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The Effect of Community-Level Socio-Economic Conditions on Threatening Racial Encounters

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ABSTRACT

The Effect of Community-Level Socio-Economic Conditions on Threatening Racial Encounters

This paper contributes to the emerging literature on racial and ethnic tension by analyzing the relationship between local socio-economic conditions and the propensity for outsiders to have threatening racial encounters with insiders. We use unique data for a sample of active-duty Army personnel that allow us to first, link personnel to the local communities in which they are located and second, to avoid any selectivity bias associated with endogenous community selection. We find at best mixed evidence that racial hostility is related to economic vulnerability within a community and no evidence that racial conflict can be linked to the level of public expenditure. Crime rates, however, are closely related to the incidence of threatening racial encounters and while a community's demographic profile is also clearly linked to racial tension, these relationships cannot be easily generalized across minority groups or type of threatening racial encounter.

JEL Classification: D74, J15

Keywords: racial and ethnic tension, U.S. military, economics of minorities

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1. Introduction

There is growing interest in understanding the forces within local communities that give rise to conflict between racial or ethnic groups. Such conflicts impose large costs on society and may be associated with social exclusion and an inability to achieve the long-term integration of minority groups (Dustmann et al. 2004; Gradstein and Schiff 2006). Recent debate has focused on the role of ethnic and racial concentration, fragmentation, demographic change and social distance as central factors in the development of prejudice and hostility towards minorities (Krueger and Pischke 1997; Green et al. 1998b; Dustmann and Preston 2001; Dustmann et al. 2004). Racial and ethnic tension is also seen to be the consequence of neighborhood heterogeneity (Sampson 1984; DiPasquale and Glaeser 1998) and increased ethnic fragmentation may result in reduced incentives for social capital investment (Alesina and La Ferrara 2000; Glaeser 2005) as well as a diminished capacity to reach consensus on social policies and the provision of public goods (Alesina et al. 1999, 2000, 2004; Alesina and La Ferrara 2003; Brasington 2003; Poterba 1997). On a global scale there are concerns that societies divided along ethnic and racial lines may be more likely to experience violent civil conflict (Collier 2001; Caselli and Coleman 2006) and have slower economic growth particularly when social and political institutions are poor (Easterly and Levine 1997; Easterly 2001).

Our goal is to contribute to the emerging literature on racial and ethnic tension by assessing the relationship between the characteristics of local communities and the propensity for outsiders to have threatening, racially-motivated encounters with insiders. Thus, our focus is on the geographic dimension of racial and ethnic intolerance. We are particularly interested in the following: First, how do economic and social conditions

affect the incidence of threatening racial encounters across local communities? Second, how do individuals' demographic and human capital characteristics affect the propensity to report incidents of racial or ethnic threats? Finally, what can we learn about alternative theories of the formation of community behavior towards outsiders?

In answering these questions, we take advantage of a unique survey of active-duty Army personnel—the Armed Forces Equal Opportunity Survey (AF-EOS)—which asks directly about racially-motivated, off-base incidents of physical intimidation, physical assault, and harassment by civilian police. Information extracted from the confidential AF-EOS data file allows us to identify separate Army bases and hence the local communities in which they are located. Consequently, we are able to analyze the extent to which racial hostility is related to the ethnic and racial composition, economic vulnerability, public spending, and crime level in the local community. Most importantly, as Army personnel are assigned to (rather than select) their bases, we are able to avoid the selectivity bias typically associated with research on neighborhood effects. In effect, the Army's assignment of personnel is akin to 'ignorable' treatment assignment in the evaluation literature (Rubin 1978) allowing us to use standard regression techniques to generate unbiased estimates of the causal effect of community characteristics on the incidence of threatening, racially-motivated encounters.[1]

We find at best mixed evidence that racial hostility is related to economic vulnerability within a community and no evidence that racial conflict can be linked to the level of public expenditure. Crime rates, however, are closely related to the incidence of

[1] The Army's personnel assignment process has also been used to assess the impact of pollution on child health (Lleras-Muney, 2006), the effect of parental absences on children's educational attainment (Lyle, 2006), the effect of work-related absences on divorce rates, spousal employment, and children's disability

threatening racial encounters and while a community's demographic profile is also clearly linked to racial tension, these relationships cannot be easily generalized across minority groups or type of threatening racial encounter.

In what follows we review the literature on racial and ethnic hostility within local communities focusing on the demographic and economic forces that are thought to give rise to racial tension generally. Section 3 lays out our estimation strategy including our conceptual framework and reduced-form estimation equation. Details of our data sample are provided in Section 4, while our results are presented in Section 5. Finally, our conclusions and suggestions for future research are discussed in Section 6.

2. Understanding Racial and Ethnic Hostility within Local Communities

A voluminous literature across the range of social science disciplines examines the role of race in interpersonal interactions in the United States, while the increasing representation of ethnic minorities in many European countries has focused attention on issues related to the social integration of ethnic minority groups.[2] At the heart of this literature is often a concern with understanding sources of inter-group conflict. In what follows, we briefly review this literature with an eye towards drawing broad conclusions about the economic forces that give rise to racial and ethnic hostility within a community.

How do economists think about racial and ethnic hostility? More than thirty years ago, Becker (1974) argued that concepts like envy and hatred could be analyzed by incorporating social interactions into a standard economic model of consumer demand. Caring about their relative position, rational individuals might choose to harm themselves

(Angrist and Johnson, 2000), and the community-specific determinants of consumer market discrimination (Antecol and Cobb-Clark 2008).

(i.e., give up some consumption) in exchange for the opportunity to harm others. More recently, Glaeser (2005) adopts a political economy perspective arguing that hatred is fostered by false stories propagated by political, business, or religious leaders for their own benefit.[3] Finally, like other social scientists, many economists see racial and ethnic tension as arising out of competition over scarce resources (e.g. Frijters 1998; Caselli and Coleman 2006) leading some economists to argue that racial identity itself can be considered a type of capital asset or economic property (Darity et. al. 2006).[4]

Despite the breadth of these theoretical frameworks, the empirical economics literature on conflict between racial and ethnic groups within local communities has been largely shaped by two key questions. In particular, how do socio-economic conditions–specifically the economic vulnerability of the majority group–affect the relationship between racial and ethnic groups? Is the incidence of prejudice, harassment and violence higher in areas where ethnic and racial minorities are a larger or a smaller share of the total population?

Though competition and scarce resources figure prominently in many economic models of group interactions, empirical studies exploring the effects of economic conditions on ethnic and racial tension generally find relative economic position to be a secondary issue. Economic hardship–i.e., high unemployment, low wages or relative poverty–does not appear to be the primary factor underlying the incidence of violence against foreigners in Germany (Krueger and Pischke 1997), hate crimes in New York (Green et al. 1998a; 1998b), race riots in Los Angeles (DiPasquale and Glaeser 1998),

[2] Specifically, Bowling (1993) reviews the emergence of racial violence as a social problem in Britain.
[3] Similarly, self-destructive warfare results from an agency problem in which politicians harm their nations in order to increase the probability of political success (Glaeser 2006).

attitudes towards and harassment of ethnic minorities in Britain (Dustmann and Preston 2001; Dustmann et al. 2004), or the geographic location of hate groups in the United States (Jefferson and Pryor 1999).[5] Moreover, after reviewing the available evidence, Krueger and Malečková (2003) conclude that there is little direct connection between having low education or living poverty and the decision to support or participate in terrorism. To the extent that competition is expected to be more intense in circumstances in which resources are scarcer (or amongst relatively disadvantaged individuals), this evidence indicates that factors other than simple economic competition are important drivers of racial and ethnic hostility across communities.[6]

In particular, sociologists often focus on the relationship between ethnic or racial composition and the incidence of inter-group conflict, though perhaps not surprisingly alternative theories often lead to conflicting hypotheses about the nature of this relationship.[7] On the one hand, larger minority populations may threaten the power or social distance enjoyed by the majority population thus increasing the potential for hostility towards minority group members. On the other hand, increased inter-group contact stemming from larger minority populations may diminish the power differentials and negative misperceptions between groups leading to less hostility (see Green et al. 1998b; Dustmann and Preston 2001; Dustmann et al. 2004). Which effect dominates is then an empirical question.

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[4] Green et al. (1998a) review the perspective on adverse economic conditions and inter-group hostility in the sociology and psychology literature.

[5] Dustmann et al., (2004) find that local unemployment rates are positively associated with harassment in single-equation models, though this effect disappears in multi-equation models that take into account correlation in unobserved characteristics.

[6] In fact, Jefferson and Pryor (1999) argue that historical accident may be more important than economic or sociological explanations of the geographic location of hate groups in the United States.

[7] See Green et al. (1998b) who provide a particularly helpful categorization of sociological theories relating the size of minority populations to the incidence of racial conflict.

Dustmann and Preston (2001) review the empirical evidence on the relationship between the representation of and negative attitudes towards ethnic minorities within local communities. Their review documents the complete failure of the empirical literature to achieve consensus on this issue–even when considering similar attitudes in the same country. A more limited literature suggests that acts of hostility–i.e., racial harassment or racially-motivated crime – are negatively related to the size of the minority group (Krueger and Pischke 1997; Green et al. 1998b; Dustmann et al. 2004). Finally, racially-motivated crime in local neighborhoods also seems to be related to demographic change (Green et al. 1998a; 1998b).

This divergence in empirical results–while frustrating for those interested in the design of public policy–is perhaps not surprising in light of the complexities of the underlying economic and social processes that give rise to inter-group conflict. At the same time, it is possible to take from this diverse literature two important lessons regarding the nature of racial and ethnic conflict in local communities. First, simple models of economic competition are insufficient to fully capture the nature of racial hostility. Second, it is important to estimate models that are flexible enough to consider not only the size of various racial and ethnic groups, but also more complex dimensions of racial/ethnic diversity such as the extent of racial fragmentation and polarization within local communities.

3. Estimation Strategy:

Our conceptual framework is based on economic models of victimization in which the propensity to experience crime depends upon the actions of victims and

perpetrators who interact within a specific social context (see Markowitz, 2004). Both precautionary and risky behaviors affect the chances of becoming a victim, while the social context determines the costs and benefits of criminal activity more generally. Because data are usually only available on perpetrators once a crime is committed, most researchers estimate reduced-form models of victimization that include the characteristics of potential victims, aggregate measures of the propensity of others to commit crimes, and dimensions of the social context.[8]

We adopt a similar logic and use the following reduced-form model to assess a soldier's propensity to report a threatening racial encounter in his or her local community (T_{ij}^{*}):

$$\begin{aligned} T_{ij}^{*} &= \mathrm{Z}_{\mathrm{j}}\phi + X_{ij}\beta + \varepsilon_{ij} \\ \varepsilon_{ij} &= \eta_i + \nu_{ij} \end{aligned} \tag{1}$$

where *i* and *j* indexes individuals and communities, respectively. While Z_j accounts for the socio-economic factors underlying community-level racial intolerance, X_{ij} controls for those individual characteristics thought to capture the nature of a soldier's interaction with the community as well as his or her perceptions of racial threats. Finally, ε_{ij} is an error term comprised of unobserved individual heterogeneity (η_i) and a random error term (ν_{ij}).

Identifying the exogenous effects of local communities from the effects of unobserved individual characteristics that are correlated with location choice can be

[8] Dustmann et al. (2004) rely on this approach in estimating the effect of a neighborhood's ethnic concentration on hostility towards ethnic minorities in the UK.

difficult.[9] Since individuals typically choose where they live, the characteristics of the local community (Z_j) will be correlated with both the observable (X_{ij}) and unobservable characteristics (η_i) of individuals. This selection process implies that $E(\varepsilon_{ij} \mid Z_j) \neq 0$ leading standard regression models to produce biased estimates of the effects of community characteristics ($\hat{\phi}$).[10]

Previous researchers have relied on instrumental variable techniques, fixed-effects estimation, natural experiments or randomized social trials to deal with this identification problem (Ludwig et al. 2001; Katz et al. 2001; Sacerdote 2001; Kling et al. 2005; Foster 2006). Here we exploit the fact that Army personnel are assigned to (rather than choose) their military installations. Though the Army's assignment procedure is not literally random in the sense that personnel are assigned to bases using a lottery, location assignments are made solely on the basis of an individual's skills or training and the Army's particular needs—not on the basis of race or ethnicity (Lleras-Muney 2006; Lyle 2006).[11] This assignment procedure in conjunction with our ability to control for individuals' skills implies that any unobserved characteristics related to the likelihood of reporting threatening racial encounters will be uncorrelated with community characteristics. In effect, any unobserved heterogeneity in individuals' propensity to report racial hostility is balanced across communities ensuring that we have unbiased estimates of the effects of community characteristics (see Rosenbaum and Rubin 1983).

It is not possible to provide direct evidence on the nondiscriminatory nature of the Army's procedures for troop assignment. We investigate this issue empirically, however,

[9] In effect, this model fits into the class of models designed to estimate the effects of neighborhood characteristics on individual behavior. See Manski (1993) for a discussion of the identification issues.
[10] See Plotnik and Hoffman (1996), Dietz (2002), and Haurin et al. (2002).

by analyzing the relationship between the observed characteristics of Army personnel and the characteristics of the community to which they are assigned. Specifically, there is a 21.0 percentage point disparity in the average reported incidence of threatening racial encounters between communities in the top and bottom quintile of the distribution. Oaxaca-Blinder decompositions indicate that at most between 3.2 and 24.9 percent of the gap in the incidence of threatening racial encounters is explained by variation in soldiers' characteristics across communities (see Table 1).[12] The vast majority of the gap in racial hostility stems from differences across communities in the likelihood that personnel with similar characteristics report threatening racial encounters. Community-level variation in the incidence of racial hostility does not, therefore, appear to be driven by the non-random assignment of Army personnel with particular characteristics to those communities. Moreover, Antecol and Cobb-Clark (2008) provide additional evidence using the same data sample that the Army's assignment procedure does not lead to racial differences in the chances of being assigned to a community in which ones own racial group is overrepresented and that—controlling for rank and skills—Army personnel of different races are equally likely to be assigned to communities with different characteristics.

Table 1 Here

These institutional arrangements and this empirical evidence gives us confidence that it is reasonable to assume that any unobserved individual characteristics affecting the

[11] For a discussion of military assignment procedures see http://usmilitary.about.com.

[12] We implement the decomposition as follows. We construct an indicator variable that equals 1 whenever a respondent reports experiencing a racially-motivated incident of physical intimidation, physical assault, or civilian police harassment in the local community. We then estimate a linear probability model of the determinants of threatening racial encounters separately for communities in the top and bottom quintile and calculate a standard Oaxaca-Blinder decomposition. The controls in the model include: race, gender,

propensity to report racial threats will be uncorrelated with the characteristics of local communities. The propensity of experiencing a threatening racial encounter is unobserved so we create an indicator variable reflecting the presence or absence of reported threatening racial encounters. Specifically,

$$\Pr(T_{ij} = 1) = \Pr(Z_j\phi + X_{ij}\beta > \eta_{ij}) = \Phi(Q\gamma) \tag{2}$$

where $Q = (Z_j, X_{ij})$, $\gamma = (\phi, \beta)$, $\eta_{ij} = \mu_j + \varepsilon_{ij}$, Φ is the standard normal cumulative density function. Finally, we assume that $\eta_{ij} \sim N(0,1)$ and that $E(\eta_{ij} \mid Q) = 0$. Thus, $\hat{\phi}$ provides an estimate of the causal effect of community characteristics on the incidence of threatening racial encounters related to race or ethnicity.

4. The Armed Forced Equal Opportunity Survey

We use a sample of Army personnel drawn from the public-use 1996 U.S. Armed Forces Equal Opportunity Survey (AF-EOS). We focus solely on Army personnel, excluding personnel from other branches of the military, as the previous literature documents that Army personnel's assignments to duty location are closely linked to the needs of the Army and can be treated as exogenous for our purposes (see Lleras-Muney 2006; Lyle 2006; Antecol and Cobb-Clark 2008). The data generalize to Army personnel with at least six months of active-duty service who are below the rank of general. Minority groups were oversampled to ensure adequate numbers of minorities were available for analysis. Questionnaires were mailed to sample members between September of 1996

family situation (marital status and the presence of children), education, rank, and the racial composition of an individual's military occupation.

and January of 1997 and the overall response rate was 52.7 percent (see Elig et al. 1997; Wheeless et al. 1997 for more details).

The AF-EOS data provide us with information on reports of threatening racial encounters, demographic and human capital characteristics, as well as a variable extracted from the confidential file that allows us to identify separate Army installations. The ability to identify unique Army installations is extremely important for our purposes as it allows us to match Army bases to their surrounding communities.

We restrict our analysis to personnel serving in the United States with non-missing installation codes so as to match individuals to their local communities.[13] Moreover, we only consider installations for which we have a sample of at least 10 active-duty members. Finally, we exclude Native-Americans due to small sample size. These restrictions produce a final sample of 6208 Army personnel across 67 separate installations with non-missing values for the key variables.[14]

4.1 The Incidence of Threatening Racial Encounters Across Communities

Army personnel captured in the AF-EOS were asked whether – as a result of their race or ethnicity – they had in the previous 12 months: 1) been harassed by local civilian police[15]; 2) been physically threatened or intimidated; or 3) been physically assaulted. We use these data to create three separate indicator variables which equal one whenever one of the above is reported and zero otherwise. We also create an indicator variable equal to one if any of the above is reported and zero otherwise. Means and standard

[13] We exclude members serving overseas as approximately 40 percent of overseas personnel have missing installation codes. Approximately 13 percent of members of the Army serving in the United States have missing installation codes.

deviations for our indicator of threatening racial encounters and its three underlying components are presented separately by race in Table 2.

Table 2 HERE

These results indicate that more than one in ten individuals on active-duty in the U.S. Army report experiencing some form of racial threat within their local community in the previous 12 months. While the overall incidence of threatening racial encounters is much the same among white, Hispanic, and Asian personnel, black soldiers are substantially more likely (14.4 percent) to report experiencing racial threats.

Moreover, there are important differences in the incidence of different types of threatening racial encounters. For all racial/ethnic groups, with the exception of blacks, physical threats and intimidation are the most common form of threatening racial encounters reported (that is, 10.6, 6.0, and 7.8 percent for white, Hispanic, and Asian personnel, respectively). Black personnel, on the other hand, are more likely to report having been harassed by local civilian police (10.3 percent) than to report having been physically threatened or intimidated (8.1 percent). The incidence of physical assault is less common and roughly the same (3 percent) for all racial/ethnic groups.

4.2 Characterizing Economic and Social Conditions within Local Communities

Threatening racial encounters are assumed to be driven in part by socio-economic conditions within the local community. We begin by defining the 'local community' surrounding each of the 67 bases identified in our estimation sample to be the set of individual towns, cities, or localities situated within a 10-mile radius of the specific

[14] The sample size varies depending on the measure of threatening racial encounters used—6191 (local civilian police harassment), 5279 (physically threatened/intimidated), and 5275 (physically assaulted).

base.[16] Community-level characteristics (drawn from Census data)[17] are matched to each individual city, town or locality within this 10-mile radius and then aggregated up to the 'local community' level weighting by population size.[18] Finally, local community-level characteristics are then assigned to each individual based on his or her installation. This process links soldiers to the social context within a particular community.[19]

We capture racial and ethnic diversity within a community using data on the share of the local population in various race groups (i.e. white, black, Asian, and other) in each community.[20] This allows us to assess whether threatening racial encounters are related to a community's racial and ethnic profile generally. At the same time, researchers have also argued that inter-group relations can be better understood in the context of racial fragmentation (e.g. Alesina et al. 1999, 2000; Alesina and La Ferra 2000; Easterly and Levine 1997; Easterly 2001), racial dominance (e.g. Collier 2001), or racial polarization (e.g. Alesina and La Ferrara 2004). Consequently, we present and discuss estimation results comparing all of these measures of racial and ethnic diversity in Section 5.1.3.[21]

We are also interested in analyzing the relationship between economic vulnerability and threatening racial encounters. Many social science theories link

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[15] This question also pertains to whether a member of one's family was harassed by local civilian police.
[16] We determined if a community is within 10 miles of an installation using "ePodunk", which is a search engine that allows one to map the distance between locations. For more information see http://www.epodunk.com.
[17] Community level characteristics were matched to the communities drawn from ePodunk using Geolytics CensusCD and Maps 1990.
[18] Crime (violent and property) and community-level spending on police protection and highways are aggregated to the county level as the underlying data are not available at a more disaggregated level.
[19] Alternative results based on a 5-mile radius and county-level definitions of "community" are substantively the same. These results are not presented here but are available upon request.
[20] While Census data do separately identify Hispanics, they are not a mutually exclusive racial group. Alesina et al. (1999) argue, however, that 'other' is a good measure of the Hispanic population as those in the other category are predominantly Hispanic. While Native Americans are excluded from estimation sample, they are of course included in the demographic profile of the community. Specifically, Native Americans are included in the 'white' category.
[21] Summary statistics for community- and individual-level variables are given in Appendix Table 1.

hostility and violence between groups to adverse economic conditions (see Green et al 1998a; Frijters 1998; Caselli and Coleman 2006). However, after carefully reviewing the empirical literature, Krueger and Malečková (2003) conclude that hate crimes appear to be independent of adverse economic conditions. We re-examine this issue in the context of military communities by incorporating three alternative measures of economic vulnerability (the unemployment rate, the poverty rate, and income inequality) into our analysis of threatening racial encounters.[22]

We also control for the incidence of crime and the level of public expenditure within the local community in order to account for the ways in which the social context may influence the degree of racial hostility. Specifically, our model includes separate measures of both the violent crime and property crime rates.[23] This division by type of crime is sensible given that violent crimes are more likely to be motivated by the intent to harm the victim, while property crime is more likely to be motivated by material gain (Becker 1974). This division is also consistent with evidence that, although low wages or a lack of education is associated with a higher probability of committing a property crime, the incidence of violent crime appears to be unrelated to economic opportunities (see Krueger and Malečková 2003 for a review). Moreover, others have argued that there is a link between racial and ethnic conflict, on the one hand, and a community's willingness and/or ability to invest in social capital and public goods provision on the other (Poterba 1997; Alesina et al. 1999, 2000, 2004; Alesina and La Ferrara 2000, 2003; Brasington 2003; Glaeser 2005). To account for this, we also include measures of the

[22] Income inequality is measured as the log of the ratio of per capita income for the racial group with the highest income and the income of the racial group with the lowest income in a local community. In this case, we separately identify the 'white' category from the 'Native American' category.

natural log of per capita community-level spending on police protection and highways in the model.[24] While the former is likely to be directly relevant for understanding racial crime and police harassment, the latter acts as a control for social infrastructure more broadly.[25]

Finally, our estimation model also includes an extensive list of individual-level characteristics that previous research suggests may be related to the propensity to report racial tension generally. Specifically, we include measures of demographic characteristics (indicator variables for being female, currently married, or in an interracial marriage as well as the presence of children), education levels (indicator variable for a college degree), and job characteristics (indicator variables for years of service, officer status, and the racial distribution of ones military occupation).

5. Threatening Racial Encounters within Local Communities

Estimation results (probit marginal effects and standard errors) based on equation 2 (henceforth referred to as Model 1) for our three measures of threatening racial encounters (physical threats, physical assault, and police harassment) are presented in Tables 3 through 5.[26] Specifically, while the estimates for community-level and individual-level determinants are estimated together, for convenience we present and discuss each separately. Table 3 provides estimates of the effects of economic

[23] Crime (violent and property) is calculated as (number of crimes/county population)*100,000. Therefore, it measures – at the county level – crimes per 100,000 of the population.
[24]Spending on public goods—both police protection and highways—is calculated as ln(general expenditures for public goods/county population).
[25] We also include, but do not report, controls for community size, whether the community is located in a southern or Pacific state, and the number of localities within each community.
[26] Marginal effects are evaluated at the means. Standard errors are calculated using the delta method and in all cases account for the clustering on communities.

vulnerability and social context, while results for racial/ethnic diversity and individual characteristics are presented in Tables 4 (top panel) and 5, respectively.

5.1 The Effect of Community Characteristics on Threatening Racial Encounters

5.1.1 Economic Vulnerability

Consistent with the previous literature, we find, at best, mixed support for the notion that racial hostility is related to economic vulnerability. On the one hand, there is a sizable effect of local unemployment rates on the probability that soldiers report having been physically threatened or intimidated in the local community surrounding their military installation. The effect of a marginal change in the civilian unemployment rate on the propensity for Army personnel to report being physically threatened or intimidated because of their race is 0.795 (see Table 3). In elasticity terms this implies that a one percent increase in the level of civilian unemployment leads to a 0.77 percent increase in the likelihood that a soldier reports being threatened or intimidated.[27] Together our measures of economic vulnerability are jointly significant in explaining both physical threats/intimidation and physical assaults. At the same time, we find no evidence that reported police harassment can be linked to the underlying economic vulnerability of a local community. Moreover, although economic vulnerability is jointly significant in explaining physical assaults, none of our three measures is individually significant and both income inequality and the poverty level are estimated to have the wrong sign. We are left then with large and positive effect of local unemployment rates on the extent to which individuals feel physically threatened or intimidated because of their race. This

may reflect either a higher degree of racial tension or a heightened sensitivity to racial issues generally.

Table 3 Here

5.1.2 Social Context

Despite arguments in the literature that racial conflict influences the extent to which communities can invest in social capital and provide public goods, we find no evidence that the reverse is true. The level of public expenditure on policing or highway infrastructure is unrelated to the degree of racial tension within local communities. Crime rates, however, are closely linked to the incidence of threatening racial encounters. Reported police harassment is positively related to the level of violent crime within a community, and is negatively related to the level of property crime. A one percent increase in violent crime leads to a 0.26 percent increase in police harassment, while a one percent increase in property crime results in a reduction in reported police harassment of 0.37 percent everything else constant. These results suggest that civilian police may be more aggressive in interacting with Army personnel in those communities in which violent crime is more prevalent. At the same time, reports of racially-based physical threats/intimidation and physical assaults are higher in communities in which the level of property crime is also higher. The diversity of results across type of crime (violent vs. property) lends support to the previous literature that argues the motivation for these two types of crime differs (Becker 1974; Krueger and Malečková 2003), while the diversity of results across type of threatening racial encounters (police harassment vs.

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[27] Elasticities are calculated as: $\frac{\partial y}{\partial x}\frac{\bar{y}}{\bar{x}}$

physical threat/intimidation or physical assault) suggests that the economic and social conditions driving these encounters are quite different.

5.1.3 Racial and Ethnic Diversity

We begin by measuring racial and ethnic diversity as the proportion of the local population in different racial groups. Perhaps not surprisingly, we find that the racial and ethnic profile of a community using this measure is linked to the reported incidence of threatening racial encounters between Army personnel and members of the local community (see Table 4, Model 1). Reports of physical threats/intimidation, physical assaults, and police harassment are all significantly more likely in those communities in which a higher proportion of the local population is Asian or Pacific Islander. Reported civilian police harassment is also higher in communities with a larger Hispanic population. A standard F test indicates that our race and ethnicity measures are jointly significant at the 5 percent level in all three cases. Moreover, the magnitude of these effects is substantial. Specifically, a one percent increase in the Asian/Pacific Islander population results in a 0.22 percent increase in the likelihood that a soldier reports being threatened or intimidated. A similar increase in the proportion of individuals reporting their race as "other" (i.e. predominantly Hispanics) results in a 0.12 percent increase in reports of police harassment. At the same time, threatening racial encounters between Army personnel and the civilian population are unrelated to the proportion of the local population that is black, while physical threats/intimidation and physical assaults are lower in communities with a larger Hispanic population—though these effects are imprecisely estimated and not statistically significant at standard levels. Thus, while a

community's demographic profile is clearly linked to racial tension, these relationships cannot be easily generalized across minority groups or type of threatening racial encounter.

Table 4 Here

We turn now to consider whether accounting for the number and relative size of racial groups or the distribution of the population across insider-outsider and majority-minority lines can provide additional insight into the ways in which racial and ethnic diversity are related to community-level conflict with outsiders. We consider five alternative measures of racial and ethnic diversity.

First, we consider two measures which differentiate the population into those who are first, "minority" vs. "majority" and, second, "insiders" vs. "outsiders". In particular, our first measure of racial and ethnic diversity is the proportion of the local population that is in a minority group (i.e. black, Hispanic, Asian or Pacific Islander), while the second measure controls for the proportion of the population in the local community that is outside ones own racial or ethnic group. These two measures in some sense reflect extreme positions on the nature of inter-minority group relations. In the first case, individuals' reports of threatening racial encounters are assumed to depend only on the proportion of the population that is non-white. The distribution of the local population across different minority groups is not taken into account. In the second case, individuals' likelihood of reporting racial conflict depends only on the proportion of the local population that is outside his or her own racial group. These two measures make different assumptions about the way in which community-level racial and ethnic diversity affect the likelihood that minority individuals report racial tension. While the first

assumes that a change in the size of a competing minority group has the same effect as a change in the size of ones own minority group, the second assumes that a change in the size of a competing minority group has the same effect as a change in the size of the majority (white) group. For white personnel, the two measures are the same.

Finally, we calculate a variety of measures that have been used in the literature to account for racial and ethnic diversity. Our third measure differentiates communities on the extent that they are fragmented, i.e. composed of many different racial and ethnic groups. Racial fragmentation (R_j) is given by:

$$R_j = 1 - \sum_k s_{kj}^2$$

where s_{kj} is the proportion of the population in community *j* that is in group *k* . In effect, R_j measures the probability that two individuals randomly drawn from the local population belong to different groups (see Alesina et al. 1999, 2000; Alesina and La Ferra 2000; Easterly and Levine 1997; Easterly 2001). Higher values of the index indicate more fragmentation. At the same time, Collier (2001) argues that the United States is generally characterized by racial dominance rather than racial fragmentation and moreover, that this distinction has important implications for the effect of ethnic diversity on economic performance. Consequently, we create a fourth measure of racial diversity which accounts for racial dominance within a local community and takes the value of 1 whenever s_{kj} > 0.85 for some group *k* in local community *j*. In our data, this measure defines communities in which whites are roughly 90 percent of the population. Finally, our fifth measure accounts for the extent of polarization within a community. Alesina and La Ferrara (2004) argue that a polarized community with two equally size groups

may be more unstable than one which is more racially fragmented because the two groups will often be in direct conflict with one another. This is conceptualized by an index of racial polarization (RQ) that takes the form:

$$RQ_j = 1 - \sum_k \left(\frac{0.5 - s_{kj}}{0.5} \right)^2 s_{kj}.$$

The index reaches a maximum when there are two groups of equal size.[28]

We re-estimated equation (2) substituting these five alternative measures of racial and ethnic diversity for the set of population proportions. The resulting marginal effects (and standard errors) are reported in Table 4, Models 2 through 6.

Our results indicate that the reported incidence of racial conflict is higher in communities with a larger minority population. Specifically, a one percent increase in the size of the minority population is associated with a 0.53 percent increase in police harassment, a 0.95 percent increase in physical threats/intimidation, and a 0.48 percent increase in physical assaults. The propensity of reporting threatening racial encounters also increases as the relative size of the population of outsiders grows. The effects of a one percent increase in the proportion of the local population that is in a racial or ethnic group different to ones own on racial conflict are of a similar magnitude ranging from 0.45 percent (physical assaults) to 0.97 percent (physical threats and intimidation). These results for a wide cross-section of U.S. communities are at odds with other evidence on racial harassment and racially motivated crime in Germany, the U.K, and

[28] There are two additional concepts that are occasionally used to characterize the extent of racial and ethnic diversity within a population. Green et al. (1998a,b) argue that it is the change in the representation of racial groups rather than overall population proportions which is important in understanding racially-motivated crime. Moreover, Caselli and Coleman (2002) discuss the importance of ethnic distance, i.e. the cost of assimilating into the dominant group, in understanding ethnic conflict. Unfortunately, our Census data do not provide us with sensible measures of either of these concepts.

New York (Krueger and Pischke 1997; Green et al 1998b; Dustmann et al 2004), suggesting that results based on particular institutional settings or on specific communities may not be easily generalizable.

Although racial fragmentation and racial polarization have been linked to a variety of important economic outcomes including participation in social activities, spending on public goods, public employment, economic performance, inter-racial crime, and the risk of civil conflict (Sampson 1984; Alesina et al. 1999, 2000; Alesina and La Ferra 2000; 2004; Easterly and Levine 1997; Easterly 2001), we find no evidence that the extent of fragmentation or polarization within a local community is related to the incidence of threatening racial encounters. Racially-motivated physical assaults are 7.1 percentage points more likely in those communities in which one racial group (generally whites) represents more than 85 percent of the total population, however, this effect disappears when population dominance is based on an 80 percent threshold. This suggests that any effect of racial dominance on reported physical assaults is concentrated in local communities with a high degree of racial segregation.[29] In contrast, Collier (2001) presents cross-national evidence that the effects of racial dominance in reducing economic growth and increasing civil wars occurs at much lower levels of segregation.[30]

5.2 The Effect of Individuals' Characteristics on Threatening Racial Encounters

Our conceptual framework implies that reports of threatening racial encounters will depend in part on the way that military personnel interact with their local communities

[29] These results are not presented here, but are available upon request. Seven communities fall under the 85 percent threshold while thirteen fall under the 80 percent threshold. Under both definitions, dominant communities are predominantly white.

and the extent to which they are inclined to attribute any unpleasant interactions to the effects of race or ethnicity. Neither of these can be observed directly in our data. Nevertheless, we have accounted for a range of demographic, human capital, and job characteristics which, arguably, are related to both the nature of a soldier's community interaction and his or her sensitivity to racial and ethnic issues.

Our results indicate that black, Hispanic, and Asian personnel are all significantly more likely than white personnel to report having been harassed by local civilian police because of their race or ethnicity. In particular, black soldiers are more than six times as likely to report police harassment as are their white counterparts, while Hispanic and Asian soldiers are more than twice as likely. It is unclear whether this indicates that minority personnel are more frequently in conflict with local civilian police or whether it reflects a greater tendency on the part of minority personnel to attribute conflict to the effects of race or ethnicity. Interestingly, however, race and ethnicity are generally unrelated to reports of racially-based, physical threats/intimidation and physical assault. The only exception is that relative to white soldiers, Hispanic soldiers are significantly less likely to report physical threats or intimidation. Thus, if a heightened sensitivity to race or ethnicity (rather than a greater propensity for experiencing conflict) underlies the higher incidence of reported police harassment among minorities, this does not appear to extend to other types of unpleasant encounters within the local community.

Table 5 Here

We find limited evidence that a soldier's family situation is related to the probability that he or she will report experiencing racial conflict within the local

[30] Specifically, Collier (2001) finds that racial dominance in the range of 45 to 60 percent has a small negative effect on economic growth, while dominance in the range of 45 to 85 percent has a large positive

community. Specifically, the presence of children does not impact a soldier's incidence of reporting any form of threatening racial encounters. The same is true for being married to someone of a different race or ethnicity with the following exception, we find that Army personnel who are married to someone of a different race or ethnicity are substantially more likely than other individuals to report that they (or their spouse) were harassed by the local civilian police. We do find, however, that married soldiers are significantly less likely than their single counterparts to report having been physically threatened/intimidated (45 percent less) or physically assaulted (56 percent less) because of their race or ethnicity. Of course, marital status is not easily observable making it unlikely that the perpetrators of racial threats specifically target single individuals. It is more probable that these results reflect an increased tendency for single individuals to put themselves in situations in which conflict is likely to occur.

Finally, there is some evidence that the incidence of threatening racial encounters is lower amongst women and those with higher human capital endowments. Specifically, female soldiers report only half of the racially-based physical assaults and less than half of the racially-based physical threats/intimidation of their male colleagues. The incidence of physical threats and intimidation is also dramatically lower (45 percent) among those soldiers with at least a college degree, while officers report substantially fewer physical assaults and less police harassment. Similarly, reports of police harassment are also less frequent among Army personnel with at least six years of active-duty service. Taken together, these results indicate that experiences of racial conflict vary dramatically across population groups.

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effect on civil wars.

6. Conclusions

This paper sheds light on the geographic dimension of racial and ethnic tension by analyzing the link between social and economic conditions within local communities and the propensity for outsiders to have a range of threatening, racially-motivated encounters with insiders. A unique survey of active-duty Army personnel allows us to link respondents to the local communities in which they are located. Consequently, we are able to analyze the extent to which reports of racially-motivated police harassment, physical threats/intimidation and physical assault are related to the ethnic and racial composition, economic vulnerability, public spending, and crime level in the local community. We avoid the selectivity bias typically associated with research on neighborhood effects by exploiting the exogenous nature of the Army's process for troop assignment to generate unbiased estimates of the causal effect of community characteristics on the incidence of threatening racial encounters.

We find that while the racial and ethnic profile of a community can be linked to the incidence of racial conflict between Army personnel and members of the local community, these relationships are not easily generalized across minority groups or type of threatening racial encounter. In aggregate, the reported incidence of threatening racial encounters is higher in communities with a larger minority population or as the population outside ones own racial group grows, though there are instances in which conflict declines as the relative size of some minority populations grow. We also find that the incidence of police harassment is positively (negatively) related to the level of violent (property) crime within a community, while reports of racially-based physical threats/intimidation and physical assaults are more common in communities high

property crime rates. We find at best mixed evidence that racial hostility is related to economic vulnerability within a community and no evidence that racial conflict can be linked the level of public expenditure. Finally, at an individual level, we find that variation in the propensity to report threatening racial encounters is related to differences in ones race and ethnicity as well as ones family situation.

These findings lead to a number of important conclusions. First, threatening racial encounters between insiders and outsiders appear to be driven largely by a community's demographic profile and crime level. Despite the crucial role of economic competition in many social science theories of inter-group conflict (Frijters 1998; Green 1998a; Caselli and Coleman 2006), our results for military communities in the U.S. are consistent with what Krueger and Malečková (2003) conclude and is the emerging consensus in the empirical literature, i.e. that hate crimes can be viewed as independent of economic deprivation. Given this, there is a need to continue to make progress on the formulation of alternative theories which can be useful in understanding the stylized facts. If economic deprivation is not the source of inter-group conflict then what is?

Second, the diversity of results across types of encounters—police harassment on the one hand versus physical threat/intimidation and physical assault on the other—suggests that the economic and social conditions driving these encounters are quite different. While perhaps intuitively obvious, nonetheless, this disparity clearly suggests that one size does not fit all. It is highly unlikely that one conceptual framework or theoretical model will provide an adequate representation of all forms of inter-group conflict across all types of communities. It is important that we begin to understand the

ways in which alternative forms of inter-group hostility differ and the extent to which our understanding of one situation can be applied to another.

Finally, our results suggest that variation in the incidence of racial conflict does not stem solely from unobserved heterogeneity in the propensity to attribute conflict to the effects of race or ethnicity. And, moreover, that there is potential for individuals to alter the risk of experiencing racial conflict by taking precautionary actions (or alternatively engaging in risky behavior).[31] At the same time, given the lack of direct measures of these issues in the AF-EOS data, our results are necessarily inferential. Consequently, there is a need to develop better data sources that can shed light on the way in which individuals' experiences of racial and ethnic conflict depend on their own behavior and on their sensitivity to racial and ethnic issues generally.

[31] See Dustmann et al. (2004) on this point.

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Table 1. Oaxaca Decomposition Results

	Low Weights		High Weights	
	Mean	Std. Error	Mean	Std. Error
Total Differential in Reports of Threatening Racial Encounters[a]	0.2102***	0.0219	0.2102***	0.0219
Attributable to Differences in Characteristics	0.0001	0.0021	0.0524***	0.0213
Percent due to Differences in Characteristics	0.0319		24.9095	
Attributable to Differences in Coefficients	0.2101***	0.0220	0.1578***	0.0252
Percent due to Differences in Coefficients	99.9681		75.0905	

Notes: ***, **, and * indicate significant at the 1, 5, and 10 percent levels, respectively. [a] This is the difference in the incidence of threatening racial encounters in the 20 percent of communities with the highest level of threats and the 20 percent of communities with the lowest level of threats.

Table 2. Threatening Racial Encounters and its Components by Race

	Overall	White	Black	Hispanic	Asian
Threatening Racial Encounters	**0.114**	**0.105**	**0.144**	**0.095**	**0.092**
	(0.318)	(0.306)	(0.351)	(0.293)	(0.289)
	[6208]	[1404]	[2040]	[1689]	[1075]
Local Civilian Police Harassment	0.042	0.015	0.103	0.040	0.045
	(0.200)	(0.120)	(0.304)	(0.197)	(0.207)
	[6191]	[1400]	[2030]	[1688]	[1073]
Physically Threatened/Intimidated	0.094	0.106	0.081	0.060	0.078
	(0.293)	(0.308)	(0.272)	(0.238)	(0.268)
	[5279]	[1261]	[1650]	[1427]	[941]
Physically Assaulted	0.030	0.029	0.032	0.038	0.031
	(0.172)	(0.167)	(0.176)	(0.190)	(0.173)
	[5275]	[1263]	[1645]	[1427]	[940]

Notes: Sampling weights used. Standard deviations in parentheses. Sample size in brackets. Threatening racial encounters is coded as 1 if respondent reported experiencing at least one of the respective behaviors, and 0 otherwise. Local civilian police harassement is coded as 1 if responcent reported yes and my race/ethnicity was a factor, and 0 otherwise. Physically threatened/intimidated and physically assaulted are coded as 1 if respondent reported either once or twice, sometimes or often, and 0 otherwise.

Table 3. Determinants of Threatening Racial Encounters: Economic Vulnerability and Social Context
(Probit Marginal Effects and Standard Errors)

	Local Civilian Police Harassment	Physically Threatened/Intimidated	Physically Assaulted
Model 1			
Economic Vulnerability			
Income Inequality	-0.008	-0.026	-0.018
	(0.012)	(0.047)	(0.016)
Poverty Rate	-0.035	0.047	-0.082
	(0.068)	(0.179)	(0.059)
Civilian Unemployment Rate	0.071	0.795***	0.081
	(0.080)	(0.292)	(0.082)
P-Value of Joint Test	0.647	0.012	0.012
Social Context			
Crime			
Violent Crimes^,^^	0.018**	-0.024	-0.011
per 100,000 Population	(0.007)	(0.025)	(0.008)
Property Crimes^,^^	-0.003*	0.014***	0.004***
per 100,000 Population	(0.002)	(0.005)	(0.001)
P-Value of Joint Test	0.030	0.015	0.009
Public Goods			
Ln(General Expenditures for Police Protection/	0.002	-0.019	-0.009
County Population)^	(0.007)	(0.020)	(0.006)
Ln(General Expenditures for Highways/County	0.003	-0.000	0.003
Population)^	(0.003)	(0.014)	(0.005)
P-Value of Joint Test	0.631	0.519	0.309
Observations	6191	5279	5275

Notes: All specifications also include controls for social context (i.e., South, Pacific, Ln(Total Population/1000), and Number of Communities) and the individual characteristics listed in Table 4. ^ Measured at the county level. ^^All crime variables are included in the probit as crime/1000. Sampling weights used. Standard errors are adjusted for clustering by community. ***, **, and * indicate significant at the 1, 5, and 10 percent level, respectively.

Table 4. Determinants of Threatening Racial Encounters: Measures of Racial/Ethnic Diversity (Probit Marginal Effects and Standard Errors)

	Local Civilian Police Harassment	Physically Threatened/Intimidated	Physically Assaulted
Model 1			
Percent Black	0.018	-0.006	-0.005
	(0.023)	(0.098)	(0.032)
Percent Asian/Pacific Islande	0.082***	0.281***	0.042***
	(0.012)	(0.047)	(0.016)
Percent Other	0.145***	-0.336	-0.120
	(0.052)	(0.251)	(0.092)
P-Value of Joint Test	0.000	0.000	0.013
Model 2			
Percent Minority	0.064***	0.258***	0.042***
	(0.015)	(0.051)	(0.016)
Model 3			
Percent Not You	0.045**	0.176***	0.026**
	(0.020)	(0.054)	(0.012)
Model 4			
Fragmentation	0.036	0.099	-0.029
	(0.027)	(0.120)	(0.031)
Model 5			
Polarization	0.019	0.108	-0.007
	(0.019)	(0.079)	(0.019)
Model 6			
Dominance (>85%)	0.004	0.041	0.071**
	(0.010)	(0.038)	(0.035)
Observations	6191	5279	5275

Notes: All models also include controls for the community level characteristics and the individual level characteristics listed in Tables 3 and 5, respectively. Sampling weights used. Standard errors are adjusted for clustering by community. ***, **, and * indicate significant at the 1, 5, and 10 percent level, respectively.

Table 5. Determinants of Threatening Racial Encounters: Individual Level Characteristics (Probit Marginal Effects and Standard Errors)

	Local Civilian Police Harassment	Physically Threatened/Intimidated	Physically Assaulted
Model 1			
Race			
Black	0.095***	-0.003	0.006
	(0.013)	(0.020)	(0.006)
Hispanic	0.031**	-0.036***	0.004
	(0.013)	(0.011)	(0.007)
Asian	0.038*	-0.014	0.003
	(0.021)	(0.016)	(0.008)
P-Value of Joint Test	0.000	0.019	0.682
Family Situation			
Married	-0.006	-0.043*	-0.017***
	(0.005)	(0.024)	(0.007)
Mixed Marriage	0.024*	0.012	0.009
	(0.014)	(0.017)	(0.009)
Presence of Kids	-0.007	-0.009	0.004
	(0.007)	(0.017)	(0.005)
Education			
College	-0.006	-0.043**	0.003
	(0.008)	(0.022)	(0.010)
Female	-0.005	-0.059***	-0.015***
	(0.007)	(0.009)	(0.002)
Years of Active Service			
6 or less	0.017***	0.023	0.008
	(0.006)	(0.014)	(0.005)
Officer	-0.015***	0.004	-0.022***
	(0.004)	(0.036)	(0.005)
Observations	6191	5279	5275

Notes: Based on the results presented in Tables 3 and 4, Model 1. Sampling weights used. Standard errors are adjusted for clustering by community. Model 1 also included controls for the racial distribution of ones military occupation. ***, **, and * indicate significant at the 1, 5, and 10 percent level, respectively.

Appendix Table 1. Summary Statistics

	Mean	Std. Dev.
Community-Level Characteristics		
Racial/Ethnic Diversity		
Percent White	0.654	0.161
Percent Black	0.240	0.147
Percent Asian/Pacific Islander	0.073	0.164
Percent Other	0.033	0.041
Percent Hispanic	0.087	0.131
Percent Not You	0.521	0.275
Percent Minority	0.346	0.161
Racial Fragmentation	0.433	0.104
Polarization	0.751	0.176
Dominance (>85%)	0.082	0.275
Economic Vulnerability		
Income Inequality	0.665	0.169
Poverty Rate	0.146	0.044
Civilian Unemployment Rate	0.092	0.030
Crime^		
Violent Crimes per 100,000 Population	607.291	433.806
Property Crimes per 100,000 Population	5149.707	2469.232
Public Goods^		
General Expenditures for Police Protection ('000s)	3.945	0.601
General Expenditures for Highways ('000s)	3.728	0.771
Social Context		
South	0.691	0.462
Pacific	0.151	0.358
Ln(Total Population/1000)	3.976	1.126
Number of Communities	8.169	11.850
Individual-Level Characteristics		
Race		
Black	0.269	0.443
Hispanic	0.099	0.299
Asian	0.025	0.157
Family Situtation		
Married	0.681	0.466
Mixed Marriage	0.121	0.326
Presence of Kids	0.521	0.500
Education		
College	0.218	0.413
Female	0.148	0.355
Years of Active Service		
6 or less	0.459	0.498
Officer	0.189	0.391
% Minority in DoD Occupation Group (Enlisted-E; Officer-O)		
8.4-24.3 (E); 0-12.1 (O)	0.181	0.385
24.5-28.6 (E);12.3-13.8(O)	0.052	0.222
29.1-34.4 (E);14.1-14.8(O)	0.352	0.478
35.8-42.2 (E);14.9-17.7(O)	0.168	0.374
42.7-46.4 (E);17.8-20.3(O)	0.094	0.292
47.2-54.3 (E);20.8-37.4(O)	0.153	0.360
Number of Observations	6,224	

Notes: Sampling weights used. ^ Measured at the county level.