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Understanding Variations in Local Conflict: Evidence and Implications from Indonesia

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Summary. — Recent studies of large-scale "headline" conflicts have excluded consideration of local conflict, in large part due to the absence of representative data at low levels of geographic specification. This paper is a first attempt to correct for that by assessing the incidence, impacts, and patterns of local conflict in Indonesia. We employ a combination of qualitative fieldwork with an exploratory statistical analysis of the 2003 Village Potential Statistics collected by the Bureau of Statistics (*Potensi Desa*-PODES), which maps conflict across all of Indonesia's villages/neighborhoods. Violent conflict can be observed throughout the archipelago. The qualitative analysis shows that local conflicts vary in form and impacts across districts, and that local factors are key. The quantitative analysis, which excludes high conflict areas of Indonesia, confirms the importance of economic factors, with positive correlations between violent conflict and poverty, inequality, and variables measuring economic development. Clustering of ethnic groups and ill-defined property rights were also positively associated with violence.

Key words — Asia, Indonesia, conflict, violence, poverty, ethnicity

1. INTRODUCTION

Headline conflicts such as major instances of civil war, and their ensuing setbacks for economic development, have in recent years been given increased attention. In many cases, however, conflict does not escalate to that scale. Localized, low intensity conflicts are common in many developing countries (Ayres, 1998; Moser & Rodgers, 2005; World Health Organization, 2002). In the context of a weak institutional environment, realignments in power and resources, and challenges to existing interests and values—phenomena inherent in the development process—can lead to social tensions and conflicts that, in cases, result in violence (Bates, 2000). Such conflicts do not normally manifest themselves as major crises, with large explosions resulting in high death tolls associated with particular outbreaks. Rather, in most cases they result in local tensions and (sometimes) violence, with each incident resulting in fewer casualties and conflict concentrated locally, within or between villages, rather than at higher levels (Barron, Diprose, & Woolcock, 2007a, 2007b). These local conflicts reduce human security, an essential component of welfare, and can provide the fuel for larger incidents of unrest. In the long run, they constitute a major barrier to development.

Systematic evidence on the presence of local conflict, and on the underlying factors associated with it, is limited. Important strands of the conflict literature have sought to investigate conditions that affect the probability of countries experiencing large-scale violence and, in particular, the likelihood of civil war.[1] More recently, a new research program on the micro-dynamics of civil wars has emerged offering scope to understand how different factors such as poverty, access to resources, and demographic structure explain intra-country variation (Kalyvas, 2008). Yet while progress has been made in explaining large-scale "headline" conflicts such as civil wars, this has not been accompanied by a systematic consideration of local conflict. Understanding the factors that affect the onset and escalation of localized violence and conflict is important to designing strategies and programs aimed at speeding development while ensuring human security.

Indonesia exemplifies both the importance of local conflict and the relative lack of theory and empirical evidence to help understand it. The fall of Suharto's New Order government in 1998 was accompanied by, and helped trigger, large-scale outbursts of periodic inter-communal conflict in provinces such as West and Central Kalimantan, Maluku, and Central Sulawesi, resulting in thousands of deaths and violence in Jakarta, where at least 1000 people died in the May 1998 riots (Varshney, Rizal, & Tadjoeddin, 2008). After a period of détente, the separatist civil war in Aceh also reignited, killing thousands more.

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Such outbreaks stemmed from what Bertrand (2004) had called Indonesia's "critical juncture." As Indonesia began to transition from the autocratic political structure of Suharto's New Order to a new, more open system, different elites (in many cases ethnically or religiously aligned) staked their claim, often in violent ways, for influence in the new democratic Indonesia. Resistance from the army to losing its political influence and sources of economic rent-taking further contributed to unrest (Mietzner, 2006). A literature on conflict in Indonesia has considered the causes and destructive results of violence in a set of "high conflict" provinces. [2]

Yet the violent *local* conflicts that also accompanied the post-Suharto transition are understudied. The authoritarian regime managed conflict through repression with state structures regulated and vertical in nature, and the army, through its presence in each and every Indonesian village, quelling any latent unrest (Malley, 2001). When the New Order regime collapsed, few effective institutions remained for problem solving and conflict management. Local and traditional mechanisms had been undermined throughout the Suharto era (World Bank, 2004). State institutions, especially the security and justice sectors, were no longer trusted, in many cases were corroded by corruption, and were vastly under-funded (The Asia Foundation, 2001). The subsequent wave of more localized conflict over local issues appears to be persistent. A small but growing body of work has started to examine the incidence and forms of local conflict in a range of places across Indonesia, usually through case studies. [3] However, the absence of representative data at low levels of geographic specification over wider areas has negated against the development and testing of hypotheses on the factors that cause localized violence.

In this study, we assess the incidence, impacts, and patterns of local conflict in Indonesia. The study contributes toward understanding of the distribution and patterns of violent local conflict in Indonesia, and the relationship between the incidence of local violent conflict and local factors in post-Suharto Indonesia. The vast majority of comparative studies of violent conflict have tended to focus on cross-national comparisons, and to examine civil wars. This study seeks to contribute to the emerging field of micro-quantitative studies on conflict (Kalyvas, 2008) by looking at the patterns of local conflict in Indonesia, and by looking at the local factors that are associated with varying levels. The qualitative work, and the rich data available, allows us to derive and test a broad set of hypotheses regarding the patterns of local violent conflict, and relating to economic, social, and institutional factors associated with it.

The paper does so by drawing on recently gathered qualitative and quantitative data on the topic. The former stem from a study conducted by the World Bank on conflict and community development (the KDP and CCN study) covering four districts in East Java and East Nusa Tenggara provinces. [4] Nine months of qualitative fieldwork took place in 41 villages during January 2003–February 2004 (Barron *et al.*, 2004; Barron *et al.*, 2007a, 2007b); this was complemented by a review of all incidents of local conflict during 2001–03 reported in the local newspapers from seven districts in East Java and five in East Nusa Tenggara (Barron & Sharpe, 2005, 2008). The quantitative dataset on conflict stems from a government census of every urban and rural village in Indonesia, more than 69,000 in total: the Bureau of Statistics' Village Potential or PODES survey. In 2003, this census collected for the first time data on the presence of conflict. The census reported conflict in 7% of villages and neighborhoods in 2002, with 4.4% reporting violent conflict.

Together, the data provide a unique opportunity to gain a better understanding of the distribution of violent conflict across Indonesia, to test hypotheses relating to factors that may potentially be associated with violent local conflict, and to investigate the empirical considerations related to tracking such conflict. Given endogeneity problems, and the limitations of surveys in understanding the mechanisms by which factors become important (George & Bennett, 2005), the paper takes a modest objective, aiming to identify correlates rather than causes of violent local conflict. As such, it should be seen as an exploratory exercise.

The paper proceeds as follows. Section 2 discusses the results of the qualitative fieldwork and newspaper conflict mapping. We describe the types of conflict found, and factors that caused incidents to escalate into violence. From this, and the broader literature on conflict, we generate hypotheses regarding the factors that might be associated with violent local conflict in Indonesia. These are discussed in Section 3. Section 4 introduces the PODES data, describing the conflict measure it uses. Section 5 contains the results of the quantitative analysis. Excluding data from the six "high conflict" provinces and Jakarta in order to consider only local conflict, we look for patterns of correlation between the potential conflict-inducing factors outlined in Section 3 (with variables taken from the village and population censuses) and the presence of violent local conflict. While we do not claim to be able to test the hypotheses for causality, integration of the qualitative fieldwork allows for tentative exploration of the relationship between potential causal factors and violent conflict incidence. Section 6 concludes.

2. LOCAL CONFLICT IN INDONESIA: EVIDENCE FROM FIELD WORK IN TWO PROVINCES

The qualitative data for this study stem from the KDP and CCN study, which attempted to provide a better understanding of the nature of local conflict in Indonesia, and the impact of development projects on the pathways of local conflicts. The research involved 12 researchers living in 41 villages in four districts (Ponorogo, Pamekasan, Sikka and Manggarai) in two Indonesian provinces (East Java and East Nusa Tenggara) for nine months. In the field they collected case studies on a range of different kinds of local disputes, some of which ended peacefully, others which became violent. Villages were chosen purposively, with district conflict mapping used to identify "interesting" cases to follow-up based on detailed criteria aimed at allowing for the isolation of program impacts. [5] The results of this study give a picture of the levels and forms of local conflict that exist in a range of different areas, the extent of variation, and factors that help determine levels of local conflict and that cause them to escalate into violence. These feed into the hypotheses discussed in the next section.

Conflicts found in the research areas include those over land and natural resources (which ranged from large ethnic conflicts to private conflicts over inheritance), cases of vigilante justice (against thieves, witchdoctors, *etc.*), gang fights, political disputes (e.g., over local elections and administrative boundaries), conflict over access to and the management of development resources, and domestic and sexual violence. In order to assess how representative the case studies were, the extent of variation between areas, and aggregate impacts, a dataset of conflicts as reported in the local newspapers in the research areas and surrounding districts was constructed (Barron & Sharpe, 2005, 2008).

Table 1. *Violent incidents and deaths in 12 districts in East Java and East Nusa Tenggara by conflict type as reported in local newspapers in 2001–03*

Type	# violent incidents	# deaths
Physical resources	70	73
Administrative/development	43	5
Political position and influence	8	2
Vigilantism and retribution	430	168
Other	30	27
Total	581	275

Source: KDP and CCN dataset (Barron & Sharpe, 2008).

As can be seen from Table 1, violent local conflict has significant impacts in our research areas. Two hundred and seventy five people died in the 2001–03 period in a range of different types of disputes. Violent physical resource conflicts (largely over contested land) and vigilante attacks (including revenge attacks and lynching related to theft, alleged witchcraft, sanctioning of social "deviants," sexual indiscretion, and broader identity clashes) were the most significant in terms of impact. There was a large variation in the levels and impacts of violent conflict across the 12 districts covered. In Ponorogo district (East Java), four persons were killed in local conflicts during 2001–03, and 7 died in Ngada (East Nusa Tenggara). At the other end of the spectrum, 38 died in Sampang (East Java) and 52 in Manggarai (East Nusa Tenggara). The newspaper dataset showed that the qualitative case studies were broadly representative of the forms of local violent conflict present in the research areas (Barron & Sharpe, 2008).

There was also a large variation in the most prominent forms of violent conflict across areas. Within each area, serious disputes tend to be over a given issue (e.g., land), and there are also commonalities within areas in how such conflicts are "expressed," the ways in which actors participate in conflictual action and the symbols and strategies they employ (Barron & Sharpe, 2005). In both provinces, the most violent forms of conflict were those seemingly driven by local cultural behaviors and norms: the history and development of rival *silat* (martial arts) groups in the Ponorogo research area in East Java; Madurese culture, at the other end of East Java, that condones and even insists on bloody retribution over matters of honor; the communal battles over traditional land ownership and usage rights in parts of East Nusa Tenggara, where actors split along lines of ethnicity and kinship.

Comparative analysis of the cases found that three sets of variables tended to explain the prevalence of local conflict and the likelihood of it escalating into violence (Barron *et al.*, 2004). The first relates to the "rules of the game," the laws and norms that shape the immediate context in which disputants, their representatives, or external mediators engage one another. In some of our sites, multiple ethnic groups exist, each with different sets of laws and norms governing life. In the absence of a formal rule of law, these customary rules sometimes clashed with each other and with formal state legislation. This was particularly true of conflicts over land, when different kinship groups had different rules and understandings of how land should be allocated. The most serious conflict incident in the dataset—resulting in 15 deaths—was of such a nature (Clark, 2004). Poor enforcement of rules was also a significant factor contributing to cases escalating.

The second realm focuses on the "dynamics of difference"—the ways and means by which inter-group relations are constructed, and are able to be mobilized, re-imagined, and exploited for strategic advantage. Where groups saw themselves as different, conflict between them was more likely. Such differences are not static and given. Rather, the research found that identities morphed based on a range of factors including population movements, the political motivations of leaders, and the extent to which common institutions (such as places of worship) existed.

The third relates to the "efficacy of intermediaries," the actions of mediators, leaders or officials in conflict resolution, and the extent to which they possess the necessary legitimacy, willingness, and capacity to both make and enforce decisions. Intervention by local leaders (formal and informal) and state institutions (e.g., the security sector) proved decisive in many cases in preventing conflict escalation; where intermediaries were not present, conflicts tended to escalate.

The study thus showed the significance of local violent conflict and large variation in violent conflict levels and forms across districts. It also showed that local demographic, economic, and institutional structures are key in shaping the prevalence of different forms of local conflict and the likelihood of them escalating into violence. This suggests a range of factors which may be correlated with the incidence of violent conflict and which can be tested using variables from a number of large-*n* surveys conducted in Indonesia.

3. HYPOTHESES ON FACTORS ASSOCIATED WITH VIOLENT LOCAL CONFLICT

The qualitative fieldwork and conflict mapping identified three realms of variables that may shape the incidence and trajectories of local conflict in Indonesia. Ideally, we would test hypotheses relating to these variables in the large-*n* study. However, the PODES and other datasets we use, such as the population census, do not contain questions that allow us to directly test these hypotheses quantitatively. The qualitative study addressed processes of conflict escalation, something that is difficult to do with a single time period quantitative dataset. This paper aims to identify correlates of violent conflict, not the pathways by which such correlates become important, which would require an investigation of causality (Ragin, 1987).

As such, we adapted the hypotheses generated from the qualitative work based on the presence of suitable proxy variables in the quantitative datasets and the existing literature on the causes and pathways of violent localized conflict from Indonesia and elsewhere. These hypotheses form the basis for the specification of the quantitative models presented in Section 5. The ways in which these hypotheses fit with those from the qualitative work are detailed below.

Three sets of hypotheses are distinguished. The first relates to the composition of the population and the ways in which tensions between different groups could result in conflict. The second set is organized around economic explanations of conflict, and includes hypotheses relating to poverty (absolute and relative), economic development, and unemployment. The third set relates to institutional factors, including the presence of informal institutions, the distance from government services, and the institutions that govern land distribution and management. Table 2 presents the exact definitions of the variables used in the empirical analysis. The ways in which these factors might be correlated with the likelihood of violent conflict occurring are discussed below. In Section 5 we interpret the results in the light of findings from the qualitative case study work, which showed in greater depth the mechanisms by which particular variables become salient.

Table 2. *Definition of variables used in regression analysis*

Variable	Definition	Source
Nature/respondent characteristics		
Population	Village population (/1000)	PODES
Population density	Village population/village area in hectares (/10)	PODES
Natural disaster	A natural disaster defined as earthquake, landslide, or flooding occurred in last 3 years	PODES
Mountain	Village located in mountainous area (excluded category is flatland)	PODES
Seaside	Village located on seaside (excluded category is flatland)	PODES
Valley	Village located in valley (excluded category is flatland)	PODES
Village leader present	Village leader is present in village/neighbourhood	PODES
Village leader is female	Equals one if village leader is present and female, zero otherwise	PODES
Village leader age	Equal to the age of village leader if present, zero otherwise	PODES
Village leader years education	Equal to the years of education of the village head (based on completed level of education), zero otherwise	PODES
Population composition		
Ethnic diversity of sub-district	Based on self-reported ethnicity in the CENSUS, see section on diversity measures in Appendix A	CENSUS
Ethnic clustering of ethnic groups in villages within sub-district	Clustering of ethnic groups across villages in sub-district. Based on self-reported ethnicity in the CENSUS, see section on ethnic clustering measure in Appendix A	CENSUS
Multiple ethnic groups	Equals one if village head reports that there is more than one ethnic group in the village, zero otherwise	PODES
Multiple religions	Equals one if village head reports that there is more than one religion in the village, zero otherwise	PODES
Share of Javanese, Off-Java in 1995	# of Javanese divided by population in sub-district, both in 1995. Set to zero for villages on Java. Reconstructed variable from the migration information in the census	CENSUS
Share migrants	Share of sub-district population that lived outside of district 5 years ago (=migrants)	CENSUS
Share of migrants from conflict areas	Migrants from conflict provinces divided by total number of migrants	CENSUS
Villagers work outside of village	There are families who live outside village for work or study (equals one if true, zero otherwise)	PODES
Outsiders work in village	There are families who have moved to this village for work or study (equals one if true, zero otherwise)	PODES
Level education in sub-district	Mean year of schooling of household heads. Based on education attainment	CENSUS
Inequality education in sub-district	Standard deviation in education of males aged between 20 and 30 years of age. Years of education based on educational attainment variable in the census	CENSUS
Horizontal inequality education in sub-district	Based on self-reported ethnicity and years of education (based on educational attainment) in the CENSUS, see section on horizontal measures in Appendix A	CENSUS
Economic		
Absolute poverty:	# of poor as reported by village head divided by population	CENSUS
Change in Poverty	Village head reports an increased in the number of poor in the past year (one if true, zero otherwise)	PODES
Unemployment	# of unemployed individuals in village according to village head divided by population	PODES
Non-agriculture	Share of families that do not work in agriculture (based on question to village head that asks for the % of families that work in agriculture)	PODES
Land converted	Share of land converted to different economic use in past 3 years PO	PODES
Electricity	# of households connected to electricity divided by # of households in village	PODES
Institutional		
Agricultural land ownership reported	Dummy equals one if land ownership agricultural land reported	PODES
Land titling	Hectares of privately used titled agricultural land divided by total hectares of agricultural land (excluded category: privately used non-titled agricultural land)	PODES
Communal land	Hectares of communal agricultural land divided by total hectares of agricultural land (excluded category: privately used non-titled agricultural land	PODES
Mining	Mining is main source of income in village (one if true, zero otherwise)	PODES
Forestry	Forestry is main source of income in village (one if true, zero otherwise)	PODES
Distance to government administration	Distance to district government offices in kilometers	PODES
Places of worship	# of places of worship in village/Nr of families in village	PODES
Adat institutions	There are traditional (adat) institutions in the village	PODES

(a) *Composition of population*

Conflict often occurs between different identity groups. Evidence from the qualitative study, and from other work on Indonesia, indicates that a large proportion of local conflict is group-based (Barron & Madden, 2004; Varshney *et al.*, 2008) and shows how the "dynamics of difference" are key in shaping conflict patterns. Even where conflicts are between

individuals (such as disputes between two people over access to water), group identities tend to determine who the conflicting parties are (Barron *et al.*, 2004). Identities, as numerous authors (e.g., Horowitz, 2000) have noted can be either ascriptive (based on race, language, clan, caste, *etc.*) or prescriptive (political party affiliation, class where economic mobility is possible, *etc.*). There are several ways in which the presence of different groups in a given geographic area could hypothetically influence violent conflict levels.

The first hypothesis is that *increased heterogeneity of identity groups (with an ethnic, religious or other basis) within a given area is associated with higher levels of violent local conflict*. Different people have posited different explanations for this. One line of reasoning has sought to emphasize the primordial basis of cultures and their enduring nature (Geertz, 1963; Shils, 1957). If group norms are "bounded" (i.e., tightly enforced and differentiated from the norms of other groups), as the theory would posit, where different groups co-exist side by side, clashes in norms may be more likely (Huntingdon, 1996). The result is that conflicts are more common, and harder to resolve when they do occur. Moreover, if culture is the defining element of a person's identity, individuals and groups will seek to protect their cultures against exogenous influences; this may lead to resistance to other groups, resulting in tensions and/or conflict.

While this view has been discredited by many as overly essentialist (Sen, 2006), the extent to which group culture (and the symbols, rituals, and myths which embody and sustain it) are resources that can be utilized by leaders to sustain or expand their power has also been emphasized (Brass, 1997; Wolf, 1999). In areas with multiple identity groups, leaders may be more tempted to shore up their constituencies by making appeals based on cultural legacies. This, in the Indonesian case, has been a factor driving outbreaks of conflict in some high conflict areas (Bertrand, 2004; Van Klinken, 2005). The case studies of martial arts violence in East Java and clan-based land conflicts in East Nusa Tenggara showed these processes at work (Barron & Sharpe, 2005).

Others have argued that the presence of multiple cultural groups impacts on conflict indirectly. The coexistence of different groups, accompanied by diverging economic growth patterns of the groups, may lower total economic growth. Social sanctions against shirking may be more difficult to enforce across ethnic groups, hence weakening cooperative outcomes (Miguel & Gugerty, 2005). Lack of cooperation between groups leads to lower total economic growth, which, as Easterly and Levine (1997) argued, can lead to a higher probability of violent conflict. Gurr (2000) had shown a strong link between the extent of ethnic factionalism in a nation and the presence of violent conflict.

The second hypothesis is that *increased inequality defined along group lines is associated with higher levels of violent local conflict*. Collier (2001) suggested that the impact of group diversity depends on the type of diversity; for example, a certain degree of dominance on the part of an ethnic group could see it exploit a minority rather than stimulate "encompassing" policies that benefit all groups in a jurisdiction. Stewart (2002) argued that horizontal inequalities—differences between groups in political opportunities, economic assets, employment and incomes, and social access—play an important role in determining when and where violent conflict will take place. Previous case study work in Lampung province (Barron & Madden, 2004) had shown how inequality of opportunity between ethnic Lampungese and Javanese fuelled tensions which escalated to village burnings. Mancini (2005), using district level data from across Indonesia, argued that horizontal inequality in child mortality rates is associated with deadly ethno-communal violence.

The third hypothesis is that *changes in population make-up are associated with higher levels of violent local conflict*. In the Indonesian context, "outsiders" are often blamed for causing conflict. This finding came through strongly in the qualitative fieldwork. Migration changes the balance between existing groups and introduces new competitors for existing resources. Increased competition resulting from migration could be a cause of conflict (Chua, 2002). In Indonesia, the Government's transmigration programs, which shifted millions of poor farmers from Java and other over-populated islands to the outer islands (Fearnside, 1997), has been associated with conflict; the violence between the Dayaks and Madurese in West and Central Kalimantan, for example, has its roots in these policies (Davidson, 2003; Smith, 2005). In addition to the formal transmigration programs, other population flows have changed ethnic and religious balances in many areas, accentuating local struggles over control of political institutions (Sidel, 2006). Large movements of internally displaced people (IDPs) is both a result of conflict and, in cases, a trigger for future unrest, in particular when aid is targeted at incoming groups at the expense of receiving communities (Barron *et al.*, 2007a, 2007b).

(b) *Economic factors*

Conflict is often a manifestation of competition over scarce economic resources and the access to power to control them. Disputes are more likely to turn into explicit conflicts or violence if the expected economic gains from engaging in conflict exceed the potential negative consequences. The qualitative work indicated that violent conflicts over resources are common, and that the "dynamics of difference" shape the ways in which groups are formed and mobilized to pursue economic goals. The literature suggests some of the reasons why economic factors may be important.

The first hypothesis is that *absolute poverty is positively associated with the incidence of violent local conflict*. Poor people do not have many household assets, and as a result the risk of losing them may not act as a deterrent to partaking in conflictual action. Using this reasoning, Burton (1990) had argued that conflict is a result of basic denial of absolute needs.

The second hypothesis is that *an increase in poverty is positively associated with the incidence of violent local conflict*. Addison (1998) had used the African experience to hypothesize that slow growth is a predictor of violent unrest; Rodrik (1999) had argued in the context of the Asian Financial Crisis of 1998 that shocks that reduce growth and incomes make violence more likely. With sticky norms on what are appropriate levels of consumption and means of earning an income, a sudden increase in poverty may increase conflict as the sense of entitlement is greater than what is possible to achieve by peaceful means.

The third hypothesis is that *unemployment is positively associated with the incidence of violent local conflict*. Where education levels are rising, and the economy takes a turn for the worse, unemployed youth are likely to feel aggrieved; in systems where they feel they are unable to influence political and economic decision-making, these grievances may turn violent (Urdal, 2004). Unemployed youth are highly represented in conflicting groups in Indonesia, and inter-group violent conflicts are often triggered by clashes between youths (Varshney *et al.*, 2008).

The fourth hypothesis is that *economic development is positively associated with the incidence of violent local conflict*. Development, which increases the complexity and uncertainty of economic relationships, could cause conflict if it is not

accompanied by improved dispute resolution mechanisms. The empirical evidence in support of this hypothesis is mostly at the macro level (see, e.g., Bates, 2000; Moore, 1967) and has shown how processes of modernization can reduce social capital (Miguel, Gertler, & David, 2003) and lead to competition that increases the risk of conflict. Similar processes are likely to occur at the local level (Barron *et al.*, 2004; King, 2004). Structural transformations away from (particularly subsistence) agriculture may increase uncertainty over incomes, and may necessitate new institutions as traditional/informal mechanisms are unable to cope with new situations.

(c) *Institutions*

Institutions matter in determining levels and forms of local conflict. They shape the "conflict environment," the economic and social structures that make violence more or less likely. Institutions also matter in determining whether small disputes and criminal acts turn into larger outbursts of violence. The qualitative work showed the extent to which having clear "rules of the game," with disputing parties sharing norms about how conflicts should be addressed and by who, is key. It also showed the importance of having effective intermediary institutions to prevent conflict from arising or escalating into violence (Barron *et al.*, 2004). In particular, the functioning of the security sector and local government helped determine the extent to which small disputes escalated into larger ones (Barron, Nathan, & Welsh, 2005). The datasets used in the quantitative analysis offer a limited set of variables that can be used to test institutional explanations of conflict; there are few measures of the quality of governance, conflict resolution, or the extent to which civic structures involve multiple groups. However, a number of hypotheses can be explored.

The first hypothesis is that *ill-defined property rights, both for ownership and usage, are associated with higher levels of violent local conflict* (Deininger & Songqing, 2003; de Soto, 2000). Where rights are not clear, or not enforced, land grabs—by individuals, groups or the state—are more likely to occur (Bennet, 2002). Where multiple systems of property rights co-exist—for example, traditional, oral systems, which allow communal ownership, as well as state-mandated individual title—parties can make different (conflicting) claims, based on very different forms of public reasoning (Bowen, 2003). The qualitative research also showed how the extent to which effective institutions govern the management of land is important. Conflict over communal land (normally untitled) resulted in 30 deaths in Manggarai district in East Nusa Tenggara during 2001–03 alone. Conversely, the process of land titling often involves redistribution of resources and power and may, in itself, be a source of conflict (Clark, 2004).

The second hypothesis is that *the presence of institutions aimed at building social cohesion is associated with lower levels of violent local conflict*. Such institutions can be important bulwarks against the eruption of violence. Varshney (2002) had argued in his work on India, that the presence of associational institutions, which generate interactions between different groups, is more important than ethnic/religious diversity in explaining the presence (or absence) of conflict. Others, including Colletta and Cullen (2000), had pointed to the links between different forms of societal organization and conflict management capacity. There are a number of proxies for local social institutions in the available datasets. The presence of places of worship may be a restraining force on conflict. *Adat* (traditional) institutions, which are usually defined along ethnic cultural lines, could play a similar role. Both could, however, also be used as bases for mobilization if conflict grows more intense.

A third hypothesis is that *proximity to local government institutions is associated with lower levels of violent local conflict*. The qualitative fieldwork showed that absence of strong mediating institutions was one factor that allowed localized disputes to escalate. One would expect that close proximity to local government administration would reduce information costs, and increase the opportunity for, and the likelihood of, government mediation in conflicts.

4. THE PODES VILLAGE CENSUS

The Indonesian Government Central Bureau of Statistics' (BPS) Village Potential series (PODES) is a longstanding tradition of collecting data at the lowest administrative tier of local government. Detailed information is gathered on a range of characteristics—ranging from infrastructure to village finance—for Indonesia's 69,000 rural villages and urban neighborhoods.[6] Sub-district level statistical agents (*mantri statistik*), who work for BPS, implement the survey. Information is typically gathered from the *kepala desa* (rural village heads) and *lurah* (urban neighborhood heads). The 2003 PODES was fielded at the end of 2002 as part of the Agricultural Census. For the first time it included a section on politics, conflict and crime (see Figure 1). If conflict was reported, the survey asked for the type of conflict, whether it was longstanding, and the impacts of the conflict (fatalities, injuries, and material damage). Finally, the survey also asked if the conflict was resolved, and, if so, by whom (citizens, the village government, or the security apparatus).

Just over 7% of villages and neighborhoods across Indonesia reported local conflict during the previous year, 2002, a total of 4872 incidents (see Table 3); 4.4% of villages reported violent conflict. Almost a quarter of reported conflicts were alleged to

Question	Answer codes
Has there been any conflict in the village over the past year?	Yes No
If yes, which type of conflict has frequently occurred over the last year?	Disputes between groups of villagers Disputes between students Disputes been villagers and the apparatus Inter-ethnic disputes Security Other……..
If yes, is the conflict which occurred during the last year:	New Conflict Old conflict
Number of conflict victims	Dead : ……..people Injured: ……people Material damage (thousands of rupiah) Rp……..

Figure 1. *Conflict measurement questions included in the 2003 PODES.*

Table 3. *Incidence and costs of conflict*

	Indonesia (excluding Jakarta)	High conflict provinces	Other provinces
Conflict (% localities)	7.04	15.81	5.27
Conflict that started last year (% localities)	3.15	11.82	1.40
Conflict with human or material damage (% localities)	4.43	9.68	3.37
Conflict with human damage (% localities)	3.95	8.99	2.93
Total human damage in terms of deaths (people)	4,849	4,106	743
Total human damage in terms of wounded (people)	9,560	3,720	5,840
Total material damage (billion of Rupiah)	765.69	328.18	437.51

Note: High conflict provinces are West Kalimantan, Central Kalimantan, Maluku, North Maluku, Aceh, and Central Sulawesi.

have involved fatalities, about half injuries, and about a third material damage. Total fatalities arising from conflict were reported to be 4849. Reported injuries amounted to 9560 injuries and material damages of Rupiah 771 billion (approximately US$ 90.7 million at the time of the survey) were reported. While 85% of the deaths were in the high conflict provinces, 61% of injuries and 57% of property damage occurred in other provinces.

Figure 2 reports conflict incidence at the district (*kabupaten* and *kota*) level, mapping the share of communities in each district reporting conflict. Conflict-prone areas, such as Aceh and Central Sulawesi, show up as having high conflict incidence. However, the map also highlights that conflict is spread throughout the archipelago.

The survey was ambiguous about the definition of conflict. Because of this, we decided to focus the regression analysis in the next section to include only incidents of violent conflict, that is cases that resulted in material damage (human or physical), in order to establish a common threshold across localities and to minimize reporting bias due to village heads covering up minor conflicts. [7] Moreover, since the purpose of this paper is to study low intensity "local" conflict, we decided to exclude Indonesia's high conflict provinces—West Kalimantan, Central Kalimantan, Maluku, North Maluku, Aceh, and Central Sulawesi—from the analysis of correlates. [8] These provinces experienced high intensity conflicts, each with their unique underlying causes and with many extra-local factors in play. We also excluded Jakarta, the largest metropolis, because of its unique position in Indonesia. Table 4 lists the reported types of violent conflict outside of the high conflict provinces and Jakarta, the sample to be used in the subsequent empirical analysis. Just over half of the violent conflicts were reported as being between civilian groups, with a considerably larger share of conflict of this type within Java. Ethnic conflict accounted for only 2.6% of reported violent incidents, most of which were off-Java. Within conflict types, the majority of instances were reported as violent, except in the case of conflict between students.

5. PATTERNS OF LOCAL CONFLICT

This section tests which regionally specific factors correlate with violent local conflict as it is reported in the 2003 PODES

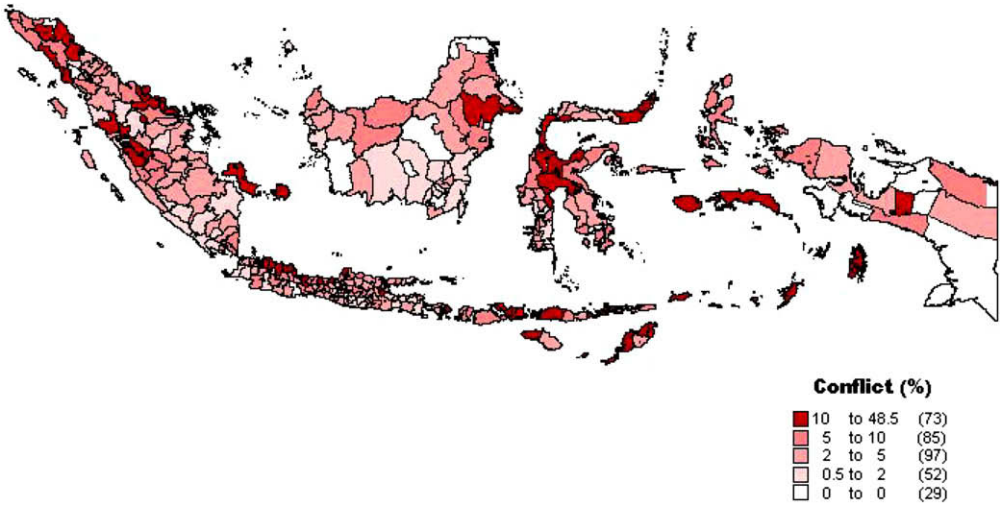

Figure 2. *District incidence of conflict (% total communities reporting by district (district/sub-district). Source: Podes 2003.*

Table 4. *Type of local violent conflict outside of high conflict provinces (percent)*

	Conflict with material or human damage				
	Total	Urban	Rural	Java	Off-Java
Civil/group conflict	55.28	68.81	51.38	81.95	44.34
Conflict w/gov apparatus	7.69	4.93	8.48	2.99	9.61
Student conflict	1.91	3.73	1.38	2.64	1.60
Ethnic conflict	2.64	3.28	2.45	0.46	3.53
Other	32.49	19.25	36.30	11.95	40.90
Total	100.00	100.00	100.00	100.00	100.00

data. We use the hypotheses outlined in Section 3 as a basis for the selection of variables to be included in the model. The estimated coefficients should be viewed as measures of association, rather than of causation; almost every variable could be considered endogenous in the model as violent conflict affects almost all aspects of civic, political, and economic life (Kalyvas, 2006).

The data are taken from the 2003 PODES village census and the 2000 population census. Data from the 2000 population census are merged with the village census data at the sub-district level. [9] The names, definitions, and source of the variables are given in Table 2; Table 5 presents the basic descriptive statistics. In the discussion of the results below we indicate with italics which variables we used to test the hypotheses.

A logit model was applied and estimated at the village level. Table 6 reports estimated coefficients of the models with the dependent variable indicating whether the community experienced violent conflict (defined as conflict with human or material damage) in the past year. In our estimates we distinguish between rural and urban areas, based on the assumption that conflict dynamics may be structurally different between the two. [10] Indeed, differences between the correlates of local violent conflict in rural and urban areas are clear in the analysis below, justifying separate analyses. A chow test also indicates that the null hypothesis of pooling the urban and rural model is rejected in all cases. Standard errors have been corrected for correlation in the error terms at the sub-district level. Every regression contains a set of variables which can be assumed to be exogenous to the reported incidence of violent conflict, province level fixed effects, and a set of variables that are included to correct for respondent bias. The reported specifications test the hypothesized patterns related to the composition of the population, economic, and institutional factors separately and simultaneously. The significance of estimated coefficients, discussed below, provides an indication of whether these patterns can be observed in the data. The low pseudo R^2, seen in all specifications, indicates that a large share of the variation in violent conflict across villages remains unexplained.

The first two columns in Table 6 report the base specification. In rural areas, more populated places are more prone to violent conflict. A recent natural disaster in a locality increases the likelihood of violent conflict across the range of

Table 5. *Descriptive statistics*

Nature/respondent characteristics	Urban		Rural	
	Mean	Std. dev.	Mean	Std. dev.
Population (thousands)	7.289	8.233	2.508	2.748
Population density	60.959	126.162	6.816	20.155
Natural disaster	0.305	0.460	0.264	0.441
Mountain	0.109	0.312	0.245	0.430
Seaside	0.150	0.357	0.129	0.335
Valley	0.047	0.211	0.072	0.258
Village leader present	0.973	0.162	0.986	0.117
Village leader is female	0.043	0.202	0.019	0.136
Village leader age	43.556	9.721	43.970	10.014
Village leader years education	13.851	2.898	10.430	3.148
Population composition				
Ethnically diverse sub-district	1.175	0.824	0.702	0.698
Ethnic clustering	0.177	0.128	0.280	0.158
Multiple ethnic groups	0.858	0.349	0.593	0.491
Multiple religions	0.827	0.378	0.447	0.497
Share Javanese, off-Java in 1995	0.369	0.392	0.409	0.428
Share migrants	0.085	0.081	0.046	0.077
Share migrants from conflict areas	0.105	0.193	0.151	0.254
Villagers work outside of village	0.974	0.160	0.961	0.193
Outsiders work in village	0.896	0.305	0.667	0.471
Level education in sub-district	8.182	1.992	5.805	1.449
Inequality education in sub-district	3.654	0.388	3.389	0.439
Horizontal inequality education in sub- district	114.026	20.181	110.623	26.684
Economic				
Absolute poverty	0.327	0.239	0.498	0.281
Change in poverty	0.344	0.475	0.335	0.472
Unemployment	0.043	0.069	0.039	0.060
Non-agriculture	0.643	0.356	0.189	0.198
Land converted	0.024	0.239	0.030	3.130
Electricity	0.803	0.263	0.534	0.331
Institutional				
Agricultural land ownership reported	0.386	0.487	0.261	0.439
Land titling	0.303	0.354	0.197	0.300
Communal land	0.423	0.470	0.314	0.425
Mining	0.007	0.086	0.003	0.051
Forestry	0.004	0.059	0.012	0.110
Distance to government administration	21.200	54.800	60.900	95.700
Places of worship	0.010	0.008	0.018	0.016
Adat institutions	0.320	0.467	0.394	0.489

Table 6. *Regression results (logit with dependent variable = violent conflict (i.e., with death, injuries, material damage) (PODES 2003:1704c) (Robust standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%)*

	Base		Population composition		Economics		Institutional		Full	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Population	0.012	0.078***	0.016*	0.080***	0.008	0.070***	0.010	0.075***	0.014	0.073***
	[0.009]	[0.008]	[0.008]	[0.010]	[0.010]	[0.009]	[0.009]	[0.009]	[0.009]	[0.010]
Population density	0.407	0.893*	0.209	1.022**	0.247	0.501	0.362	0.786*	0.170	0.546
	[0.381]	[0.475]	[0.499]	[0.513]	[0.428]	[0.508]	[0.395]	[0.452]	[0.494]	[0.497]
Natural disaster	0.379***	0.373***	0.385***	0.347***	0.353**	0.354***	0.347**	0.324***	0.368**	0.293***
	[0.140]	[0.075]	[0.141]	[0.075]	[0.141]	[0.076]	[0.141]	[0.075]	[0.144]	[0.076]
Mountain	0.200	−0.340***	0.106	−0.314***	0.263	−0.311***	0.190	−0.297***	0.153	−0.246**
	[0.221]	[0.090]	[0.231]	[0.094]	[0.226]	[0.091]	[0.228]	[0.088]	[0.235]	[0.096]
Seaside	0.493***	0.526***	0.256	0.376***	0.509***	0.529***	0.379**	0.441***	0.249	0.329***
	[0.169]	[0.093]	[0.181]	[0.090]	[0.174]	[0.093]	[0.177]	[0.094]	[0.190]	[0.093]
Valley	0.332	−0.195	0.248	−0.253	0.351	−0.175	0.262	−0.224	0.231	−0.236
	[0.298]	[0.152]	[0.308]	[0.158]	[0.305]	[0.152]	[0.302]	[0.152]	[0.311]	[0.158]
Village leader present		−0.393		−0.303		−0.361		−0.240		−0.196
		[1.036]		[1.066]		[1.028]		[1.036]		[1.049]
Village leader is female	0.360	−0.167	0.128	−0.111	0.347	−0.170	0.314	−0.185	0.126	−0.142
	[0.241]	[0.183]	[0.250]	[0.183]	[0.239]	[0.183]	[0.240]	[0.183]	[0.246]	[0.183]
Village leader age	0.004	−0.002	0.005	−0.003	0.003	−0.001	0.003	−0.003	0.005	−0.004
	[0.010]	[0.004]	[0.011]	[0.004]	[0.010]	[0.004]	[0.010]	[0.004]	[0.011]	[0.004]
Village leader years education	0.018	0.029**	0.016	0.021	0.007	0.029**	0.017	0.017	0.010	0.013
	[0.024]	[0.013]	[0.028]	[0.014]	[0.026]	[0.013]	[0.025]	[0.013]	[0.029]	[0.014]
Ethnically diverse sub-district			0.154	−0.013					0.137	0.049
			[0.116]	[0.099]					[0.120]	[0.099]
Ethnic clustering			0.558	0.988					0.600	1.042***
			[0.800]	[0.3720]					[0.818]	[0.374]
Multiple ethnic groups			0.225	0.155*					0.196	0.136
			[0.241]	[0.089]					[0.238]	[0.087]
Multiple religions			0.487**	0.129*					0.486*	0.113
			[0.245]	[0.073]					[0.256]	[0.074]
Share of Javanese, Off-Java in 1995			−0.405*	−0.116					−0.326	−0.151
			[0.243]	[0.114]					[0.263]	[0.118]
Share migrants			1.711**	−0.657					1.997**	−0.700
			[0.830]	[0.770]					[0.793]	[0.759]
Share of migrants from conflict areas			1.988***	0.177					1.789***	0.236
			[0.545]	[0.428]					[0.524]	[0.407]
Villagers work outside of village			1.427	0.686***					1.318	0.558**
			[1.066]	[0.255]					[1.070]	[0.254]
Outsiders work in village			0.140	0.447***					0.032	0.414***
			[0.282]	[0.081]					[0.278]	[0.083]
Level education in sub-district			0.003	−0.034					−0.024	−0.050
			[0.052]	[0.039]					[0.057]	[0.042]
Inequality education in sub-district			0.103	0.574***					0.057	0.403***
			[0.234]	[0.115]					[0.240]	[0.115]
Horizontal inequality education in sub- district			−0.001	−0.008***					−0.001	−0.008***
			[0.004]	[0.002]					[0.004]	[0.003]
Absolute poverty					−0.179	0.284**			−0.127	0.390**
					[0.312]	[0.140]			[0.320]	[0.152]

Change in poverty					0.477	0.177			0.356	0.113
					[0.143]***	[0.070]*			[0.138]***	[0.072]
Unemployment					0.797	0.843			0.667	1.011
					[0.839]	[0.438]*			[0.697]	[0.415]**
Non-agriculture					0.251	0.545			0.058	0.522
					[0.256]	[0.165]***			[0.316]	[0.180]***
Land converted					−0.588	−0.023			−0.703	−0.029
					[0.651]	[0.048]			[0.599]	[0.091]
Electricity					0.129	−0.079			0.263	0.087
					[0.327]	[0.134]			[0.368]	[0.127]
Agricultural land ownership reported							−0.635	−1.028	−0.859	−1.073
							[0.455]	[0.244]***	[0.476]*	[0.246]***
Land titling							−0.178	−0.192	−0.024	−0.196
							[0.255]	[0.113]*	[0.246]	[0.114]*
Communal land							0.459	0.654	0.780	0.698
							[0.481]	[0.232]***	[0.488]	[0.232]***
Mining							0.291	0.201	0.318	0.070
							[1.019]	[0.448]	[0.993]	[0.443]
Forestry								−0.035		0.110
								[0.461]		[0.502]
Distance to government administration							0.001	−0.002	0.000	−0.001
							[0.001]	[0.001]*	[0.002]	[0.001]*
Places of worship							−40.265	−33.789	−21.950	−28.965
							[11.426]***	[4.347]***	[11.364]*	[4.287]***
Adat institutions							0.360	0.259	0.163	0.159
							[0.154]**	[0.081]***	[0.145]	[0.089]*
Constant	−3.758	−3.590	−6.687	−5.848	−3.952	−3.937	−3.293	−2.928	−6.180	−4.902
	[0.635]***	[1.021]***	[1.592]***	[1.170]***	[0.650]***	[1.009]***	[0.688]***	[1.028]***	[1.705]***	[1.162]***
Observations	6316	50530	6046	49611	6307	50530	6290	50530	6021	49611
Pseudo R^2	0.011	0.024	0.041	0.041	0.019	0.027	0.022	0.041	0.050	0.057
Chow test χ^2/p value	$\chi^2(10) = 17183/0.000$		$\chi^2(23) = 208/0.000$		$\chi^2(16) = 18790/0.000$		$\chi^2(17) = 19836/0.000$		$\chi^2(36) = 236/0.000$	

specifications. A natural disaster in the community is associated with an increased likelihood of violent conflict. Relative to non-seaside flat land, mountainous areas experience less violent conflict than seaside villages. Village leader characteristics are included to correct for respondent bias. Only the education of the village head in rural areas significantly affects reported violent conflict levels. The estimated coefficients on the village leader characteristics are difficult to interpret, since they can point to how different types of leader both systematically report and deal with conflict in different ways.

(a) *Composition of the population*

The hypotheses developed are:

- increased heterogeneity of identity groups (with an ethnic, religious or other basis) is associated with higher levels of local violent conflict;
- increased inequality defined along group lines is associated with higher levels of local violent conflict;
- changes in population make-up are associated with higher levels of local violent conflict.

The 2000 population census allows one to test whether heterogeneity of identity groups is associated with increased levels of violence. The census collects self-reported ethnic status, a first for Indonesian household questionnaires since the 1930s. Over 1000 different ethnic groups were reported. We use these responses to construct a sub-district level indicator of ethnic diversity (*ethnically diverse sub-district*). We also constructed a sub-district level measure of ethnic fractionalization that measures the extent to which ethnic groups cluster in villages within a sub-district (*ethnic clustering*, see Appendix A). Problems can easily be framed in an "us *versus* them" way if villages are dominated by one ethnic group, and if neighboring villages are of a different ethnicity. The PODES provided a limited number of diversity measures at the village level, including the presence of multiple ethnic groups (*multiple ethnic groups)* and whether there were different religions within villages (*multiple religions*).

The results indicate no systematic patterns between the overall levels of ethnic diversity in a sub-district, or the presence of multiple ethnic groups in a village, and levels of violent conflict. However, the clustering of ethnic groups in rural villages is associated with greater violent conflict. This might indicate that land conflicts, which are more prevalent in rural areas and which often cross village boundaries, are worsened when neighboring villages have different dominant ethnicities. Indeed, the analysis of newspaper reports in East Nusa Tenggara found that 85% of communal land conflicts involved competing ethnic groups. The most serious of these were inter-village disputes which accounted for 2 deaths, 2.5 injuries, and 5.7 properties damaged per conflict (compared with 0.7 deaths, 1.2 injuries, and 1 property for intra-village resource conflicts). Where identity was conflated with claims for resources, and where identities were different in neighboring areas, participants were less likely to see outcomes as negotiable, and conflicts tended to become violent (Barron & Sharpe, 2008).

In urban areas, the presence of multiple religions is associated with a higher incidence of reported violent conflict. It could be that in urban places, where there is more ethnic diversity, religion becomes more important as a source of perceived difference and hence a basis for conflict.

Prior work—including the qualitative fieldwork in East Java and East Nusa Tenggara—has shown that the ways in which ethnic or religious groups are mobilized is more important than diversity in itself (Brass, 1997; Bertrand, 2008; Horowitz, 2000). However, our findings show that there may be correlations between an area's structural ethnic and religious make-up (levels of diversity, and how people from different identity groups are clustered) and the ability and motivations for leaders to mobilize such groups for violent purposes. PODES does not allow us to test this, but the findings do show the need for closer analysis of such relationships and levels of violence.

We also tested the correlation between violent conflict and inequality within the population. The census allows us to calculate exact measures of inequality in educational attainment. We tested for the level (*level of education in sub-district*), variance (*inequality of education in sub-district*), and extent of horizontal group inequality between ethnic groups in the population (*horizontal inequality education in sub-district*). We find that high inequality is associated with higher levels of violent conflict in rural areas. Contrary to our expectations, and in contrast to the findings of Mancini (2005) who used district level data and considered larger-scale ethno-communal violence, horizontal inequality is associated with lower levels of violent conflict in rural areas. Further research is needed to scrutinize, and to help us understand, this result. More effort needs to be devoted to constructing indicators of horizontal inequality at lower levels of geographic disaggregation. Our measure (see Appendix A), which focuses on the best *versus* the least endowed group, could be contrasted with one that focuses on more intermediate ranges. Further work could focus on which group differences matter in fueling conflict, with a subsequent definition of appropriate indicators and data needs.

Past transmigration policies, that moved Javanese to less populated areas on the other islands, are often blamed for current conflict. To test the correlation, we constructed a variable that measures the share of Javanese in off-Java sub-districts in 1995, before the fall of the Suharto regime (*share of Javanese, off-Java in 1995*). The census allows us to construct this variable from the migration information and self-reported ethnicity. We reconstructed the situation from five years before the census to ensure that the observed patterns do not reflect population movements that resulted from conflict, which increased after the fall of the Suharto regime.

The regression results show no significant correlation between the share of Javanese and conflict in off-Java areas. The results do, however, indicate that more recent migration is associated with higher levels of violent conflict. In urban areas, a higher share of migrants in the total population (*share migrants*) is associated with more violent conflict, and even more if the migrants come from known high conflict areas (*share migrants from conflict areas*), confirming findings from the previous literature. In rural areas, no such pattern exists, perhaps because migrants to rural areas are more likely to move because of marriage or because local social capital is stronger. This supports the finding that in rural areas labor-related population movement—measured by whether villagers work outside of the village (*villagers work outside of village*), or outsiders work in the village (*outsiders work in village*)—is more likely to be associated with higher violent conflict. In such situations, communities may be less receptive of incomers. We did not find a similar effect in urban areas, where inwards labor-related migration is less likely to feel threatening to the indigent population. In urban areas, almost every community reported in- and outward labor-related migration (90% and 97%, respectively), and even in rural areas these figures were high (66% and 96%, respectively).

(b) *Economic factors*

The hypotheses developed are:

- absolute poverty is positively associated with the incidence of local violent conflict;

- an increase in poverty is positively associated with the incidence of local violent conflict;
- unemployment is positively associated with the incidence of local violent conflict;
- economic development is positively associated with the incidence of local violent conflict.

Information on poverty is collected in the village census using the Government's BKKBN (*Badan Koordinasi Keluarga Berencana Nasional*—family planning board) poverty data. Each village in Indonesia keeps a record of poor families. BKKBN instructs the use of a proxy means test to identify the poor although, in practice, local leaders have considerable leverage in deciding who gets listed as poor. BKKBN lists are used to distribute subsidized rice for the poor, Indonesia's main anti-poverty program at the time of the survey.

The analysis shows whether absolute poverty is positively correlated with violent conflict in rural and urban areas. The hypothesis holds in rural areas: a higher fraction of poor people residing in the village (*absolute poverty*) is associated with a higher likelihood of violent conflict. In urban areas, no significant correlation can be detected. It is not immediately clear from the literature why there should be such a difference.

In contrast, in both urban and rural areas, an increase in the number of poor households in the year preceding the survey (*change in poverty*) is associated with higher incidence of violent conflict. The results support the hypothesis of a positive association between violent local conflict and changes in poverty. Higher unemployment (*unemployment*) is weakly, but not significantly, associated with higher violent conflict in rural areas but not in urban areas.

As measures for economic development, we included the share of families working in agriculture (*non-agriculture*), whether land had been converted for different economic uses in the three years preceding the survey (*land converted*), and whether the village was connected to the electricity grid (*electricity*). The results indicate that in rural areas, villages where less families work in agriculture more often experience violent conflict. These results require more exploration to tease out possible causal mechanisms.

(c) *Institutions*

The hypotheses developed are:

- ill-defined property rights, both for ownership and usage, are associated with higher levels of violent local conflict;
- the presence of institutions aimed at building social cohesion is associated with lower levels of violent local conflict;
- proximity to local government institutions is associated with lower levels of violent local conflict.

The qualitative work showed that many violent local conflicts are over land use (Clark, 2004). The PODES allows us to test correlations between the security of land rights and violent conflict. The PODES collects information on land ownership for agricultural land (*agricultural land ownership reported*). It distinguishes between three types of ownership of agricultural land that are commonly found in Indonesia. These are: privately used land that is titled (*land titling*), privately used land that is not titled, and community land (*communal land*). In this order, ownership rights to the land become less well defined, and, we hypothesize, there is an increased likelihood of violent conflict. This is confirmed in the data for rural areas. As long as agricultural land is privately used, there is no significant difference in the likelihood of conflict depending on whether the land is titled or not, demonstrating how formal rights are often relatively unimportant. A clear pattern is found for communal land, where it is often not clear to whom the land belongs, with a strong association with higher incidence of violent conflict. The findings show the extent to which concentrating on actual title can prevent attention being paid to more relevant sources of land insecurity, which correlate more strongly with the presence of violence.

We also constructed indicators from the PODES that are set to one if mining (*mining*) or forestry (*forestry*) is the main source of household income. For both these sectors, property rights are ill-defined. We did not find any significant effect of these variables on violent conflict. This may be because the variables do not accurately capture land insecurity, or because there is something different to these sectors than other forms of land use. Again, theory and prior empirical evidence does not point to any clear conclusions, and future work may be warranted.

The qualitative work indicated that often varying expectations between different groups in the community, or between the community and the state, about how tensions should be resolved resulted in (sometimes violent) conflict. Intermediary institutions can play an important role in overcoming those differences. To test this correlation, we constructed variables which indicate the distance to district government offices (*distance to government administration*)—Indonesia is heavily decentralized, with great financial and decision-making autonomy at the district level—the density of places of worship in the village (*places of worship*), and the presence of traditional law/customs institutions (*adat institutions*) in the village. We would hypothesize that all can act as mediating institutions for conflict resolution, and therefore reduce the likelihood of violent conflict.

This pattern is indeed found for the density of places of worship. The presence of *adat* institutions, in contrast, is associated with higher levels of violent conflict. How can we interpret such findings? It may be that religious institutions play some integrative role, even in areas with religious diversity, and especially in areas which are ethnically heterogeneous. Indeed, some research has shown that local churches and mosques played a role in quelling conflict in areas such as Ambon and Poso (Sidel, 2006). In areas with great ethnic diversity, but relative religious homogeneity, such as NTT province, religious bodies (such as the Catholic Church) are often the only authority that has the respect of all elements of society. In contrast, *adat* institutions rarely play such a cross-cutting role. Where *adat* is strong, different groups tend to have different *adat* systems and authorities. Their presence may reflect differences in norms about conflict resolution; where strong informal and formal systems co-exist, these may clash reducing the likelihood of effective conflict management (Barron *et al.*, 2004). The findings thus show that developing and testing hypotheses on the role of integrative institution requires a deep understanding of the actual role different formal and informal institutions are playing.

Very weak negative effects are found for the distance to government offices in rural areas. This indicates that traditional institutions may often play a more important role in local conflict than government institutions.

6. CONCLUSIONS

This paper has analyzed patterns of local conflict in Indonesia. Local conflict is distinct from large-scale conflicts, which involve large interest groups over extended periods of time. Most of the analysis of conflict in Indonesia has focused on large-scale conflict, in particular communal violence and separatism. Similarly, the international literature has tended to focus on large-scale conflict and, in particular, civil war.

Local conflict, however, has also accompanied Indonesia's post-Suharto transition, and has considerable impacts on

development. Data from a unique nationwide village census (PODES) were used to analyze the extent and nature of local conflict in Indonesia. The data report local conflict present in 7% of the rural villages and urban neighborhoods in Indonesia in 2002. Overall, 4875 conflicts resulting in 4849 fatalities and US$90.7 million of material damage were reported.

The paper used both qualitative and quantitative analyses to understand the patterns that underlie local conflicts. In-depth qualitative work in 41 villages in two Indonesian provinces (East Java and East Nusa Tengarra) was complemented with a local newspaper review in 12 districts. The qualitative work indicates that violent local conflicts are common: 275 people died from such conflicts during 2001–03 in the research districts. Types of disputes varied from land and development conflicts to vigilante violence; there was also a significant variation in the most prominent forms of conflict in the different districts and their aggregate impacts. Analysis of the case studies collected shows that local factors—related to the ''rules of the game,'' the strength of intermediaries (including local leaders and state institutions), and the ways in which group differences were created and sustained collectively—determined when disputes would arise and escalate.

The qualitative analysis and a review of the literature were used to generate hypotheses on factors that may be associated with incidence of violent local conflict. The absence of some variables did not allow us to directly test these hypotheses using the PODES village census in combination with data generated from the 2000 Population Census. Rather, we drew on elements of the qualitative findings, as well as on the Indonesia-focused and international conflict literature, to explore the hypotheses relating to demographic, economic, and institutional factors that may affect local violent conflict incidence. We excluded six high conflict provinces and Jakarta from the analysis in order to restrict the analysis to factors that may be associated with local conflict. Because of problems of endogeneity, we restricted the analysis to looking at the patterns of correlation without analyzing processes of causation. However, the qualitative work did allow us to tentatively explore some explanations for the ways in which different variables may be important.

The quantitative analysis indicated no systematic patterns between reported violent conflict and the ethnic diversity of the population in a sub-district. Ethnic clustering within villages, however, is associated with higher violent conflict in rural areas. In urban areas, the presence of multiple religions is associated with higher incidence of violent conflict. While transmigration is not associated with higher levels, more recent migration is. In particular, where migrants come from high conflict provinces, reported violent conflict is higher. In rural areas, labor-related population movements are associated with greater local violence, but this is not true for urban areas.

The quantitative analysis confirmed the importance of economic factors. Villages are more likely to experience violent conflict if they are poor, have recently become poorer, or have high unemployment. The qualitative data showed a clear correlation between violent conflict and lack of clarity over land title or usage rights. A higher fraction of communal agricultural land, where property rights tend to be ill-defined, compared to privately used land, is associated with a higher rate of conflict. The quantitative analysis, however, did not show significant effects of titling privately owned land. The data point to the finding that, in practice, land titles may often have a little importance in defining the property rights of privately used land. We did not find any significant association between the presence of natural resources (mining and forestry) and violent conflict.

The regressions including institutional variables underlined the importance of clarity over agricultural land use rights, a finding that also came clearly out of the qualitative analysis. Clarity over non-agricultural land use rights, which is often found in the mining and forestry sector, was not related to conflict. The density of religious and traditional institutions and the distance to government, were, respectively, positively, negatively and not correlated with conflict, underlining the different roles these organizations play in local conflict and in its mediation.

This paper presents a first attempt at analyzing violent local conflict in Indonesia using data, both qualitative and quantitative, that had recently become available. There are many areas in which the analysis could be extended. A more careful collection of conflict data in the village census could uncover more conflicts, allowing for a more systematic mapping. Future work along these lines could focus on improved methodologies and instrument implementation to measure the incidence of local conflict, empirical proxies at the local level to measure potential factors associated with conflict, and empirical mixed methods research design to begin to address issues of causality. More focused work on particular types of violent local conflict (e.g., over land) may yield interesting insights. We hope that the paper will stimulate further debates and consideration, both of the causes of local conflict in Indonesia and of the methodological tools that can be used to measure and understand it.

NOTES

1. Early work was largely theory based and focused on peasant revolutions (Skopcol, 1979; Scott, 1976; Scott, 1985). More recently, there has been a shift to econometric studies that investigate the characteristics that make countries more prone to civil war. The Correlates of War study at the University of Michigan and Pennsylvania State University (Singer, 1990) and the Conflict Data Project at the University of Uppsala (Wallensteen & Sollenberg, 1998) have both compiled large cross-national datasets on wars and armed conflicts. Ted Gurr and Monty Marshall's work seeks to look at which state forms make civil wars more or less likely (Gurr, Marshall, & Khosla, 2001). Other influential work includes Collier and Hoeffler (2004), and Fearon and Laitin (2003).

2. Good overviews in English include the following: on Maluku and North Maluku, see Van Klinken (2001), and Wilson (2007); on Central Sulawesi, see Acciaioli (2001) and Aragon (2001); on Papua, see Chauvel (2005); on West and Central Kalimantan, see Human Rights Watch (1997), Van Klinken (2000), Davidson (2003), and Smith (2005); on Aceh, see Schulze (2004), Sukma (2004), Barron, Clark, and Daud (2005), and Reid (2006). Comparative treatments include Bertrand (2004), Sidel (2006) and Van Klinken (2007). The reports of the International Crisis Group (ICG), available at www.crisisweb.org, provide some of the best analyses of the different conflicts.

3. See, for example, Vel (2001) on Sumba island, and Barron and Madden (2004) on Lampung. Some comparative work has been done using newspapers to map incidence and impacts (Barron & Sharpe, 2005, 2008; Welsh, 2008), but geographic coverage has been limited.

4. The Kecamatan Development Program and Community Conflict Negotiation (KDP and CCN) study attempted to provide a better understanding of the nature of local conflict in Indonesia, and the impact of development projects on pathways of local conflict. KDP is the World Bank's primary community development project in Indonesia, having channeled over US$ 1 billion to poor Indonesian villages since its

inception in 1998. The study's methods are outlined in Barron, Diprose, Madden, Smith, and Woolcock (2004). Findings from different elements of the study are given in Barron, Smith, and Woolcock (2004), Barron and Sharpe (2005, 2008), and Barron *et al.* (2007a, 2007b), and are available on the project's website: www.conflictanddevelopment.org.

5. East Java and NTT were chosen as "medium-level" conflict sites, places which had not experienced massive outbreaks of conflict but which had significant levels of lower intensity local conflict. The provinces were chosen to maximize variation, with them differing in terms of population size and density (high in East Java, low in East Nusa Tenggara), ethnic homogeneity (homogenous in East Java, heterogeneous in East Nusa Tenggara), dominant religious group (Muslim and Catholic, respectively), and provincial development (East Java is relatively rich, East Nusa Tenggara extremely poor). Within each province, two districts were selected based on varying local capacity—that is, the ability of communities and/or the state to collectively solve or manage conflicts when they arise—based on interviews with stakeholders. For full sampling procedures, see Barron *et al.* (2004).

6. The module was initiated by the BPS Directorate of National Resilience (*Ketahanan*) under Drs. Suharno. The PODES is typically conducted in conjunction with the Population Census (e.g., 1990 and 2000), the Economic Census (1986 and 1996), and the Agricultural Census (1993 and 2003) (Kaiser & Molyneaux, 2000).

7. There is reason to think that PODES under-reports violent conflict with village heads understating problems in their village. Comparisons with the fieldwork and newspaper data show that PODES does under-report deaths from conflict. However, comparison of the datasets shows that such under-reporting is systemic (fairly equal across regions) allowing for consideration of factors associated with conflict.

8. Papua is normally thought of as being high conflict. However, the pattern of violence there more closely resembles that in other lower conflict provinces.

9. Theoretically, the population census could be merged with the village census at the village level, but the inconsistencies in the village codes that have been applied across the two datasets resulted in many dubious merges. There are 4820 sub-districts in Indonesia.

10. This assumption is backed by a large empirical literature which shows difference in conflict forms, triggers, and outcomes in urban and rural areas (see, for example: Chapin, 1999; Logan, Walker, Cole, Ratliff, & Leukefeld, 2003).

11. Note that $\sum_{m=1}^{M} 0 \ln\left(\frac{1}{0}\right) \to 0$ so one needs to sum only over the ethnic groups that are observed.

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APPENDIX A. MEASURES OF GROUP DIVERSITY AND INEQUALITY

A.1 *Ethnic diversity measure*

To measure ethnic diversity, we apply the Theil multi-group segregation index as presented in (Reardon, John, & McNulty Eitle, 2000)

$$E = \sum_{m=1}^{M} \pi_m \ln\left(\frac{1}{\pi_m}\right), \quad (1)$$

where π_m is defined as the share of ethnic class m in the total population.[11] A high value of the index indicates more ethnic diversity. If all the population is from one group, that is, $\pi_m = 1$ for $m = j$ and $\pi_m = 0$ for $m \neq j$, the index reaches its lowest value of zero. The upper bound depends on the numbers of ethnic groups.

The Theil index is similar to the Ethnolinguistic Fractionalization (ELF) measure used in much of the international literature (Alesina, Devleeschauwer, Easterly, Kurlat, & Wacziarg, 2003). The measure equals one minus the sum of individual group shares. ELF measures the probability of two individuals in an area coming from the same group. The measure is effectively the inverse of a Herfindahl measure. Zero entails high homogeneity, whereas a maximum of one entails that all individuals come from a different group.

A.2 *Ethnic clustering/segregation*

While the ELF is at first sight easier to interpret, the Theil has a number of attractive statistical properties, including the ability to construct measures of the ethnic and religious segregation (or "clustering") (Reardon & Firebaugh, 2002; Reardon *et al.*, 2000). A further advantage is that it can be decomposed to capture individual group contributions (Iceland, 2002). The decomposed Theil index (H) compares how diverse sub-areas in a given area as a whole (e.g., villages relative to the sub-district). The index ranges from 0 (little "clustering") to 1 (if no member of the same group lives in the same sub-area as another sub-member)

$$H_i = \frac{\sum_{j=1}^{J} \pi_{ji}(E_i - E_j)}{E_i} = \sum_{m=1}^{M} \sum_{j=1}^{J} \frac{t_j}{TE} \pi_{jm} \ln\left(\frac{\pi_{jm}}{\pi_m}\right), \quad (2)$$

where t_j is the population in sub-area (e.g., village) j, and $T =$ the total population in the area (e.g., sub-district). The ethnic segregation index is based on comparing the shares of an ethnicity in a sub-jurisdiction (e.g., village) (π_{jm}) to its overall share in a jurisdiction (e.g., sub-district) $r_{jm} = \left(\frac{\pi_{jm}}{\pi_m}\right)$, that is, the share of ethnic group m in village j as a proportion of the share of that ethnic group in the whole population in the sub-district. If $r_{jm} = 1$ for all j and m, all ethnic groups are evenly distributed across villages and the index equals zero. Note that it is not an indication of whether one group is more dominant than the other. Ethnic dominance is defined by the share in the population of the largest group.

A.3 *Local inequality—inequality education in sub-district*

In the absence of consumption or income measures by group and/or locality, we used educational attainment from the census as a measure of wealth, for *males aged 20–30* in the sub-district. The standard deviation is used as the inequality measure.

A.4 *Horizontal inequality in education in sub-district*

Our measure of horizontal group inequality measures the most to least educationally endowed group in a jurisdiction (e.g., sub-district), based on years of schooling by household heads

$$HI_{m=} \frac{\max_m(educ_{mr})}{\min_m(educ_{mr})} * 100,$$

with m denoting groups that represent at least 10% of the population.