous behavior. We find that riot size and intensity are most closely linked to the size of the nonwhite community, holding city size constant. The nonwhite unemployment rate is also significantly correlated with riot occurrence and mildly correlated with riot intensity. Police expenditures per capita are significantly negatively correlated with riot intensity. Riots were also rarer in the South, perhaps due to a public perception that Southern police officers are more willing to adopt more draconian measures under duress. The relative homeownership rate is significantly negatively correlated with riot occurrence, perhaps because homeownership decreases the incentives to start fires in one's own neighborhood. These results seem to lend some credence to a basic economic view that time and arrest costs drive the size and occurrence of riots.

Our examination of 1960s data finds little support for the idea that relative poverty drives rioting, except in one regression where relative poverty is significant at the 10% level. The size of government is also somewhat positively correlated with rioting, perhaps because community level gains from rioting are higher when there is a greater amount of government expenditures to divide. Racial segregation decreases riot intensity slightly. We believe that this result may be due to decreased police intervention in riots in segregated communities or to the fact that rioters who focus aggression against other races have fewer targets when they live in segregated areas. Our overall assessment is that poverty contributes little to explaining which cities explode into riots, but that unemployment does spur riots by lowering the opportunity cost of time for marginal rioters. Since all of the 1960s riots in our sample are race riots, the 1960s data again stress the connection between ethnicity and rioting.

The next section presents a framework for the empirical work. Section III presents our results using international data on riots. In Section IV, we provide data on Los Angeles in 1990 and present our cross-city regressions for the U.S. in the 1960s. In Section V, we draw our conclusions from the evidence provided in this paper.

II. A Framework

Previous work on the economics of rioting suggests that riots occur because of congestion in law enforcement, meaning that as more people riot the chances of being arrested decline, decreasing the cost of rioting to an individual. This literature, which includes Tullock (1971), Kuran (1989), and Lohmann (1992), suggests a role for focal points (the King verdict in the case of L.A.), strong expectations of a riot, some presence of organizers, and large, initially peaceful, crowds. We begin with an economic theory of rioting based on this previous work; our framework here is not original, but serves as a useful starting point for the empirical work presented in this paper.

We assume a population with a range of net benefits from rioting, where these benefits are meant to include all the benefits and costs of rioting except for those costs specifically related to the police.[5] We order the population by the net benefits they receive from rioting on the unit interval using an index i, so that individuals with less net benefits from rioting are assigned a higher level of i. We then specify a function $B(i, X, Y)$ which represents the net benefits of rioting to the individual i, where X is a vector of characteristics that affect the individuals' cost of time and probability of gaining financial advantage through rioting, and Y is a vector of characteristics that may influence the non-financial and communal rewards from rioting.

We assume a cost of being caught rioting $C(X)$ and a probability of being caught $P(N, X)$, where N denotes the number of rioters.[6] With any congestion in law enforcement, the probability of being caught goes down as the number of rioters goes up, so $\partial P(N, X)/\partial N<0$. When the number of rioters is known by everyone, it must be the case that for all individuals indexed $i<i^*$, rioting is preferred and for all of those with $i>i^*$, rioting is avoided (as long as $\partial B(i, X)/\partial i>0$).

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[5] The taste for rioting may come from individual benefits derived from this behavior such as from goods stolen. It is also possible that the tastes for rioting include the political benefits that may be reaped by the group as a result of the rioting behavior.

[6] N could also include the number of individuals in crowds on the street.

However, we assume that only a fraction z of the population observes the riot going on, and those who do not observe the riot will not choose the risk of rioting. In this case, $N=zF(i^*)$, where F(.) is the cumulative distribution of i (which has a related density function f(.)). The equilibria are found by the i^* that satisfies the following equality:

$$B(i^*, X, Y)=C(X)\,P(zF(i^*), X) \qquad (1)$$

Figure 1 plots the equilibria in a simple case. The figure illustrates a case of multiple equilibria in violent activities.[7] The first equilibrium (marked 1) is a no riot equilibrium where the probability of arrest is high and there is no violence. The second equilibrium (marked 2) has a small level of violence and a moderate probability of arrest--this equilibrium is unstable, but it determines the minimum riot size. If the initial riot size is greater than this point, then the riot will converge to the high riot equilibrium. If the initial riot size is below this point then the riot will converge to the non-riot equilibrium.[8] The third equilibrium (marked 3) has a high level of violence and a low probability of arrest.[9]

The multiple equilibria framework suggests that riots are related to initial events that bring the riot to a certain critical size. This initial riot mass can be the result of large non-rioting crowds that cause congestion in law enforcement as in riots at soccer matches or in the Watts riot, expectations and focal points (such as Berlin's explosion after the announcement of the

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[7] There are other ways of getting these multiple equilibria without congestion in police technologies. It is possible that the small riots have no political benefits whatsoever and that both the average benefits of rioting and the marginal benefits rise with the number of rioters.

[8] Informal stability arguments can be made formal, by redefining (1) as $B(i^*_t,X,Y)= C(X)P(zF(i^*_{t-1}), X)$, and using standard arguments as in Takayama (1985). In that case the condition for stability is that $\partial i^*_t/\partial i^*_{t-1}=CP_1(F(i^*_{t-1}), X)f(i^*_{t-1})/B_1(i^*_t,X)<1$, which holds at equilibria 1 and 3, but not at equilibrium 2.

[9] In the first equilibrium the costs of violence are higher than the benefits, so everyone is at the corner solution of no violence. The second and third equilibria are points where costs and benefits curves intersect so for the marginal agent the costs and benefits of violence are equal.

Versailles Treaty) and organizers trying to use riots for political ends[10] (such as in the riots at the 1968 Democratic political convention, or the mafia-led riots in Sicily described in Hobsbawm (1957)).[11] While we find these ideas interesting, and often compelling, we will have little evidence on them because they are difficult to quantify.

Individual Comparative Statics

The model in its Figure 1 form offers the following simple comparative statics: (1) higher probabilities of arrest (P) or costs from arrest C(X) each lower the likelihood and the extent of rioting, (2) a lower value of time represents a change in X that raises B(i, X, Y) and increases both the likelihood and extent of rioting, (3) a greater value of z raises both the likelihood and intensity of the riot; better information (caused by urban density or the media's reporting on a riot's progress) will make riots larger and more common. Tullock (1971) presented many of these comparative statics in the context of predicting which citizens will join in a revolution.

Citizens with a lower opportunity cost of time should be more willing to spend time rioting and less bothered by the time costs involved in prison time. In our cross-country data, we will use GDP per capita as our best measure of the marginal product of time in non-rioting activities. Across cities in the U.S. in the 1960s, we will use unemployment rates to capture the actual presence of unfilled time.

Our measure of the potential costs of punishment in the cross-national data is the

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[10] Political agitators will be more important when there are high political gains from rioting or when the transaction costs of organizing groups are low. Riots in the early 1960s, such as Watts, seem to have come more from peaceful crowd situations; riots in the late 1960s were connected with a clear series of focal points (often the presence of Student Nonviolent Coordinating Committee (SNCC) activists). Perhaps the gains from organizing rose because traditional political groups seemed weak, or the costs of organizing fell over the 1960s.

[11] Political results of rioting might be due to information being transferred to an authority that a problem exists (e.g., the supposed positive benefits of the 1960s race riots in focusing federal attention on the plight of the inner city), or it might be the result of scaring the authority. Scaring the authority can also be seen as an information effects by signaling to the authority the might of the rioting group.

dictatorship variable. This variable (which is based on the Gastil index of political rights) measures the extent to which governments are bound by political limits. Countries that are not bound by these limits are free to punish rioters without due process and with little mercy. Our measure of potential imprisonment across cities is police expenditures per capita. This measure is meant to capture the resources available to arrest potential rioters. Finally, one possible interpretation of a regional effect in the cross-city regressions is that the South dummy is proxying for omitted variables capturing the brutality of the enforcement agents.

A third relevant variable is property ownership. As rioting leads to the destruction of property, those individuals with more physical property at stake will stand to lose most from rioting.[12] As Chafets (1990) emphasizes in his explanation of the Detroit inner city's nights of arson, when property is owned by absentee landlords, arsonists need not fear hurting their own or their neighbors' economic welfare. Property owners should also have incentives to try and stop riots.[13]

Community Forces that Effect Rioting

Tullock (1971) strongly argued that only those variables that relate to individual costs and benefits predict joining a revolution. We believe that the popular intuition that communal costs and benefits of rioting, what Tullock terms the "public good" aspects of revolution, represents a legitimate alternative hypothesis. Research advances in understanding the nature and formation of preferences, collective action problems, and focal points all suggest that community factors may indeed help explain rioting. In particular, we will focus on poverty and despair, ethnic forces, and social capital (as in Putnam (1993)).

A connection between poverty and rioting can be explained in part if poverty captures

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[12] This argument can explain why writers, from the framers of the U.S. Constitution (who made property a prerequisite for voting) to current defenders of homeownership subsidies (see Rosen (1984)), have argued that property ownership makes for "better citizens."

[13] An example of this effect is the Korean shopowners in the L.A. riot protecting their property.

some portion of the cost of rioting that is not captured with the unemployment variables. Such a connection can also be explained with the more popular mechanisms arguing that poverty breeds anger, either because of frustrated aspirations (as argued by Durkheim (1955)) or from just plain misery. These theories suggest that pain generates a taste for violence.[14] As a result, in our cross-city models for the U.S. in the 1960s we consider the impact of relative poverty (nonwhite poverty rate/total poverty rate).

A second community level variable that seems connected to rioting is ethnicity. Many of the U. S. riots have been fought along ethnic or racial grounds. Countries with substantial ethnic heterogeneity often face substantial rioting (South Africa, India). During and after the L.A. riot, the popular press emphasized the importance of conflicts between whites, African-Americans, Hispanics, and Asian immigrants.[15] One explanation for the connection between ethnicity and rioting is that ethnic minorities might riot against the status quo to receive an increased share of the national wealth, political rights and political power. An alternative explanation of the role of ethnicity is that different ethnic groups have different rules of behavior, and actions which are acceptable to one ethnic group may be perceived by another ethnic group as a violation of the perceived social contract. This misunderstanding-based conflict can be seen between African-Americans and Jewish shopkeepers in the 1960s, in arguments between Koreans and African-Americans in New York or L.A., and in street fighting between Hindus and Muslims in India.[16] If agents respond to violations of social norms by entering into punishment

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[14]Such a connection between pain and violence could indeed be an evolutionarily dominant connection. If periods of suffering are periods when the marginal product of violence are particularly high (i.e. in periods of shortages it may be necessary to use violence to secure food, while in periods of plenty such violence is unnecessary and wasteful), then evolution might select individuals who get more violent as they get more desperate.

[15]In the aftermath of the Miami riot, 90% of African-American members of the community surveyed about the riot and community conditions which contributed to it indicated that they deeply resented the economic and social progress made by Cuban immigrants (reported in the June 22, 1980, *Washington Post*).

[16] Ethnic heterogeneity may also increase the likelihood of urban unrest if the government redistributes resources between ethnic groups, as in South Africa (see Horwitz (1985) for a

strategies (in the usual manner of repeated games) which may include rioting, then we would expect to see more riots when different ethnicities are mingled together.

While these explanations help us understand why rioting is rational for an ethnic group as a whole, it is hard to see why these forces should make rioting rational for any particular individual. Again, it is possible that the ethnic gains are internalized by the riot organizers who then reward and punish individual rioters. It is also possible that racial events, such as seemingly prejudiced jury verdicts, just provide convenient focal points for rioters. Finally, it may be that tastes develop so that individuals get angry to avenge slights to their ethnic group. Under ideal conditions, the relative importance of these mechanisms could be determined by examining the role of ethnicity, or community variables in general, in incidence relative to intensity. If community variables work mainly as focal points or through the role of organizers, then community level forces should drive incidence, not intensity. If the community level variables actually strike at the taste for rioting, then it would be reasonable to believe that these variables should shift the entire benefits curve and increase both the incidence and intensity of riots.

Conflicts between ethnic groups are expected to be higher when these ethnic groups live and work in close proximity. Thus, segregation could decrease rioting by separating groups that are different. Alternatively, segregation could induce rioting if a segregated group feels isolated and excluded from the resources of the larger community.

A final hypothesis is that older communities can decrease the likelihood of rioting by creating social institutions (e.g., churches, political parties, temples and block organizations) that lessen social conflict. Putnam (1993a and 1993b) particularly emphasizes the importance of this social capital and shows its connection to economic development in Italy. Finally, longer duration of residence means that conflicts stemming from perceived violations of community norms will be less likely. One test of this notion is to examine the role of migration in the L.A. data and cross-city evidence.

Throughout our presentation of our empirical results, we will examine the impacts of our

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general discussion), or if altruism across ethnic groups is weaker than altruism within ethnic groups. The argument that altruism declines when the recipient is different from the donor is occasionally made by evolutionary biologists such as Dawkins (1976).

measures of individual costs and benefits to rioting and community forces that may influence riot occurrence and severity. While we find this dichotomy between individual and community forces useful, it is important to point out that the line between the individual measures and the community measures may not be as bright as our discussion thus far suggests. For example, we use the nonwhite unemployment rate as a measure of opportunity cost of time. This variable also reflects important community conditions. A high unemployment rate may be a measure of community level despair even when we control for community level poverty.

III. Evidence 1: Cross-National Evidence

This section tests our theories by comparing rioting across countries. Our data come primarily from the sources detailed in Barro and Wolf (1991). Our population numbers and GDP numbers are from Summers and Heston (1991). Our urbanization figures are derived from the United Nations' *Prospects of World Urbanization*, which gives the percentage of the population living in towns of 2500 or more. We use the ethnolinguistic fractionalization measure described in Taylor and Hudson (1972) and used in Mauro (1995) to capture ethnic heterogeneity. This variable measures the probability that two randomly selected people will not belong to the same ethnolinguistic group. Our political variables are riots and the Gastil index of political rights, described in Barro and Wolf (1993).

The riots variable measures the number of riots per year over the 1960-1985 period, taken from Banks (1991). These variables capture riot incidence more than riot intensity. We construct a dictatorship dummy variable using the Gastil index of political rights which ranges from 1, where broad democratic freedoms prevail, to 7, where the most severe repression exists. We construct a dummy variable which takes on a value of 1 if the Gastil index of political rights is greater than 3 and a value of 0 otherwise.[17] Our primary data set contains 102 observations.

The means and standard deviations are shown in Table 2, Panel A. The riot variable

[17] The construction of this dummy variable is described in detail in Ades and Glaeser (1995). We see this dummy variable as more intuitive than using the continuous variable. Results do not change if we move to a continuous variable.

ranges from 0 to 9.46 riots per year. Sixteen of the countries had no riots over the sample period. This variable was highly skewed in its distribution, with the vast majority of countries having values of riots less than one. Only two countries had values greater than four. We decided to smooth these variables by using the natural logarithm of one plus riots as our primary dependent variable.[18] This log variable also aids in interpreting coefficients.

Our ethnic heterogeneity variable runs from 0.01 to 0.93.[19] Per capita GDP in 1970 measured in 1980 dollars has a mean of $2,498 and ranges from $268 to $9,459. Urbanization rates averaged 39.2%. Using our measure of dictatorship, 65.7% of our countries are dictatorships. Most of our data are for 1970, which was the earliest year for which data were largely available; we prefer this earlier data to limit any endogeneity problems.

Table 2, Panel B, presents a more detailed view of the riots data and shows the five most riotous nations in our sample. The five nations on this list are India, the U.S., South Africa, Pakistan and Italy. The U.S. is included in the list primarily due to the events of the 1960s. The most striking characteristic shared by four of the countries is ethnic strife (Hindus and Muslims in India and Pakistan, blacks and whites in the U.S. and South Africa). Three of the countries are democracies, which is particularly surprising given that 2/3 of the countries in our sample are classified as dictatorships.

The first set of regressions are included in Table 3. Since the log of one plus the riots variable is censored at 0, we have performed standard Tobit corrections.[20] The first regression shows a strongly positive correlation between rioting (the log of one plus riots per year) and country population. This correlation is driven primarily by the U.S. and India. GDP per capita is negatively correlated with rioting. A one standard deviation increase in real GDP per capita leads to a 12.3% reduction in riots. This connection could be evidence that a low opportunity

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[18] Taking the logarithm of one plus the riots variable was necessary so that those countries with no rioting could be included in the regressions.

[19] We used the natural logarithm of this variable in our regressions.

[20] The results do not change if we run the regressions without the Tobit correction or if we drop the countries with no riots.

cost of time in poorer countries leads to more riots. There is very limited data available on income inequality at the country level. Using these data, in results not reported here, we fail to find a connection between income inequality and rioting at the country level.

Dictatorships have, on average, 24.9% fewer riots per year than non-dictatorships, probably because they engage in more repressive anti-riot techniques. As Tilly, Tilly and Tilly (1975) put it, "repression works." Our results are consistent with Alesina and Perotti (1993): urbanization increases rioting. In our results, increasing urbanization by one standard deviation (26%) increases rioting by 13%. The role of cities in contributing to congestion of law enforcement, increasing information flows, and facilitating coordination seems to be important in explaining riot behavior across countries.

The first regression also shows a connection between ethnic heterogeneity and riots. A one standard deviation increase in the log of ethnic heterogeneity raises the riots per year by 1.7%. Regression 2 includes a cross effect between the ethnicity and urbanization variables, and shows that ethnic heterogeneity is more strongly correlated with rioting when individuals from different ethnic groups live together in close quarters. While this cross effect is positive and statistically significant, ethnic heterogeneity becomes negative and statistically insignificant. Using the estimated coefficients on this cross effect and ethnic heterogeneity, we find that in countries where 25% of the population lives in cities the cross effect exactly offsets the coefficient on ethnicity indicating that ethnic heterogeneity does not effect the propensity to riot. Among countries with 75% of the population living in cities, a one standard deviation increase in ethnic heterogeneity raises the riot frequency by 20%.

While we recognize the limits of using cross-national data to explore rioting, these results on GDP, urbanization and dictatorship lend preliminary support to the Tullock model of rioting. There is also evidence for a connection between ethnic heterogeneity and rioting, especially in urbanized countries, which does not fit the Tullock model.

IV. Evidence 2: Rioting in the U.S.

We use two sets of U.S. evidence to examine riots. First, we use the 1990 and 1970 U.S.

Census to describe Los Angeles in the 1990s in an attempt to understand what factors might have influenced the explosion into riot in 1992. To further explore why U.S. cities riot, we examine the evidence from the 1965 to 1968 period when 83 American cities experienced riots.

A. Los Angeles, 1990s

In examining Los Angeles in the 1990s we divide our variables into two categories: (1) individual (neoclassical) forces (unemployment and property ownership) and (2) community forces (poverty, family structure, mobility and ethnicity). The evidence that we present in this section is largely based on the 5% public use micro sample (PUMS) of the 1990 U.S. Census. The 1990 PUMS has a distinct advantage over previous public use samples of the U.S. Census in that it offers detailed geography that allows us to examine the two public use microsample areas (PUMAs) that represent South Central L.A. We compare the data on South Central L.A. to L.A. County and the U.S. in 1990.[21] In addition, we use the 1970 PUMS to provide data on L.A. County. Since the 1970 PUMS is a 1% (not a 5%) sample and there is no intra-city geography, we aggregate summary statistics by census tract for data on the South Central L.A. neighborhood in 1970 for those variables where data are provided in the published 1970 Census reports.

Individual Forces

Much of the evidence from surveys and anecdotal descriptions of rioters suggests that they tend to be young men. In Table 4a, we provide unemployment rates for young males (age 16 to 30). Unemployment rates in L.A. County for young African-American and Hispanics males rose from 1970 to 1990. In 1990, the unemployment rate for young African-American males in South Central L.A. was 25%. This high unemployment rate for young African-American males may help to explain the massive scale of the L.A. riot.

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[21] The data for the U.S. presented in this section is based on the 1% PUMS from the 1990 U.S. Census.

Our measures of physical property are self-employment rates (i.e., ownership of a business), and homeownership rates for residents of the South Central area. Ideally, we would use data on the ownership of the property in South Central L.A. rather than data on South Central's residents who own property, but this information is not available from the Census.[22] The self-employment rates in Table 4a indicate that for whites, African-Americans and Hispanics, both L.A. County and South Central L.A. had higher rates of self-employment than the U.S. in 1990. All Los Angeles County self-employment rates are also high compared to historical figures; for whites and Hispanics, the figures rose over 50% between 1970 and 1990.

L.A. County and South Central have substantially lower homeownership rates than the U.S., perhaps due to the high price of housing, but the African-American homeownership rate is higher in South Central L.A. than in L.A. County, presumably due to the low cost of housing in South Central L.A. and, perhaps, to the nature of the South Central housing stock. The African-American and Hispanic homeownership rates have declined in L.A. County from 1970 to 1990, but their homeownership rates rose in South Central over the same period.

To further examine the role of property we examined housing prices. Using the American Housing Survey, we estimated hedonic equations for each year for which L.A. was surveyed and created quality-controlled price indices by race for L.A. County, presented in Figure 2. Through 1985, prices for all three groups move in a similar pattern, rising in the late 1970s and leveling off in the early 1980s. In the late 1980s, prices diverge substantially. From 1985 to 1989, overall prices rose 45% but prices for Hispanics rose by 35.6% and those for African-Americans rose by only 11.3%. Part of the explanation of these differences in these house price series may be a result of the American Housing Survey's use of self-reported housing values. To the extent that these self-reported measures indicate beliefs about the community's future, they suggest that the residents of South Central L.A. have a bleak view of the long term prospects of their community and that these residents may have believed that their own

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[22] The 1990 PUMS does provide place of work PUMAs but these PUMAs are much larger than the place of residence PUMAs. In LA County, there are 58 residence PUMAs but only 11 place of work PUMAs. In these data it is impossible to identify South Central as a place of work.

community was losing value relative to L.A. as a whole.

Community Forces

In Table 4b, we present poverty rates by race. The poverty rates for whites, African-Americans and Hispanics are lower in L.A. County than in the U.S. as a whole in 1990. However, South Central L.A. is considerably poorer than L.A. County. African-Americans in South Central L.A. have a significantly higher poverty rate than African-Americans in L.A. County, but their poverty rate is quite close to the national rate for African-Americans. In L.A. County, the poverty rates for African-Americans and whites have not changed much between 1970 and 1990. Data comparisons over time for South Central L.A. by race are difficult because of the Census's changing definition of race.[23] In the available data, poverty rates for African-Americans in South Central appear to be up only slightly over the two decades. It appears that poverty among Hispanic households in South Central L.A. has risen dramatically. Looking at the younger residents of Los Angeles, we found that children in South Central L.A. are poor in comparison to children in L.A. County or the U.S., regardless of race.

We find that 35.6% of the African-American households in South Central L.A. are headed by females, much higher than the rate in L.A. County or across the U.S. This variable can be interpreted as an indicator of a particular form of poverty or it can be viewed as a measure of community structure. The high number of female headed households indicates that the adult male community is particularly uninvolved with parenting, the most basic social responsibility.

As shown in the second page of Table 4b, African-Americans in South Central L.A. are considerably less mobile than African-Americans in either L.A. County or the U.S. They are also less mobile than whites and Hispanics in South Central L.A.

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[23] The comparability problems come from the Census's redefinition of race. The public use sample in 1970 does not permit disaggregating the data below the county level. The 1970 South Central data are aggregations of published census tract data. In the 1970 published Census data, the racial and ethnic shares sum to more than 100% since whites and African-Americans may also include Hispanics. In the data for 1990 and LA County 1970, whites and African-Americans do not include Hispanics.

Perhaps the most striking community level variables in the L.A. data relate to ethnicity. From 1970 to 1990, L.A. County and South Central L.A. became more heterogeneous and both areas are now much more ethnically diverse than the U.S. as a whole. While the share of the African-American population in L.A. County remained constant, whites fell from 71% of L.A. County's population in 1970 to 41% in 1990. The Hispanic share of the population rose from 15% to 37% and the Asian share rose from 2.5% to 10.5%. Again, race definitions for 1970 South Central L.A. are problematic, but the figures in Table 4b do indicate a decline in the share of the area's population that is African-American from 80% to 45% and a corresponding increase in the Hispanics share from 8% to 51%. As stated earlier, African-American mobility in South Central L.A. is low, but whites and Hispanics in this area have moved extensively in the past and many (15% of Hispanics and 21% of whites) lived abroad in 1985.

B. The Riots of the 1960s

The race riots of the 1960s provide opportunity to examine a large number of riots and to compare the characteristics of cities which rioted with those that did not. In addition, for those cities which rioted, we have several measures of the intensity of the riot.

Data Description

Our data on the 1960s riots come from the 1969 McClellan Senate Subcommittee report on rioting (U.S. Congress (1968)). The Subcommittee's researchers surveyed all major cities in the United States for data on racially oriented riots between 1965 and 1968. As a result, all of these riots have a racial/ethnic component. The method used was to identify cities where riots occurred and then to contact the municipal authorities of those cities for facts about their riots.[24]

[24] The Subcommittee's research does not detail any cutoff it may have had for the size of a riot city and we have no way of judging the thoroughness with which the Senate researchers combed newspapers looking for evidence of a riot. However, we know of no riot over that time period that is not included in the McClellan data.

The extent of each riot was measured with arsons, arrests, deaths, injuries and estimates (if any) of the property damage sustained by each city. The subcommittee also provided a one sentence (or less) description of the events leading up to the riot (e.g., dance hall argument or Student Nonviolent Coordinating Committee (SNCC) demonstration).[25]

We then combined this data with information on urban characteristics derived from 1950 and 1960 censuses. All of the information is city-level information from the published extracts. Our segregation index is the standard index used by Taeuber and Taeuber (1965), who provided us with our sample selection rule. Their indices were compiled only for those cities with more than 2000 nonwhite families. The Taeuber and Taeuber sample of 202 cities was the base for the cities included in this analysis. Data availability ultimately reduced the number of cities included in our tables to 192.

Table 5, Panel A, contains the means and standard deviations of the variables we use in these regressions. Our four dependent variables are (1) riot occurrence, (2) log (one plus arrests), (3) log (one plus arsons) and (4) log (one plus injuries). As shown in the Table, 43.2% of the 192 cities experienced one or more riots during the 1965-1968 period. Southern cities account for 39.6% of our sample. The age of nonwhite community variable is the ratio of percent non-white in 1950 divided by percent nonwhite in 1960. This variable is a measure of the extent to which the nonwhite community was created before 1950 (before most of the great African-American migration to the cities).[26] We realize that the nonwhite community may be ethnically diverse in some cities even in 1950 and 1960 but nonwhite is the only race/ethnic distinction made in these published censuses. As shown in the Table, the age of the nonwhite community ranges from 0.12 to 2.295. The poverty measure that we use in this analysis is a relative poverty rate (nonwhite poverty rate divided by the total rate). This relative rate provides a measure of

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[25] For cities with more than one riot, we summed the results from the multiple riots. The results were unchanged if we included only the results from the largest riot.

[26] Taking the ratio of the percent nonwhite (rather than the actual number of nonwhites) solves the problem of this variable potentially including omitted urban characteristics related to the past growth of the city. The goal is to capture the newness of the African-American community without capturing the growth of the city which is related to the economic success of the area.

inequality between the white and nonwhite populations. In these data, the relative poverty rate ranges from 0.98 to 3.9. For this analysis, we also use the relative homeownership rate (nonwhite rate/total rate). This measure permits us to control for cross-city differences in housing market conditions, such as differences in housing prices which may account for differences in homeownership levels. The relative homeownership rate ranges from 0.31 to 1.56.

Table 5, Panel B, presents basic correlations for the sample of 192 cities. The most important explanatory variables are the log of the total population and the log of the nonwhite population. The correlation between these variables and the riot variables ranges from 37% (for occurrence and the log of nonwhite population) to 66% for log of injuries and log of total population.

Table 6 presents our riot occurrence regressions. Regression 1 is a probit for our entire sample, regressing the occurrence of a riot on our set of explanatory variables. All of the variables have the expected signs. The south dummy, the size of the nonwhite population, the nonwhite unemployment rate and the relative homeownership rate are all statistically significant. The significance of the nonwhite unemployment rate again supports the notion that those with low opportunity costs are more likely to riot. The significance of the relative homeownership rate suggests that property ownership decreases the probability of a riot, and that when the homeownership rates of whites and nonwhites are closer, a riot is less likely to occur. A connection between riots and the housing market was found by Morgan and Clark (1973) who correlated housing market inequality and riots. The size of the nonwhite community has a positive and statistically significant impact on rioting; Wanderer (1969) had previously found a correlation between growth of the nonwhite community and rioting. In this first regression, the significant variables all clearly influence the private costs and benefits of crime.

Regression 2 presents the same probit but includes police and non-police government expenditures per capita. As expected, police expenditures per capita have a negative impact on riot occurrence but the coefficient is not statistically significant. Non-police government expenditures positively influence riot occurrence and is statistically significant. The positive impact of non-police government expenditures may suggest that rioters were motivated in part by a desire for a larger piece of the government pie. This is the only community level variable that

matters in these regressions. Adding these government variables does not change the other results very much; segregation, city size (total population), age of the nonwhite community, and the relative poverty rate remain insignificant.

In Table 7, we examine the determinants of riot intensity using arrests, arsons and injuries as the dependent variables. In these regressions, we include in our sample only those cities that had riots using the same independent variables used in Regression 2 in Table 6. In the arrests regression (Regression 1), the segregation index is negative and statistically significant, suggesting that arrests are lower the more isolated the nonwhite community. This may indicate fewer arrests when the riot is less a direct threat to white communities. The age of the nonwhite community, another variable measuring community structure, remains statistically insignificant. As in the occurrence regressions, the size of the nonwhite community has a positive impact on the number of arrests and is statistically significant. The southern city dummy variable is insignificant. Spilerman (1976) found that only the size of the nonwhite population and the southern city dummy variable are related to riot intensity.

The nonwhite unemployment rate, our measure of the opportunity cost of time, is marginally significant in the arsons equation, but not in the arrest or injuries equation. The relative homeownership rate does not seem to be related to riot intensity. Taken literally, these results imply that homeownership acts as a deterrent against starting a riot but once it begins it has little impact. The relative poverty rate is marginally significant in the arrests equation, but essentially poverty has again failed to show much of a connection with rioting. Finally, police expenditures has a statistically significant negative impact on the numbers of arrests and arsons. The results on police again support the basic neoclassical framework.

What can the results from the riots in the 1960s tell us about the 1992 Los Angeles riot or the future prospects for other American cities to riot? Using 1990 data for 24 large American cities and the occurrence Regression 2 in Table 6, we can predict the probability of a riot in the 1990s. Since the 1960s data represent an extraordinary time in terms of riots in the U.S., we realize that this exercise will overstate the probability of a riot. As a result, we report the ranking of cities rather than the estimates of the probability of a riot occurring. Clearly, the rankings in Table 8 indicate that Los Angeles was a city that this regression predicts as a likely candidate for

a riot. Surprisingly, eight cities in the table rank ahead of Los Angeles. These results suggest that a number of American cities could be one igniting event away from a large scale riot. However, we should be cautious drawing strong conclusions from these rankings since we explain a small portion of the variation in riot occurrence in our models, which suggests there may be many important factors that we have not adequately controlled for in our regressions.

V. Conclusion

What caused the 1992 L.A. riot? While this question has no definitive answer, the evidence presented in this paper does suggest that South Central L.A. had some characteristics that made it more likely than other cities to explode into a large scale riot. Our empirical results suggest that the ethnic diversity of South Central L.A., the high unemployment rates of young black men in that area, and the sheer size of Los Angeles all help explain the 1992 riot.

Our cross-national and the 1960s evidence provided little support for the popular notion that poverty is a major determinant of which cities riot. We also fail to find a connection between high levels of migration, which might work against social capital, and rioting. Los Angeles, itself, is not a city marked by extreme African-American poverty or high rates of African-American migration.

Our results support a basic neoclassical view that probability and size of punishment drive some portion of rioting behavior. The dictatorship results from the cross-national data, the police expenditures results from the cross-city data, and the south dummy all suggest that an increase in the probability of arrest lessens the probability and size of riots. Rioting is less common when the time or property costs of rioting are high. The national GDP results suggest that more wealth increases the opportunity cost of rioting. We also interpret the cross-city results on unemployment and homeownership as further supporting the Tullock view that rioters respond to simple economic incentives. South Central Los Angeles has a high level of homeownership, but it also has large numbers of unemployed young men. We also find a connection between urbanization and rioting that is readily understandable with a simple model of rioting.

We find considerable support for the Tullock view of rioting where individual costs and benefits matter and we find that some of the frequently discussed community level variables have little impact. However, this distinction should not be pushed too far since many of the variables we interpret as individual level variables such as unemployment could be seen as also capturing community level forces. Even more importantly, our strong results on ethnicity provide a glaring exception to Tullock's general conclusion that community forces do not matter. Ethnic diversity is related to rioting across countries, especially in urbanized nations. While we had no measure of ethnic diversity in the cross-city data, all of the riots were race riots and by definition ethnic in character. Miami and Los Angeles, the two big riots of the past 15 years in the U.S., occurred in two of this country's most ethnically diverse cities, and immediately followed race-related court decisions. We are still far from understanding why ethnic heterogeneity is so important in rioting behavior, but it does seem to be a central component of why riots occur.

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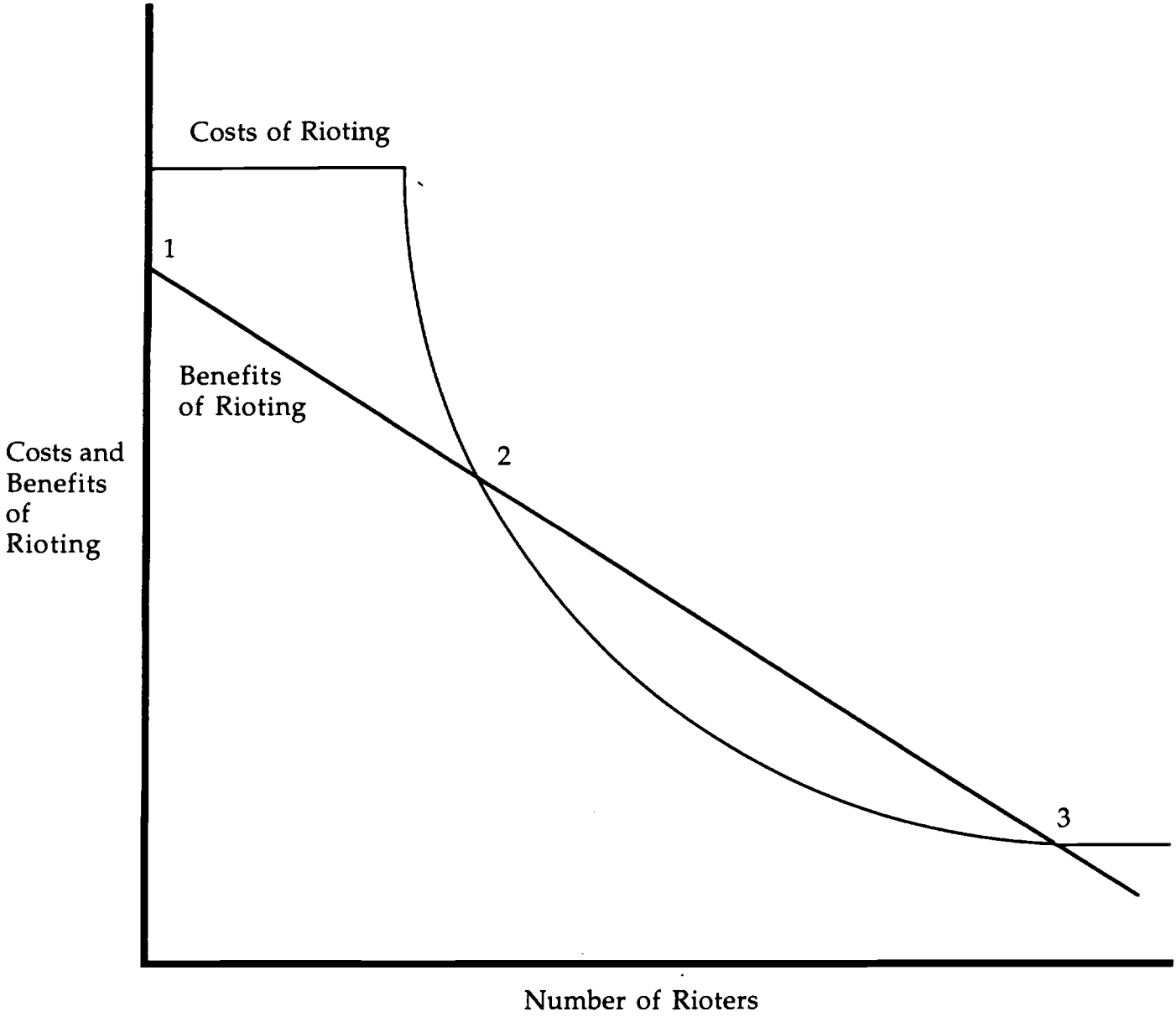
Figure 1: The Costs and Benefits of Rioting



The benefits of rioting curve is downward sloping because as the number of rioters increases, the marginal rioter receives lower benefits from rioting.

The costs curve is downward sloping because more rioters decrease the probability that the marginal rioter will be arrested.

Point 1 is the no riot equilibrium, point 2 is the unstable mid-level riot equilibrium and point 3 is the high riot equilibrium.

Figure 2: Los Angeles Quality-Controlled House Prices (LA Bundles for all, Hispanics and black owners)

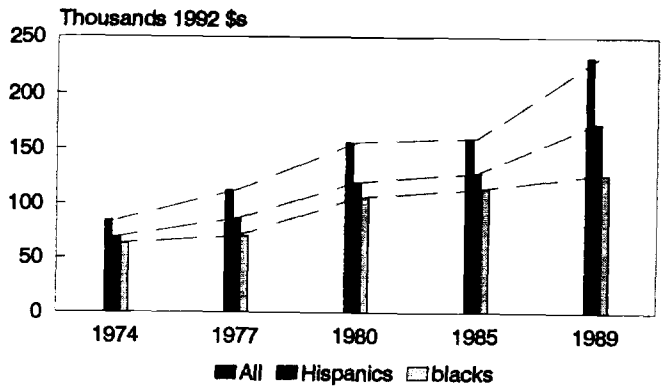


Table 1
IMPACT OF THE 1992 LOS ANGELES RIOT

DEATHS AND INJURIES

	Deaths	Critical Injuries	Non-Critical Injuries
Citizens	52	248	2,077
LAPD			101
Non-LA Police			3
National Guard			11
LA Fire		1	58
Total	52	249	2,250

SOURCE: Telephone interview with staff at the LAPD.

CRIMES AND ARRESTS

Serious Crimes Reported	9,925
Arrests for Serious Crimes	3,270
Misdemeanors Reported	6,160
Arrests for Misdemeanors	3,289

SOURCE: Telephone interview with staff at the LAPD.

PHYSICAL DAMAGE TO BUILDINGS

Value of Damage	$446 million	
Number of Buildings Damaged	1,120	
Commercial		1,050
Residential		98
Level of Damage		
Number of buildings destroyed	377	
Number of buildings seriously damaged*	222	
Types of Buildings Damaged**		
Commercial	1,008	
Retail		764
Restaurants		70
Gas Stations		58
Office		57
Manufacturing		17
Warehouse		11
Public Garages		10
Private Garages		7
Hotel		5
Church		5
Theater		2
Public Office		2
Residential	85	
Single Family Dwelling		29
Duplex		7
Apartment		29
Other		20

*Seriously damaged is defined as 50% or more of the building is damaged.
** Total by building type is less than the total number of buildings damaged because not all buildings are classified by type.

SOURCE: Profile of 1992 Civil Disturbance Damage and Areas of Need City of Los Angeles, prepared by City Planning Department, Community Development Department, Community Redevelopment Agency, September 1992.

Table 2
Cross-National Data on Riots

Table 2A--Variable Values

Variable	Obs	Mean	Std. Dev	Min	Max
Riots per year 1960-1985	102	0.662	1.344	0	9.46
Riots per year per capita	102	0.513	0.068	0	0.3228
Ethnic heterogeneity	102	0.428	0.302	0.01	0.93
Real per capita GDP 1970 in 1980$s	102	2.498	2.510	0.268	9.459
Urbanized population/Total population 1970	102	39.159	26.022	2.2	100
Dictatorship dummy 1970	102	0.657	0.477	0	1
Riots per year (log)	102	0.365	0.455	0	2.3476
Population 1970	102	22.037	59.920	0.577	547.57
Population 1970 (log)	102	2.040	1.296	-0.55	6.3055

Table 2b--Variable Values by Country

Country	riot	gdp70	urb70	ethn	dictator
India	9.46	0.58	19.75	0.89	0
United States	7.58	9.46	73.60	0.50	0
South Africa	4.31	3.61	47.88	0.88	1
Pakistan	3.15	0.80	24.89	0.64	1
Italy	2.69	5.03	64.27	0.04	0

Table 3
Cross-National Regressions

	Regression 1	Regression 2
Dependent variable	**Log of Riots**	**Log of Riots**
Ethnic heterogeneity (log)	0.057 *	-0.075
	(0.030)	(0.053)
Real per capita GDP 1970	-0.049 **	-0.052 **
	(0.025)	(0.024)
Urbanized population/Total population 1970	0.005 **	0.010 **
	(0.002)	(0.003)
Population 1970 (log)	0.265 **	0.273 **
	(0.026)	(0.026)
Dictatorship dummy 1970	-0.249 **	-0.258 **
	(0.095)	(0.092)
Latin American Country Dummy	0.266 **	0.231 **
	(0.085)	(0.083)
Ethnicity(log) * Urbanization		0.003 **
		(0.001)
Constant	-0.110	-0.265 *
	(0.127)	(0.135)
Psuedo R-Squared	0.566	0.618
Observations	102	102

Note: Estimated as tobit regressions.
Standard errors appear in parentheses.

* Statistically significant at the 10% level
** Statistically significant at the 5% level

Table 4a
Los Angeles in the 1990s: Individual Forces
(percent)

	US	L.A. County		South Central L.A.	
	1990	1990	1970	1990	1970 (1)
Unemployment Rates (Males 16-30)					
White	6.6	6.2	6.4	0.0	
Sample Size		12,133	3,354	20	
Standard Error		(0.8)	(1.4)	(22.4)	
Black	15.5	16.9	13.6	25.0	
Sample Size		3,059	560	628	
Standard Error		(1.2)	(2.9)	(2.2)	
Hispanic	10.3	9.7	8.2	9.9	
Sample Size		19,403	914	1,528	
Standard Error		(0.6)	(2.6)	(2.0)	
Self Employment Rates (Employed adults over 15)					
White	11.3	15.4	10.3	14.0	
Sample Size		81,628	19,088	103	
Standard Error		(0.2)	(0.5)	(6.8)	
Black	3.8	6.0	5.7	5.8	
Sample Size		13,488	2,351	2,331	
Standard Error		(0.7)	(1.8)	(1.8)	
Hispanic	6.5	6.8	4.2	6.7	
Sample Size		55,848	3,315	3,500	
Standard Error		(0.4)	(1.5)	(1.4)	
Homeownership Rates (Households)					
White	69.1	56.6	51.4	34.2	34.6
Sample Size		77,540	18,572	184	
Standard Error		(0.2)	(0.4)	(3.6)	
Black	43.8	36.6	38.0	38.5	33.2
Sample Size		14,499	2,369	3,456	
Standard Error		(0.4)	(1.0)	(0.8)	
Hispanic	41.9	34.8	39.3	21.7	19.7
Sample Size		37,525	2,758	2,245	
Standard Error		(0.2)	(0.9)	(1.2)	

Note: Standard error in parentheses.

(1) White and black may also include hispanics.

Table 4b--Los Angeles in the 1990s: Community Forces

POVERTY

(percent)

	US	L.A. County		South Central L.A.	
	1990	1990	1970	1990	1970 (1)
Poverty Rates (All Persons)					
White	10.2	7.7	7.6	51.0	
Sample Size		177,191	49,927	502	
Standard Error		(0.2)	(0.4)	(2.2)	
Black	31.1	22.3	23.8	31.8	29.3
Sample Size		40,229	7,474	9,630	
Standard Error		(0.3)	(0.6)	(0.5)	
Hispanic	26.2	24.0	16.5	39.3	7.9
Sample Size		163,421	10,652	12,068	
Standard Error		(0.1)	(0.6)	(0.4)	
Child Poverty Rates (Children 18 & Under)					
White	12.7	10.2	7.8	53.9	
Sample Size		34,273	15,026	59	
Standard Error		(0.4)	(0.7)	(6.4)	
Black	41.6	33.4	31.4	46.9	
Sample Size		12,460	3,206	2,982	
Standard Error		(0.4)	(0.9)	(0.9)	
Hispanic	33.5	30.5	19.8	47.4	
Sample Size		62,547	4,862	5,264	
Standard Error		(0.2)	(0.9)	(0.7)	
Female Headed Households (Households)					
White	8.4	8.2	7.9	8.1	
Sample Size		77,540	18,572	184	
Standard Error		(0.3)	(0.6)	(5.9)	
Black	31.2	29.1	21.6	35.6	
Sample Size		14,499	2,369	3,456	
Standard Error		(0.4)	(1.2)	(0.8)	
Hispanic	18.1	16.9	12.5	20.8	
Sample Size		37,525	2,758	2,245	
Standard Error		(0.3)	(1.4)	(1.2)	

(1) White and black may also include hispanics.

Table 4b--continued
COMMUNITY FORCES

	US	L.A. County		South Central L.A.	
	1990	1990	1970	1990	1970 (1)
RACIAL DISTRIBUTION (percent)					
White	76.0	40.9	71.1	2.6	16.5
Sample Size		177,191	49,927	502	
		(0.1)	(0.3)	(4.1)	
Black	11.6	10.6	10.6	44.6	80.3
Sample Size		40,229	7,474	9,630	
		(0.4)	(0.9)	(0.5)	
Hispanic	8.7	37.4	15.2	50.6	7.9
Sample Size		163,421	10,652	12,068	
		(0.1)	(0.6)	(0.4)	
Asian	2.8	10.5	2.5	1.7	
Sample Size		46,030	1,761	344	
		(0.4)	(2.2)	(5.1)	
HOUSEHOLD MOBILITY(2) (percent)					
Households That Moved					
White	43.9	47.2		59.2	
Sample Size		82,952		425	
		(0.2)		(2.5)	
Black	45.3	47.0		33.6	
Sample Size		15,103		3,567	
		(0.4)		(0.8)	
Hispanic	55.6	52.8		59.3	
Sample Size		29,683		1,529	
		(0.3)		(1.3)	
Location Five Years Ago(3)					
White	1.8				
Abroad		5.4	1.3	21.4	
		(0.4)	(0.6)	(3.7)	
Other State		14.7	10.7	15.5	
		(0.3)	(0.5)	(4.2)	
LA County		65.9		51.2	
		(0.3)		(3.0)	
Rest of CA(4)		14.0	88.0	11.8	
		(0.4)	(0.5)	(4.5)	
Sample Size		38,009	24,319	256	
Black	2.8				
Abroad		1.6	0.5	1.3	
		(1.1)	(2.0)	(2.8)	
Other State		11.4	13.7	5.2	
		(0.9)	(1.4)	(2.5)	
LA County		82.1		91.9	
		(0.9)		(2.6)	
Rest of CA(4)		4.9	85.8	1.7	
		(1.0)	(1.6)	(2.8)	
Sample Size		6,930	2,369	1,161	
Hispanic	11.6				
Abroad		10.3	9.1	15.1	
		(0.6)	(1.5)	(2.2)	
Other State		3.1	6.5	1.4	
		(0.7)	(1.6)	(3.2)	
LA County		79.4		82.1	
		(0.6)		(2.5)	
Rest of CA(4)		7.2	84.5	1.4	
		(0.7)	(1.5)	(3.2)	
Sample Size		15,417	2,768	899	

(1) Racial distribution sums to more than 100% because whites and blacks may also include hispanics.
(2) Census micro-sample for 1970 did not ask if the household moved in the last five years, but did ask location five years ago.
(3) For 1990, location five years ago is only for households that moved. For 1970, it represents all households.
(4) In 1970, the Census only indicates if the household lived in the state five years ago. No county information is available.

Table 5
1960s Cross-City Data on Riots

Table 5a--Variable Values

Variable	Obs	Mean	Std. Dev.	Min	Max
Riot occurred 1965-1968	192	0.432	0.497	0	1
Southern city dummy	192	0.396	0.49	0	1
Segregation index 1960	192	86.084	7.525	60.4	98.1
Population 1960 (log)	192	11.946	0.897	10.829	15.867
Nonwhite population 1960 (log)	192	9.938	1.202	7.804	13.861
Age of nonwhite community	192	0.793	0.265	0.120	2.295
Nonwhite unemployment rate 1960	192	0.096	0.038	0.025	0.238
Relative Poverty Rate 1960	192	2.143	0.48	0.982	3.896
Relative Homeownership Rate 1960	192	0.714	0.176	0.308	1.556
Non-Police Government expenditures 196	192	97.778	61.651	11.939	551.827
Police Expenditures 1960	192	11.878	6.806	1.992	82.342
Arrests (log)	83	4.911	1.637	0.693	9.188
Arsons (log)	83	3.461	1.799	0	8.015
Injuries (log)	83	2.667	1.795	0	7.207

Table 5b--Variable Correlation

Variable (192 Observations)	occur	south	seg60	lpop60	lnwpop	age	nwunem60	relpov	relho	npolgov	polex60
Riot occurred 1965-1968	1.000										
Southern city dummy	-0.190	1.000									
Segregation index 1960	0.009	0.533	1.000								
Population 1960 (log)	0.377	-0.113	-0.013	1.000							
Nonwhite population 1960 (log)	0.370	0.207	0.231	0.772	1.000						
Age of nonwhite community	-0.243	0.621	0.379	-0.162	-0.014	1.000					
Nonwhite unemployment rate 1960	0.212	-0.428	-0.120	0.024	-0.044	-0.384	1.000				
Relative Poverty Rate 1960	-0.085	0.066	0.233	-0.167	-0.315	0.235	0.121	1.000			
Relative Homeownership Rate 1960	-0.124	-0.132	-0.115	-0.137	-0.053	-0.040	0.058	-0.140	1.000		
Non-Police Government expenditures 196	0.231	-0.035	-0.181	0.306	0.338	-0.129	-0.059	-0.275	-0.054	1.000	
Police Expenditures 1960	0.244	-0.244	-0.183	0.404	0.411	-0.268	0.071	-0.273	-0.028	0.709	1.000
Occur = 1 (83 Observations)											
Arrests (log)		0.050	-0.110	0.551	0.624	-0.141	0.032	-0.244	-0.086	0.240	0.202
Arsons (log)		0.007	-0.092	0.391	0.453	-0.120	0.110	-0.306	-0.044	0.071	0.015
Injuries (log)		-0.069	-0.170	0.662	0.618	-0.158	-0.016	-0.259	-0.080	0.312	0.308

Table 6
1960s Occurrence Regressions

	Regression 1	Regression 2
Dependent Variable: Occurrence		
Southern city dummy	-0.777 **	-0.899 **
	(0.349)	(0.375)
Segregation index 1960	0.015	0.022
	(0.018)	(0.018)
Log of total population 1960	0.029	0.025
	(0.222)	(0.227)
Log of nonwhite population 1960	0.569 **	0.554 **
	(0.190)	(0.203)
Age of nonwhite community	-0.518	-0.413
	(0.543)	0.550
Nonwhite unemployment rate 1960	5.308 *	5.601 *
	(3.214)	(3.238)
Relative poverty rate 1960 (nonwhite/total)	0.095	0.178
	(0.263)	(0.266)
Relative homeownership rate (nonwhite/total)	-1.346 **	-1.212 *
	(0.637)	(0.643)
Police expenditures per capita 1960		-0.013
		(0.033)
Non-police government expenditures per capita 1960		0.005 **
		(0.003)
Constant	-6.514 **	-7.637 **
	(2.262)	(2.422)
Pseudo R-squared	0.219	0.237
Observations	192	192

Note: Estimated as probit regressions.
Standard errors appear in parentheses.

* Statistically significant at the 10% level
* * Statistically significant at the 5% level

Table 7
1960s Riot Intensity Regressions

	Regression 1	Regression 2	Regression 3
Dependent Variables	**Log of Arrests**	**Log of Arsons**	**Log of Injuries**
Southern city dummy	-0.275	-0.598	-0.504
	(0.579)	(0.749)	(0.707)
Segregation index 1960	-0.058 **	-0.028	-0.040
	(0.024)	(0.031)	(0.029)
Log of population 1960	-0.488	-0.368	0.473
	(0.332)	(0.429)	(0.407)
Log of nonwhite population 1960	1.434 **	1.185 **	0.748 **
	(0.302)	(0.392)	(0.369)
Age of the nonwhite community	-1.010	-0.587	-0.971
	(0.696)	(0.902)	(0.852)
Nonwhite unemployment rate 1960	3.761	9.840 *	-2.140
	(3.963)	(5.128)	(4.861)
Relative poverty rate 1960 (nonwhite/total)	0.821 *	-0.562	0.463
	(0.432)	(0.559)	(0.528)
Relative homeownership rate (nonwhite/total)	-0.579	-0.359	-0.135
	(0.892)	(1.159)	(1.098)
Police expenditures per capita 1960	-0.059 **	-0.100 **	-0.038
	(0.026)	(0.035)	(0.032)
Non-police government expenditures per capita 1960	0.004	0.002	0.004
	(0.003)	(0.004)	(0.004)
Constant	0.425	0.096	-7.262 **
	(2.625)	(3.414)	(3.239)
Pseudo R-squared	0.194	0.118	0.164
Observations	83	83	83

Note: Estimated as tobit regressions.
Standard errors appear in parentheses.

* Statistically significant at the 10% level
** Statistically significant at the 5% level

Table 8
1990 Rankings of Large Cities by the Estimated Probability of a Riot Occurrence

Estimated Most Likely to Riot

New York
Washington, DC
Boston
San Francisco
Detroit
Philadelphia
Chicago
Baltimore
Los Angeles
Cleveland
Milwaukee
Indianapolis

Estimated Somewhat Likely to Riot

Memphis
Nashville
Phoenix
San Diego
Columbus

Estimated Least Likely to Riot

Houston
Seattle
San Jose
Jacksonville
Dallas
Austin
San Antonio

APPENDIX 1: SELECTED OTHER CITIES

City	Description of Events
Atlanta (GA)	Over 300 arrests and 20 injuries; mob attacks commuters at subway station; looting; police use teargas to control crowd of rock-throwing college students
Birmingham (AL)	Protesters set fires and attack a news crew; gunshots reported fired
Bridgeport (CT)	Store windows smashed
Denver (CO)	Store windows smashed
Detroit (MI)	Molotov cocktail tossed into police mini-station
Eugene (OR)	Minor damage
Las Vegas (NV)	Looting and arson; 2 killed; Governor orders in National Guard and city council declares curfew; about 20 buildings burned; police stations firebombed and 1 officer shot
Madison (WI)	Windows shattered on 34 police cars
Newark (NJ)	31 arrests for disorderly conduct
New Rochelle (NY)	Youths loot stores; police use teargas; molotov cocktail tossed into police station
New York (NY)	Times Square rally turns into violent rampage; more than 120 arrested; 33 police officers injured; shops and businesses close; protestors in Harlem attack two white men in a truck
Oakland (CA)	Minor incidents
Omaha (NE)	Several young men, shouting "It's Rodney King Day," stop traffic and throw bricks and rocks at passing cars
Peoria (IL)	Protestors attack police with rocks and bottles
Philadelphia (PA)	Minor incidents; man aims gun at police officer, shouts "Rodney King," and is shot
Pittsburgh (PA)	Arson reported; windows broken; group of black men beat white man making telephone call
San Diego (CA)	Demonstrators block freeway traffic; two officers fired on by sniper; several beatings
San Francisco (CA)	Demonstrators loot stores and set fires; more than 100 businesses damaged and more than 1,000 arrests made
San Jose (CA)	Peaceful rally turns into mob scene after TV crew shows up
Seattle (WA)	Violence breaks out following a demonstration; 100 youths run through downtown area just after midnight, breaking windows and overturning cars; more than 20 arsons and 40 arrests reported
Tampa (FL)	Youths throw rocks and bottles; shots fired
Toronto (Canada)	1,000 people go on a six-hour looting rampage; violence continues over several days
Warrensburg (MO)	100 Missouri State College students break windows, overturn car

Information gathered from a LEXIS/NEXIS search of current periodicals. Sources included articles from *Los Angeles Times*, *USA TODAY*, *Houston Chronicle*, *Financial Times*, *New York Times*, *Engineering News Record*, *Chicago Tribune*, *Boston Globe*, *Montreal Gazette*, *Electronic News Media*, UPI, and Reuters, and from *Facts on File*. Exact references available upon request.