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Diverse we stand:
Horizontal inequality and ethno-communal conflict in Indonesia

Bart Kleine Deters and Zina Nimeh

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Authors: Bart Kleine Deters and Zina Nimeh[1]

Abstract: This paper aims to shed some light on the drivers of (relatively) small-scale ethno-communal violence within an ethnically diverse state, by quantitatively examining the relationship between horizontal inequalities and ethno-communal violence. Specifically it addresses the complexity in assessing the effect of Horizontal Inequality on ethno-communal conflict in Indonesia. The paper examines the case of Indonesia around the time of the downfall of the New Order regime and the first years of the *reformasi* (roughly 1997-2003). Different HI indicators are constructed and a pooled time series cross-sectional probit regression is utilised, using deadly ethno-communal violence as a binary (dummy) dependent variable. The research measures HI indicators across five dimensions (health, employment, education, housing and network connectivity), which are further subdivided into access and achievement variables.

Results show that while horizontal inequalities can be considered a determinant for ethno-communal conflict, there are marked differences in the society for different groups, in this case linguistic versus religious groups. Preliminary results show that a common basis is formed by horizontal inequalities in malnutrition and water source. A main driver of the ethno-religious estimations has been adult educational attainment, pointing out to a narrative where schooling – and the career chances that come with it – is something for the privileged groups, leading to frustration among the disadvantaged.

This study adds to the existing literature on horizontal inequalities and conflict by building on previous studies and looking further at a broad range of horizontal inequality indicators within the diverse context of Indonesia. We reflect on the notion that there is not a single dimension with a clearly stronger explanatory strength than another. Rather, it is the combination of different facets of horizontal inequality that enables us to uncover the variation in the data.

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[1] Bart Kleine Deters (research assistant at MGSoG) bartkleinedeters@gmail.com; and Zina Nimeh (assistant professor at UNU-MERIT/MGSoG) zina.nimeh@maastrichtuniversity.nl.

Table of Contents

List of Tables and Figures

I.   Introduction

Introduction to the topic

Over one billion people worldwide are living in 'fragile' situation and affected by conflict, crime, and violence (World Bank, 2011), and while it might be argued that the era of large interstate conflicts as we have known them is behind us, intrastate conflicts draw a different picture (Eriksson & Wallensteen, 2004). Intrastate conflict can take many forms, such as intra-communal violence (between different groups in society, where the state is not directly involved), secessionist (where a party tries to break away from the state) or civil war (where one or more groups try to replace the current state apparatus) (G. K. Brown & Langer, 2010). Within this sub-set of conflicts, identity has become more important than ever, with 70 per cent of the conflicts in 2010 being coded as 'ethnic' (compared with 15 per cent in 1953) (Marshall, 2012).[2]

Identity underlies conflicts to distinguish between the "right" and the "wrong" side, between the "good" and the "bad", the "us" versus "them". It serves as a common banner, and features prominently in the narrative used to justify violence. Based on these narratives, some put forth the argument that the sheer co-existence of different ethnic or religious groups is enough to spark conflict (Huntington, 1993). However, it is often overlooked that the number of peaceful multi-ethnic and multi-religious countries is still larger than those who actually do experience violence; thus making this inability to coexist a partial rationalisation at best. A more thorough analysis is provided by the theory of *horizontal inequalities*, which links ethnicity, conflict and deprivation.

Horizontal inequality is a form of social exclusion where a certain group (be it an ethnic, linguistic, religious or otherwise distinctly defined group) is structurally disadvantaged vis-à-vis another group. This disadvantage can be political, socio-economic, cultural or – most of the time - a combination of those aspects. Where an unequal access to resources runs along ethnic lines, the chances of successful violent mobilisation are higher than where only one of the two is present. The theory was introduced by Frances Stewart in the early 2000s, not so much as an alternative, but more as an addition to the existing discourse on poverty and conflict (Stewart, 2000).

Governments have reacted differently to the existence of horizontal inequalities within their borders. Some – such as Russia in Chechnya or Iraq under Hussein in Kurdistan – have used military repression to prevent or suppress the mobilisation of popular unrest where horizontal inequalities existed, while others – like Northern Ireland and Côte d'Ivoire under Houphouët-Boigny – tried to attenuate the

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[2] This research will use the broad definition of ethnicity, which includes religion, ethnicity, nationality or another distinct cultural characteristic.

inequalities via inclusive social policies. Although the latter approach intuitively seems to be more effective, it does not necessarily lead to a peaceful coexistence of different groups. The Holy Grail – if it exists at all – has not yet been found. No two cases are alike, and therefore there are always variables lurking in the dark, waiting for the unwary modern Percival. Policies that might work in one country, can fail to do so in the next. Due to the many observed and unobserved factors at play in each case, cause and effect gets easily tangled. More formally: differences in populations and differences in settings are potential threats to external validity (Stock & Watson, 2002). The population in country X is likely to be different from the population in country Y, for known or unknown reasons. Even if the population is exactly the same, extrapolating from one country to the next might not be possible due to different settings, such as different laws, a different *zeitgeist*, and different economic situations amongst others. Again, it is especially the factors that the researcher cannot know that make it hard to extrapolate to other cases.

The best way to address this situation is to study a multi-ethnic state, with different cases of horizontal inequalities. This way the undetermined unknowns are likely to be constant, and thus no threat to the validity. The Republic of Indonesia seems to be the ideal candidate; this archipelago state has many distinct island groups, with a wide variety of languages, religions and ethnicities. It has seen a myriad of violent conflict (secessionist violence in Timor-Leste, Aceh and Papua and communal violence mainly on the Maluku islands, Sulawesi and Kalimantan), with the latter taken place mainly surrounding the breakdown of the New Order regime at the end of the nineties.

Statement of the Problem

The subject of the paper is to investigate how horizontal inequalities can influence conflict. This subsection will describe both items, discuss the relationship between each and define the main problems.

Horizontal Inequalities

The central subject of the paper is the horizontal inequality, which consists of two parts: inequality and the group. While examples exist of different groups facing different inequalities, usually a group faces deprivation in multiple areas. Theory prescribes that political inequality is the mother of all inequality, since it gives access to distributive decision-making and all the opportunities for corruption and nepotism that come with it.

The defining aspect of horizontal inequality is that it is aligned with a certain group – that the difference between the have and have-nots is not based on skill, hard work or plain luck, but on the ethnicity, religion or caste to which one belongs. While the group element gives the horizontal inequality theory its explanatory strength, it also creates a conceptual problem: how to define a

group? People are almost invariably part of multiple groups and can usually change their membership of groups (e.g. religious affiliation). It is thus impossible to categorise people in an exhaustive (everybody must fit into a certain group) and exclusive (nobody can be a member of more than one group) way (G. K. Brown & Langer, 2010).

Nevertheless, many conflicts have been – and are being – based on group affiliation. It seems that while scientifically ethnic categorisation is at best an artificial method, in the hearts and minds of the people involved the distinctions are very real. Perceptions – both of the horizontal inequalities and the groups – play a crucial role in the processes that lead to violence. Leaders can manipulate their followers to divert attention from intra-group inequality towards 'the other'.

Conflict

Despite the widespread existence of horizontal inequalities and ethnic animosity, conflict is much less common. It thus cannot be explained by referral to group-bound inequality alone, and there is a need to look further. Perceptions and how these are played out by so-called 'ethnic entrepreneurs' might be what lights the fuse, but a fuse without an explosive load attached to it will give nothing but a spark.

Two competing views are often brought into this discussion: the cultural hypothesis and the instrumental hypothesis. The cultural hypothesis states that an ethnic difference in itself is the root cause for conflict, and that a peaceful coexistence of ethnic groups is untenable in the long run. Its main advocates are Huntington (1993) and Kaplan (1994). The instrumental hypothesis sees those differences as merely instrumental, that the real causes being economic or political factors. The main scholars defending this strand of thought are Gurr (1970) and Horowitz (1985).

Horizontal inequality theory is related closely to the instrumental theory. The association between horizontal inequality and conflict has been shown more often (see Stewart (2011) for an overview), but it remains unclear whether the inequality itself causes the conflict, or if it is the perception of these inequalities. This difference matters because perceptions need not reflect reality. Take for example the Third Reich's depiction of the Jews as the dominant economic and political force in Weimar's Germany. While this perception was absolutely fact-free, it helped create the environment that justified persecution and in which the Holocaust could develop.

To sum up, while a scientifically sound categorisation of ethnicity is a long shot, identities as perceived by the individuals themselves and their society matter. If it is indeed only those perceptions that matter or if there also needs to be an objective socio-economic, cultural or political difference is still subject to debate.

Are horizontal inequalities a determinant of ethno-communal conflict?

The primary purpose of this paper is to quantitatively assess whether horizontal inequalities have been a determining factor in the ethno-communal violence that took place in Indonesia between 1998-2003. The rationale for the study is provided by the realisation that the nature of conflict has changed dramatically over the past twenty-five years, as is signified by the sharp – relative – increase in intra-state ethnic conflicts. Especially intra-communal violence, in which tensions after years of simmering suddenly escalate – leaving its mark on communities for years to follow – is hard to predict and even harder to prevent. While not disregarding the role of community leaders and perceptions, the horizontal inequality theory states – and has provided evidence – that political, socio-economic and cultural inequalities between groups are at the root of ethnic conflict. By extension, reducing those inequalities will also reduce the propensity of conflict.

It is precisely this extension which policy makers should be interested in. Politicians trying to create a stable and peaceful society will want to know which horizontal inequalities are most devastating to the cohesion in their communities. Unfortunately, current research has not been able to provide an answer to this– although many scholars have delved into the subject matter.[3] The reason for this is that most of this research has used only a few indicators of horizontal inequality, which the author believes is too little to draw strong conclusions. Horizontal inequalities are often intertwined; lower educational attainment, for example, negatively affects ones chances on the labour market, leading to lower household income and worse housing condition. It is thus true that using only a few proxies a good model can still be created, but such a model does not help policy makers trying to determine what the root problems are. Therefore this paper will look at a wide variety of horizontal inequalities – both access and achievement – to try and determine what the most important horizontal inequalities are, thereby providing an addition to existing literature.

We hypothesise that Horizontal Inequalities are a determinant of conflict, and we view this hypothesis as an expression of the instrumental theory. Specifically we investigate if a) Ethnic diversity is a determinant of conflict and/or b) Horizontal Inequalities are a determinant of conflict.

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[3] See Stewart (2011) for an overview of research involving horizontal inequalities, some of which will be discussed in the literature review.

II. Literature Review

Horizontal inequality and conflict

In this section we specifically review two papers that quantitatively test the link between horizontal inequality and conflict in a cross-country comparison. Challenging the idea that inequality and conflict are unrelated, Gudrun Østby conducted a large N-study to test group influences on conflict (Østby, 2008). The purpose was to test the effect of vertical inequality, polarisation and horizontal inequality on the onset of conflict. The main independent variables were vertical economic and social inequality (measured using the Gini-coefficient), ethnic, social and economic polarisation and social and economic horizontal inequalities. The economic variable was based on household assets, and the social variable on years of education completed. The horizontal inequalities were defined as where the social or economic inequalities coincide with ethnic boundaries. Using economic development, population size and conflict history as control variables, a logistic regression with country-clustered standard errors was run.

Both vertical inequality indicators were not significantly related to the outbreak of civil conflict. Ethnic polarisation as such also did not have a discernible influence on the dependent variable. Economic and social polarisation were both positive and significant, lending credibility to the theory that countries with a few clearly-delineated, internally strongly homogenous groups, and large intergroup differences, are more probably to experience violent conflict (Esteban & Ray, 1994). As expected, horizontal social inequality was a significant determinant variable. However, the influence of horizontal economic inequality failed to reach significance at any conventional level. This was surprising, since it indicates that the combination of ethnicity and economic polarisation is less powerful than economic polarisation alone.

Østby theorised that household asset ownership might not be reflective of the 'real' ethnic economic inequalities in a given society, but did not substantiate this claim. It seems more likely that there was a lurking group variable – other than ethnicity (unfortunately, the author did not define the concept) – which influenced both the chance of conflict and economic assets. Such a variable could be class distinctions, which is known to have led to Maoist/communist violent conflict in developing countries such as Peru and Nepal (Murshed & Gates, 2005). While the paper did suffer from a number of limitations, including data issues, the author did conclude that neither ethnicity, nor vertical inequalities alone are sufficient to explain the nascence of conflict but that it seems likely that horizontal inequality is an important factor.

An even more ambitious attempt to show the link between horizontal inequality and conflict has been undertaken by Cederman, Weidmann and Gleditsch (2011). Combining a host of different

datasets, the authors managed to create a worldwide dataset with *inter alia* geo-coded information on ethnic groups' settlement areas, spatial wealth measures, economic activity and access to state power. Their main purpose was to check if the existence of economic and political horizontal inequalities increased the probability of ethnic-driven civil war. It was theorised that the path from group asymmetries to conflict goes via two intermediate steps. The first step is the realisation that objective horizontal inequalities only become grievances when groups start comparing their collective assets with other groups. After grievances have become salient, violent collective action is only triggered through a process of group mobilisation led by group leaders. Although this seems rather obvious, it indicates that horizontal inequalities as such might be a necessary, but not a sufficient condition for conflict.

The authors limited themselves to ethnic-driven civil war. Conflict was considered ethnic-driven if the rebel group "expresses its political aims (at least partly) in the name of the group *and* a significant number of members of the group were participating in the conflict" (Cederman et al., 2011, p. 384). This definition was also used as the binary dependent variable. The economic horizontal inequality was measured as the distance of the group's GDP per capita to the average for the entire country. This allowed for both positive and negative distances (both relatively wealthier and poorer), and thus to check if horizontal inequalities work both ways. Political inequality was captured in a binary measuring exclusion from country-level central decision-making power. Controlling for GDP per capita (nation-wide), number of excluded groups in the country and years lived in peace, a logit regression was run.

The results of the regression were in line with the horizontal inequality theorem. Economic horizontal inequality had a highly significant and substantial effect on the occurrence of civil war. This was true for both relatively wealthy and relatively poor ethnic groups. Horowitz (1985) explained this by pointing out that well-off groups in society might fear that their privileges will be taken away, and will consequently rebel. The effect of GDP per capita was negative, indicating that richer countries are less prone to civil war – although this might have been an endogenous process. Interestingly, the number of groups excluded from power had a significant negative effect, which evidences Walter's theory (2006) that in ethnically rich countries central government is inclined to act very repressive towards minority claims, to prevent a chain reaction of separation movements. Lastly, the political horizontal inequality variable was positive and significant (especially in tandem with the economic inequality), which might indicate a grievance-based leader-follower dynamic.

This dynamic, however, need not follow the two-step theory put forward by the authors. It could very well be that the process of group comparison is instigated and influenced by community leaders aiming to enlarge their power base, making the horizontal inequalities largely instrumental. In other

words, the two-step theory is not proven nor rejected, which is the largest limitation of the paper. Other limitations flow mainly from the large scope of the research.

Indonesian context

A former Dutch colony, Indonesia has been ruled by authoritarian leaders for the majority of its independence, most notably general Suharto, who headed the country from 1967 to 1998. His 'New Order' regime was based on an implicit social contract which promised its citizens "prosperity and stability in exchange for acceptance of authoritarian government" (Liddle, 1999, p. 37). By opening up the country for foreign investment prosperity was attained, despite large-scale nepotism and corruption. Stability was ensured by a repressive military. As a side-effect of the rapid economic growth inequality increased as well (Mancini, 2008). This creation of have and have-nots might have contributed to the rise in ethnic tensions during the nineties (Booth, 2000).

The social contract worked as long as economic growth persisted. When the Asia currency crisis unexpectedly hit Indonesia in the fall of 1997 both inflation and poverty skyrocketed – poverty rates rose from 15% in the beginning of the crisis to 33% by the end of 1998 (Suryahadi, Sumarto, & Pritchett, 2003). This sharp increase was mainly caused by rising food prices – rice for example became on average twice as expensive – and had an uneven impact across Indonesia, both geographically and socio-economically. On top came a large draught combined with ravaging forest fires in Sumatra, Kalimantan and Sulawesi. Suharto could no longer deliver the prosperity he promised in the social contract and was forced to step down in May 1998 (Liddle, 1999).

The fall of Suharto marked a turning point in Indonesian history. The country had to reinvent itself, find a new workable social contract and transform from an autocratic centrist state to a decentralised democracy (Mishra, 2002). This process, which had already started in the dying years of the New Order regime, was marred by episodes of violence. The violence can roughly be divided in two groups, secessionist and ethnic violence. Secessionist conflict – mainly in Aceh, Papua and Timor-Leste – had been existent for decades and only became more intense during this period. Ethnic collective violence – where the state was not directly involved - had been largely absent from the archipelago in the previous decades, however. The violence took a myriad of forms, ranging from anti-Chinese pogroms on Java, religious strife between Muslims and Christians in the Maluku's to anti-migrant violence targeting the Madurese in Kalimantan.

In the years preceding the transformation Indonesia had always been described as a country without searing ethnic tensions; the sudden apex in violence surprised many political scientists (Boo Teik, 2004). It was feared that the country might break up, like the Soviet Union had done the decade before (Uhlin, 1999). This proved to be untrue. Only Timor-Leste gained independence, but the

Indonesian occupation of the island had always been seen as illegitimate (United Nations Security Council, 1975). Furthermore, large scale ethnic violence has been virtually absent after 2003 (World Bank, 2010). It is clear that the violence was able to erupt due to the power vacuum in the chaotic years of the so-called *reformasi,* but it is still unclear what caused these sudden outbursts.

While some authors have a rather simplistic view (such as the alleged violent Indonesian culture (Colombijn & Lindblad, 2002)), most authors view the violence as a complex interplay of factors, actors and opportunities. Common discussion points are grievance versus greed and ethnic tensions as either a cause or an effect. What is typical about the collective violence is its high concentration in both time and space. It is estimated that only 15 districts (which represented 6,5% of the total population) accounted for 85,5% of all deaths in episodes of collective violence (Varshney, Panggabean, & Tadjoeddin, 2004). The incidence of collective violence started to rise at the end of 1996, peaked in 2000 and then dropped sharply afterwards; it started before the Asia crisis fully hit Indonesia, and continued for a couple of years after the fall of Suharto.

Horizontal inequality and conflict in Indonesia

Several authors have combined the conflict data with socio-economic databases to determine the characteristics that made these particular districts descend into violence while the majority of Indonesia remained relatively peaceful.

In 2008 Mancini used Indonesia to study the link between horizontal inequality and ethno-communal violence (Mancini, 2008). In his opinion, inequality between ethnic groups is an important determinant of violence in an ethnically diverse environment. The study combined socio-economic information from the 1995 Indonesian Intercensal Population Survey with the UNSFIR II conflict dataset in order to facilitate a district level analysis. To account for the diversity and variation of ethnic composition in districts, a horizontal inequality indicator was used which is sensitive to group size, without mixing it with vertical inequality, the so-called 'group-based coefficient of variation weighted by group size' (GCOV).

Using a binary as the dependent variable to determine whether deadly ethnic violence occurred between 1997 and 2003, a logit regression was set up which measured the following socio-economic indicators: average years of education, proportion of landless agricultural labourers and poor farmers, proportion of unemployed young males, income inequality, proportion of civil servants and child mortality rates. Ethnically homogenous districts were omitted from the regression, since the author asserted that by definition ethnic conflict is impossible in those districts. According to the regression, the probability of deadly ethno-communal violence was higher if the district's HDI was

lower,[4] the proportion of the population which consists of migrants was higher,[5] the number of conflicts between 1990 and 1996 was higher and the gap between child mortality rates was higher. The other factors had no significant impact. The effect of child mortality rates turned out to be the strongest and most consistent in different configurations. Interestingly, when the change over time was measured for child mortality – based on the 1990 Indonesian census survey – the rates on average nearly halved, but inequality had risen on average, and especially so in those districts that experienced collective violence.

Mancini concluded that child mortality reflects other socio-economic inequalities, such as housing quality, healthcare and education levels and can thus be used as some sort of proxy. A possible reason for the strong link could be the strong emotional and symbolic value of infant mortality, which can be used instrumentally to fan ethnic hatred. The relation between a low HDI score and violence was explained by the Asia crisis, which might have exacerbated existing inequalities. The overall conclusion was that vertical income inequality – which has had no significant effect – is not sufficient to predict the probability of ethnic violence, where horizontal inequalities might be.

Mancini's research suffers from the same limitation the other horizontal inequality based papers: using a dummy as the dependent variable. A binary variable is simply not able to grasp the diversity of the different conflicts: some lasted only an afternoon, but were extremely violent, causing hundreds of deaths while others were more protracted, carrying on for weeks but on a much smaller scale. The author's choice to exclude Java because of its ethnic homogeneity can be criticised on the ground that the island saw a number of very violent anti-Chinese riots. The fact that this violence was one-sided and aimed at a demographically marginal group in society does not preclude that it is ethno-communal violence, and it should therefore have been included in the analysis. Lastly, since only one horizontal inequality variable (child mortality) is significant, the conclusion that horizontal inequalities play an important role in predicting the likeliness of ethnic violence is not particularly convincing.

Much of the same criticism was also voiced by Mohammad Zulfan Tadjoeddin, in his article on ethnic violence in Indonesia (Tadjoeddin, 2013). He highlighted two possible explanations: grievance and greed. The former comes from previously privileged groups, who in the years before the violence were losing their advantaged position. Citing Gurr's (1970) concept of relative deprivation – the discrepancy between what people think they deserve and what they get – Tadjoeddin theorised that the frustrations that came with this process fuelled the potential for violence. The greed factor was

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[4] Based on 1996 figures. It is meant as a proxy for the level of economic development.
[5] An important feature of New Order politics was *transmigrasi*, a program in which Javanese families were moved to other provinces in order to 'Javanise' Indonesia. For a narrative on how this process influenced the conflict in Aceh, see G. K. Brown (2005).

explained by the process of economic and political decentralisation that has taken place at the same time, inciting inter-ethnic competition to control state resources at a local level.

The paper also looked at the district level to discover factors influencing the ethnic violence between 1997 and 2002. Conflict data were drawn from the UNSFIR II database, and the Indonesian statistical office was used for socio-economic data. The dependant variable was ethnic violence at the district level, measured by an ordinal scale, running from zero to six, with increasing steps of severity. Grievance was measured by a so-called 'education poverty gap', which is the distance between the level of education and the level of poverty. The relative deprivation theory prescribes that educated but poor people feel that they deserve more than they get and therefore get frustrated. Since greed was defined as the desire to control state resources at the local level, it has been measured by total district revenue after decentralisation. Controlling for population, Java,[6] magnitude of the recession and pre-crisis growth, an ordered logistic regression was used to discover the determinants of ethnic violence.

The results of the regression showed a positive, highly significant effect of grievance on the severity of ethnic violence, which was consistent over different configurations. Greed, the magnitude of the recession and pre-crisis growth had no significant influence. Tadjoeddin concluded that the data support Gurr's theory that education makes people realise that they are not getting their just desert, making the combination of highly educated and poor a dangerous mix. As to why the violence took place during this particular period, the author pointed to research showing the vulnerability of countries to violence during the early stage of democratisation (Hegre, Ellingsen, Gates, & Gleditsch, 2001). After the democracy has consolidated itself, it provides peaceful avenues to channel both greed and grievances.

Tadjoeddin's theory of convergence, where a previously privileged group's frustrations are the main cause of violence is intriguing, but ultimately unconvincing. The main reason is that he does not test the theory by looking at the change in educational attainment and poverty for certain ethnic groups within districts over time, but only at the education-poverty gap for the entire district at one point in time. His method thus fails to explain why the violence was ethnic, as opposed to anti-governmental. Furthermore, no actual convergence or divergence was measured, since the analysis treated only one time point. Lastly, Tadjoeddin seems to be of the opinion that violence caused by convergence disproves Stewart's theory of horizontal inequality. The author believes this to be a misunderstanding of horizontal inequalities, which may run both ways – as has been seen above.

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[6] According to the author, Java is structurally different from other islands, due to it being highly populated, ethnically homogenous and its low levels of ethnic violence.

Discussion

In the articles previously discussed, social horizontal inequalities were shown to be a significant determinant of conflict. Differences in educational attainment and child mortality both have strong mobilisation potential. One would expect the same for economic horizontal inequalities, but not all studies find a significant effect. Most authors blame this lack of effect on the selection of variables. It is true that data often limits the possibilities to check multiple possible causes, but the number of independent variables (with the exception of Mancini's research) has been rather limited. Therefore, it seems expedient to try and use multiple variables for each category of horizontal inequality.

As Stewart (2000) stated, both relatively advantaged and relatively disadvantaged groups may start a conflict. Tadjoeddin's theory of divergence and convergence gives a helpful insight in when groups will start a conflict. To test his hypothesis that disadvantaged groups will become violent when the gap widens – and advantaged groups when the gap narrows – it is necessary to compare the development of horizontal inequalities over time. Intuitively, disadvantaged groups might also rebel when disparities do not change over time, as their position seems hopeless. This seems more unlikely for advantaged groups, although advantaged regions might feel that they are better off on their own – regardless of changes in inequality (G. K. Brown & Langer, 2010).

In Østby's research, ethnic polarisation as such did not have a discernible effect on the probability of conflict. This outcome discredits the cultural hypothesis, but does not necessarily mean that the instrumentalist theory is correct. In fact, since she found that economic and social polarisation are stronger determinants than social horizontal inequality the role of ethnicity might be less decisive than expected. The nature of polarisation implies that there is still a group factor, but the distinction between groups might also be based on class or region. By definition, this non-ethnic type of polarisation can only be socio-economic or political.

As has been noted earlier, while horizontal inequalities might be a necessary, they are definitely not a sufficient condition for conflict. Cederman's, Weidmann's and Gleditsch' two-step theory where "objective political and economic asymmetries can be transformed into grievances through a process of group comparison [and] such grievances trigger violent collective action through a process of group mobilization" (2011, p. 481) captures this realisation, but fails to explain what triggers the group comparison. This trigger could be external (e.g. economic or political shock) or internal (stirred by group leaders). If the latter is true, this theory is more illustrative of a greed-driven conflict than the grievance explanation it pretends to be. In the author's opinion, group comparison is more of an automatic, continuous process, and a grievance only emerges if the outcome is deemed unfair. The decisive factor is thus perception.

Perceptions are used in each article to help explain the link between inequality and violence. None of the papers tests their influence, however. While this is not surprising, given that they are so hard to quantify, it is important to keep in mind that this knowledge gap confounds any causal links that might be found.

What does this all mean for the case of Indonesia? The high concentration of violence, both in time and space, is somewhat puzzling. None of the districts where communal violence erupted around the fall of the New Order regime have relapsed in the years after 2003,[7] begging the question of why conflict erupted at the time that it did. The environment of financial crisis and decay of the central states is mostly explained as an opportunity for the violence to erupt, and not as a cause in itself. G. Brown, Tajima, and Hadi (2005) show this opportunity aspect in a case study of Central Sulawesi. The concurrent processes of decentralisation and decay of central state power made the old power relations null and void, but did not replace them. This vacuum forced group leaders to 'defend their turf', without being able to rely on previous arrangements or institutionalised processes. This explanation is more akin to greed-driven theories than horizontal inequality. Again, the fact that all bouts of violence took place in a single period makes it hard to test this possible cause. Nevertheless, it might be helpful to test whether districts that were split during the decentralisation process were more likely to experience ethno-communal conflict, as a rough proxy for greed as the explanation of conflict.

Most articles explain horizontal inequality-induced violence in an instrumental way: grievances are uttered in such a manner that it will adjust the discrepancies, e.g. via a rebellion or by rioting against the central authorities. The Indonesian bloodshed seems to be an expression of frustration or perhaps ethnic hatred, since none of the violence was aimed at the politically dominant Javanese population, although Javanese had transmigrated across the entire archipelago during the previous decades and were often key local economic figures.[8] If the violence was indeed solely propelled by a need to let off steam, greed did not play a role - there was simply nothing to be gained. The change in ethnic composition of Central Sulawesi districts signals otherwise, however. By trying to remove other ethnicities from a district, leaders could create a uniform constituency. This greed explanation seems most likely in the case of split districts, given that such a partition shuffles existing power relations (see for example the partition of India in 1947 (Brass, 2003)).

In hindsight, the literature review has given rise to more questions than answers. Yes, horizontal inequalities can be a determinant of conflict, although different studies found different effects – and

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[7] Although some districts have seen terrorist attacks or incidents of low scale (ethnic) violence.
[8] See Brown (2005) for a narrative on the process of *transmigrasi* and how it altered local economic and power balances in Aceh.

even then for only one or two horizontal inequalities. Yes, both diverging and converging inequalities can be significant determinants of conflict, but is this also the case in Indonesia? Could it be that next to grievance reasons, greed also played a role – especially in split districts? And lastly, is ethnicity the right way to capture the relevant groups in a society? Østby found that political and economic polarisation were a stronger determinant of conflict than horizontal inequalities, pointing to a group explanation which might be totally outside the ethnicity debate.

A number of these questions will be addressed in the quantitative part of the research. To provide a more certain answer to the research question the whole spectrum of horizontal inequalities will be taken into account. This allows us to distinguish between the true determinants of conflict and those inequalities that are merely proxies. Furthermore, the idea of converging and diverging inequalities as determinants of conflict will be tested in the Indonesian context. Lastly, the research will incorporate split districts as a control variable, to proxy a greed explanation of the ethno-communal conflict. The multi-layered nature of perceptions and group categorisation is something that cannot be measured, but should be kept in mind when interpreting the answers to the previous questions.

III. Methodology

Level of analysis

Horizontal inequality is by definition a group issue. Aggregation from the individual level is thus needed to be able to compare different groups. Given that this research focuses on ethno-communal violence, the community of interest needs to be defined. Both Indonesia's extraordinary diversity – with over a hundred ethnic groups, almost thousand inhabited islands and a wide variety of religions – and the finding that communal violence in Indonesia has been highly localised call for a comparison at a low tier (Varshney et al., 2004). A compromise has to be found between a level that is low enough to allow for sensible aggregation, and high enough to ensure sufficiently large subsamples.

The level of analysis chosen for this research is the district level. Indonesian districts are called *kabupaten* (regency) for more rural regions and *kota* (city) for more urban regions. It is one tier below the provincial level. The number of districts has grown rather rapidly as a consequence of the *reformasi*, from 295 in 1990 to over 500 at the moment. This rationale for this proliferation is Law 22/1999, which assigned all expenditure decision-making power to the district level, with the exception of national defence, religious matters, central administration and foreign affairs. Needless to say, this provided quite an incentive to form new districts. As a result, the variety among them is considerable, both in size and population.[9] Notwithstanding this heterogeneity, districts are a good level of analysis for three reasons. First, the amount and reliability of data is of a sufficient level to allow for statistical analysis. At lower levels, data is often missing or non-existent. Second, the nature of violence in Indonesia is so that it often crossed lower tier borders (inter-village brawls, massive demonstrations), while it (almost) always stayed within district borders.[10] Lastly, after decentralisation districts became the prime state entity (Ahmad & Mansoor, 2002). The large amount of decision-making power made it an important object of contention between rivalling groups and districts thus seems a logical unit of analysis.

Within districts, ethnic groups are the relevant unit of analysis. If necessary, information in each indicator is aggregated either from the individual or the family level. Malnutrition, for example, is measured individually, while flooring material is measured per household. The dataset used allows for such a distinction.

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[9] The smallest district has just over 5,000 inhabitants and the biggest almost 5,000,000. The median and average are both around 250,000 (Citypopulation.de, 2012).
[10] With the exception of violence in Jakarta, which is more likely to spread throughout the whole city.

Variables

Dependent variable

The first issue is determining how broadly the violence variable will be defined. Collective violence is defined in the conflict dataset as "violence perpetrated by a group on another group (as in riots), by a group on an individual (as in lynching), by an individual on a group (as in terrorist acts), by the state on a group, or by a group on organs or agencies of the state" (Varshney et al., 2004, p. 7). The authors group violence in four categories: ethno-communal, state versus society, economic and other forms of collective violence.

Although intuitively ethno-communal violence seems to be the category of interest, an argument can be made to broaden the scope. Theoretically, while the underlying horizontal inequalities might very well be of an ethnic nature, the violence need not be. It is perfectly imaginable that frustration born out of horizontal inequalities might be vented via other forms of violence, such as land conflict, political party rallies or violence against the state (via demonstrations). Given the overrepresentation of certain ethnic groups (especially Javanese) in the police and armed forces, fear for repercussions might rule out ethnic violence against these groups, making other violent alternatives more likely.

Focusing solely on ethno-communal violence runs the risk of losing potentially valuable information. On the other hand, allowing for a broader scope is likely to turn in a scientific guessing game: of what forms of collective violence can horizontal inequality be a hypothetical determinant? While it has been shown that ethnic indicators can be a significant determinant of ethnic conflict (specifically civil war) (Sambanis, 2001), the relationship between ethnicity and other forms of violence is still hotly debated. To avoid this slippery slope, a narrow definition of violence is thus adopted:

> "*violence perpetrated by a group on another group, by a group on an individual, or by an individual on a group, in which ethnicity is the primordial factor used to identify the persons involved or to explain the rationale for the violence*"

The dependent variable measures whether deadly ethno-communal violence took place in the district during the period 1998-2003. The use of a binary variable is explained by the relative rarity of ethno-communal violence (only 13 out of 147 districts experienced it), and the low variance in frequency and intensity of incidents.[11]

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[11] For these districts, the frequency ranges from 1 to 5 incidents (IQR 1-2) and the intensity ranges from 1 to 1188 [IQR 2-33] deaths, caused by one outlier: the anti-Chinese pogroms in May 1998 in Jakarta.

Independent variables

Horizontal inequalities can exist in many different forms in multiple dimensions. The diversity of Indonesia makes it likely that different ethnic groups face different inequalities. A wide variety of indicators is needed to account for this heterogeneity. Five dimensions are identified that together provide an insight in socio-economic deprivation. These are employment, health, education, housing and network connectivity. Within each dimension two indicators are chosen, one which signals equality of access and one which reflects equality of achievement. In this section the dimensions and their indicators will be discussed.

The function of employment is twofold. It provides access to resources needed to fulfil other aspects of life and is an achievement in itself, as it adds to a person's development, identity and self-worth (OECD, 2011). Access to employment is measured by the dummy variable *under- or unemployed*, which is one if last week's main activity of an adult respondent (15+) was to look for work, or – if the main activity was work – the hours worked per regular working week are less than half of the statutory standard working week of 40 hours, and zero otherwise (Puguh , Iftikhar , & Iyanatul 2000). Achievement is measured by the dummy *underpaid*, which is one if a person earns less than sixty percent of the median hourly wage, and zero otherwise. It should be noted that price and wage levels vary considerably among the Indonesian archipelago, as did the impact of the Asia financial crisis (Dhanani & Islam, 2002). Therefore, the median is calculated for each province separately.

The function of health is more instrumental, as it is needed to efficiently exercise our human capabilities (Sen, 2002). Access to health is measured by the variable *child- and infant mortality*, and is calculated for all women aged 15 to 49 in a subgroup as the sum of stillbirths, miscarriages and life births but who passed away later, divided by the sum of life births.[12] While child mortality can be used as a proxy for many socio-economic dimensions, it is primarily an indicator for (access to) pre- and postnatal health care and education. Health achievement is measured by the dummy *malnutrition*, which is one if an adult is underweight (a body-mass index of below 18) and zero otherwise.

Education also has an instrumental function, teaching persons to read, write and count, enabling them to achieve important life functions. As Tadjoeddin (2013, p. 24) notes, "education raises people's expectations about earnings and welfare". Access to education is measured by the dummy *Children Education*, which is one if a child (aged 6-14) is currently enrolled in school and zero

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[12] The survey question did not define a time period for 'passed away later'.

otherwise. Educational achievement is measured by the ordinal variable *Adult Education*, which is higher if an adult (age 15+) has attended a higher education level.[13]

The function of housing is twofold. It reflects economic achievement, while at the same time being instrumental to good health and sleep. Since this precludes the dichotomous distinction between access and achievement, the indicators are chosen to represent hygiene and durability. Hygiene is measured by the dummy *Water Source*, which is one if the household's main source of drinking water is from a closed source (pipe, pump, well or bottled) and zero otherwise. Durability is measured by the dummy *Flooring*, which is one if the flooring material is not dirt, sand or dung, and zero if it is.

Network connectivity is less straightforward. It reflects if someone successfully participates in the public life, and the influence a person can have on society. It can be both political and social. It is also a proxy of how segregated a society is, and to what extent soft power is concentrated in particular groups, or shared among ethnicities. The political aspect of network connectivity is proxied by *Civil Servant Distribution*, which measures the relative representation of each ethnic subgroup in the civil service apparatus. The Indonesian civil service is characterised by an informal patronage system, where jobs can be purchased and nepotism is a serious problem (World Bank, 2003). This makes it an interesting indicator to study ethnic inequality. The social aspect is proxied by *Community Participation*, which measures if a person is actively engaged in a local community initiative, such as a women's association, community meetings or voluntary labour program.

Lastly, *household consumption* will be taken into account. It is calculated based on the OECD-modified equivalence scale (OECD, 2012), and is modified by taking the natural logarithm of that value.

Measuring horizontal inequalities

When measuring horizontal inequalities, a number of pitfalls need to be avoided. According to Stewart, Brown and Mancini (2008) a good measure is not influenced by vertical inequality or intra-group inequality, is sensitive to group size, and avoids to be too evaluative. One such method is the group coefficient of variation (GCOV), which measures the variance divided by the mean, weighted by the size of each subgroup. Formally:

$$(1)\ GCOV = \frac{1}{\bar{y}} \left(\sum_{r}^{R} p_r (\bar{y}_r - \bar{y})^2 \right)^{\frac{1}{2}}$$

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[13] The distribution is 1 for no formal schooling, 2 for primary school, 3 for junior high, 4 for senior high and 5 for college and above.

where R is the number of ethnic groups, Y bar is the sample mean of variable Y, $\bar{y}_r = \frac{1}{n_r}\sum_i^{n_r} y_{ir}$ is the mean value of y for group r and p_r is group r population share. For all indicators, the GCOV will be used to assess horizontal inequality. To test the hypotheses on converging and diverging inequalities, the change over time of the GCOV for each indicator will be included.[14] Lastly, the district mean of the indicator will be assessed as well.[15]

Control variables

Lastly, a number of control variables were included. These are:

- *Violence in the period 1990-1997*. A dummy variable which is one if deadly collective violence took place in the district before the socio-economic data was collected, and zero otherwise.[16]
- *Ethno-Demographic fragmentation.* This measure of the population distribution in a district is included to account for purely demographic determinants of conflict.
- *Urban/rural area.* Dummy variable which is one if the district is more urban (Kota) and zero if it is more rural (Kabupaten).
- *District split*. Dummy variable which is one if the district has split between 1998 and 2003, and zero if otherwise.

Data

The research combines two datasets. Socio-economic data is derived from the RAND Indonesian Family Life Survey (Frankenberg & Thomas, 2000), which followed Indonesian households (and their split-offs, individual members and new entrants as well) over four 'waves': in 1993, 1997, 2000 and 2007. Only the first two waves are used to calculate the variables, and their change over time. The IFLS survey covers thirteen (of the thirty-four) Indonesian provinces,[17] accounting for approximately 84% of the Indonesian population in 1993. The individual and household data from the survey is aggregated to the district level before merging it with the United Nations Support Facility for Indonesian Recovery (UNSFIR) database on collective violence (Varshney et al., 2004).

The UNSFIR II database contains information on collective violence incidents in Indonesia between 1990 and 2003 for fourteen provinces.[18] These provinces account for 96.4% of all casualties in the

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[14] Change over time is calculated based on the 1993 and 1997 waves of the survey.
[15] With the exception of Civil Servant Distribution. Since this indicator measures the relative representation of different groups in the civil service, a district mean (including all groups) would be meaningless.
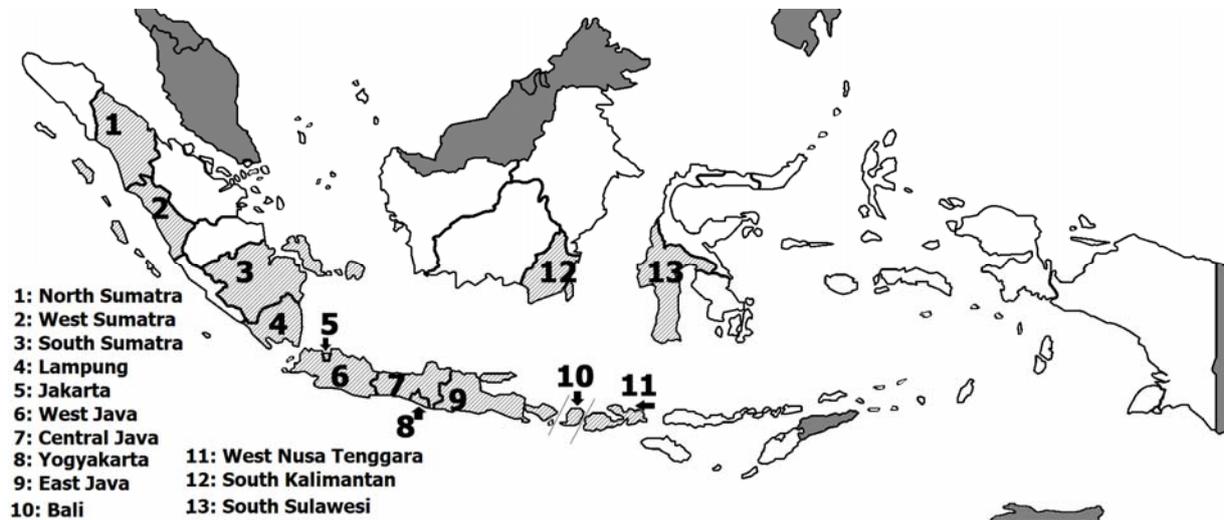[16] It should be noted that this is the broad definition of collective violence, including all four categories, instead of just ethno-communal.
[17] The provinces are: West Java, Jakarta, Central Java, Yogyakarta, East Java, Bali, West Nussa Tengara, North Sumatra, West Sumatra, South Sumatra, Lampung, South Kalimantan and South Sulawesi.
[18] The provinces are: West Java, Jakarta, Central Java, East Java, West Nussa Tengara, South Sulawesi, Central Sulawesi, Riau, Banten, Central Kalimantan, West Kalimantan, East Nussa Tengara, Maluku and North Maluku.

period of measurement.[19] The data is based on national and regional newspaper reports, cross-checked with local sources in case of ambiguity. Information on deadly ethno-communal incidents for the RAND IFLS provinces that were not included in UNSFIR II is derived from the research article describing the earlier UNSFIR I database (Tadjoeddin, 2002).

Figure 1: Provinces covered by the paper

1: North Sumatra
2: West Sumatra
3: South Sumatra
4: Lampung
5: Jakarta
6: West Java
7: Central Java
8: Yogyakarta
9: East Java
10: Bali
11: West Nusa Tenggara
12: South Kalimantan
13: South Sulawesi

After merging those two datasets, districts with less than fifty observations were dropped. This was done to attain statistically more reliable results.

Calculations were based on two ethnic identifiers: religion of the respondent and main language of respondent (next to the *lingua franca* Bahasa Indonesia). The religious identity is reported in every wave, while language is asked in the last three waves. Ethnicity was only reported in the last wave, making it impractical to backtrack. Ethnicity and language are highly correlated (over 0.9, with the differences coming mainly from small ethnicities that have a common language). Therefore, language is a good proxy for ethnic background. To limit the number of languages, small groups (less than two per cent of the sample) were merged with similar groups if those were ethnically and/or linguistically similar (based on Lewis, Paul, Simons, & Fennig, 2013),   and no ethnic violence has occurred between them. The three small groups that remain have a language and culture that is unique in Indonesia, and were all involved in ethno-communal violent incidents.[20]

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[19] With the exception of Aceh, Timor-Leste and Papua, which were subject to high levels of secessionist violence.
[20] These are the Chinese, Toraja and Lampung languages.

Regression analysis

A probit regression with heteroskedasticity-robust standard errors will be used for several reasons. First, the dependent variable is binary with a low number of successes (only 8.84% of districts). Second, most independent variables are either integers ranging from zero to one, or also binary. Lastly, the number of variables is relatively high for the number of observations, which limits the degrees of freedom. These three factors combined are likely to cause the issue of 'complete determination', where certain covariate patterns perfectly predict a success or failure (Sribney, 2005). This phenomenon makes it possible that the model fit is very good as a whole, while at the same time most variables fail to reach significance. Although this is not a problem in itself, it is often accompanied by hidden collinearity between two or more independent variables. To prevent this, certain variables have to be left out of the estimation. If this is the case, the text will mention it. This solution is far from ideal, since dropping certain variables prevents the model from calculating the impact of that variable.

An alternative way of construing the dataset is used to respond to this. While the nature of the independent variables and the low number of 'successes' for the dependent variable cannot be changed, the low N and corresponding low degrees of freedom can be addressed by a pooled time series cross-sectional analysis. Using this method, one creates a dataset consisting of multiple cross sectional datasets of randomly sampled individuals at different points in time (Zivot, 2012). The method is generally used to capture time-dependent effects, but it also enables the researcher to increase N (and as a corollary the degrees of freedom). An important condition is that coefficients need to be statistically constant over time. In the current analysis, this is ensured by using a two-group mean comparison t-test for each variable to investigate whether the variable changed significantly (at the 95% confidence level) between the two years. If this was the case, the variable was not used in the estimation.[21] Again, this prevents using the variable to test its impact on the probability of conflict. To be able to test each variable at least once, it was decided to use both approaches. First the probit regressions with the years separated will be run, and afterwards the pooled time-series cross sectional probit will be estimated. An overview of all the independent and control variables can be seen in table 2.

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[21] Since community participation was only measured in 1997, it could not be tested with this approach.

Table 2: Overview of variables

Variable	GCOV	District Mean	Type
Dependent variable			
Deadly Ethno-Communal Conflict			Binary
Independent variables			
Child- & Infant Mortality	x	x	Continuous
Malnutrition	x	x	Continuous
Under- or Unemployed	x	x	Continuous
Underpaid	x	x	Continuous
Adult Education	x	x	Continuous
Child Enrolment	x	x	Continuous
Flooring	x	x	Continuous
Water Source	x	x	Continuous
Civil Servant Distribution	x		Continuous
Community Participation	x	x	Continuous
HH Consumption	x	x	Continuous
Control variables			
Urban / Rural			Binary
History of Communal Violence			Binary
Ethno-Demographic Fragmentation			Continuous
District split between 95 and 05			Binary
Consumption Gini			Continuous
Observations per district			Continuous

Limitations

The methodology chosen has a number of limitations. The first is that sample selection is not random. In the first IFLS wave (1993) respondents were selected randomly to represent the population in the provinces. The 1997 respondents, on the other hand, were chosen because they either were a respondent in 1993 or lived in the same household as a 1993 respondent. Furthermore, first wave respondents who moved to a province not covered by the survey were not surveyed in 1997. This led to an individual recontact rate of 91%.

The second limitation is the relatively short period between the two first waves. Horizontal inequalities are notoriously persistent over time, and especially achievement inequality changes very slowly (Stewart, 2008). To reliably test the influence of divergence and convergence of inequalities over time, a longer time span would be recommended.

Next, the dataset does not cover all Indonesian provinces. While the IFLS survey covers the lion's share of the Indonesian population, it cannot be extrapolated to represent the entire population. The two largest islands of the archipelago – Java and Sumatra - are almost completely included, leading to an overrepresentation of the Javanese and Muslim population. The ethno-communal conflicts in

the covered provinces might therefore not be representative of ethno-communal conflict in the whole of Indonesia. Indeed, some excluded provinces – such as the Malukus or North and Central Sulawesi - are ethnically more diverse and experienced the most intense episodes of ethnic violence (Colombijn & Lindblad, 2002).

Since no deadly ethno-communal violence took place in the surveyed provinces before 1998, there is no simultaneous causality per se. Despite this, other forms of collective violence occurred during those years. According to the UNSFIR II database, 19.68% of all deadly incidents took place between 1990 and 1997, resulting in 315 casualties. Given the disruptive nature of communal violence, it is not unthinkable that other variables – especially the socio-economic indicators – are biased in districts were such violence took place.

The ethnic identification constitutes two minor limitations. 4 % of the respondents indicated that they only spoke Bahasa Indonesia, and could thus not be linguistically classified.[22] These observations were dropped when calculating the socio-economic indicators, possibly introducing a bias. It should be noted that 77.43% of these observations came from an urban district,[23] which might signal a more cosmopolitan lifestyle where ethnicity plays a less prominent role. Next, the religious indicator does not take into account movements and sects within a religion. These groups are identified by their overarching denomination, which makes it impossible to specifically test the main hypothesis for sectarian violence.

Another limitation is presented by the Indonesian diversity. This diversity can be classified as one major group combined with many small groups. The main linguistic group is the Javanese, while the dominant religion is Islam. It is possible that the influence of the large group conceals that of the small groups. Since the group coefficient of variation measures distances from the mean weighted by group size, very large groups tend to 'muffle' the GCOV value, as they both have a large weight and pull the sample mean towards theirs. Some of the smallest groups are of particular interest to the research, since they have been involved in ethno-communal violence. At the same time, their small size makes it unlikely that their impact on the different indicators will be statistically significant in the analysis. It is thus elementary to be cautionary when interpreting the results. To somewhat account for this phenomenon, more lenient significance levels were used (10%, 5% and 1%).

Lastly, the UNSFIR II database does not cover all IFLS provinces.[24] Conflict information for those provinces is based on the UNSFIR I database. The data collection method for those datasets is

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[22] This percentage is obtained after language matching with other household members.
[23] Urban districts make up 29.54% of the population.
[24] The provinces not covered are Yogyakarta, North Sumatra, West Sumatra, South Sumatra, Lampung, Bali and South Kalimantan.

different, however. UNSFIR II looked at national and regional newspapers, and cross-checked with local sources, while UNSFIR I only researched national newspapers. It is thus likely that UNSFIR I underreports the number of communal violence incidents. However, underreporting is most likely to happen with 'everyday' small-scale violence. The rarity of ethno-communal violence and the fact that only deadly incidents are taken into account ameliorates this bias to some extent.

IV. Results

Summary statistics

Table 3 shows the sample distribution of linguistic and religious groups.[25] As can be seen, Islam is the dominant denomination in Indonesia. It is the majority religion in every province, with the exception of Bali, which is a historically Hindu-oriented island. Similarly, the Javanese and Sundanese are by far the most common linguistic groups. Both originate from Java, which is the most populous island. The process of *transmigrasi* has led to their representation in every province,[26] where they often are sizeable minorities.

Table 3: Sample distribution of linguistic and religious groups

Language			Religion		
Type	*N*	*Percentage*	*Type*	*N*	*Percentage*
Javanese	27,447	41.59%	Islam	61,199	87.3%
Sundanese	8,429	12.77%	Christianity	5,059	7.2%
Balinese	3,060	4.64%	Hinduism	3,041	4.3%
Batak/Nias	2,889	4.38%	Buddhism	801	1.1%
Bugis/Makassar	3,441	5.21%	*Total*	*70,100*	
Chinese	532	0.81%			
Maduranese	2,166	3.28%			
Sasak	2,551	3.87%			
Minang	3,926	5.95%			
Banjar	2,319	3.51%			
Bima/Sumbawa	1,710	2.59%			
Other South Sumatra	3,019	4.57%			
Toraja	512	0.78%			
Betawi	2,062	3.12%			
Lampung	376	0.57%			
Other language	1,554	2.35%			
Total	*65,993*				

Source: Authors' Calculations

The summary statistics for the 1993 dataset can be seen in table 4.[27] In the first column all the districts are shown, while the second and third column show the linguistically and religiously diverse districts respectively.[28] Ethno-communal violence seems more common in ethnically diverse districts, although the high standard deviations warrant caution for too strong statements in this respect. While this seems an open door, there have been a number of deadly ethnic incidents in

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[25] The different totals are due to respondents who did not answer both questions and respondents that stated Bahasa Indonesia as their main language.

[26] See footnote 7 and the glossary.

[27] Participation was only measured in 1997, and is therefore not included here.

[28] A district is diverse if there is more than one ethnic group.

homogenous districts. There are two possible explanations for this anomaly. The first is the existence of sectarian violence, which has been discussed in the limitations paragraph. The other is probably undersampling. As stated before, some numerically rather small groups (mainly the Chinese) are geographically dispersed. It is possible that these groups – for whatever reason – where not included in the district sample, while the district has seen ethnic violence involving that particular group.[29]

Table 4: Mean and Standard Deviation for survey year 1993

Variable	All districts		Linguistically diverse		Religiously diverse	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Deadly Ethno-Communal Conflict	0.087	0.28	0.124	0.33	0.122	0.33
GCOV Variables						
Child- & Infant Mortality	0.165	0.31	0.268	0.33	0.239	0.39
Malnutrition	0.213	0.38	0.368	0.46	0.283	0.41
Under- or Unemployed	0.183	0.42	0.271	0.36	0.297	0.64
Underpaid	0.138	0.29	0.220	0.35	0.205	0.33
Adult Education	0.036	0.05	0.055	0.06	0.058	0.05
Child Enrolment	0.023	0.05	0.038	0.05	0.032	0.07
Flooring	0.040	0.09	0.074	0.11	0.046	0.10
Water Source	0.154	0.33	0.277	0.38	0.190	0.40
Civil Servant Distribution	0.270	0.53	0.461	0.72	0.365	0.51
Community Participation						
HH Consumption	0.007	0.01	0.012	0.01	0.009	0.01
District means						
Child- & Infant Mortality	0.204	0.09	0.205	0.08	0.201	0.08
Malnutrition	0.054	0.03	0.049	0.03	0.052	0.03
Under- or Unemployed	0.114	0.07	0.115	0.06	0.110	0.06
Underpaid	0.321	0.19	0.310	0.20	0.274	0.17
Adult Education	2.342	0.49	2.415	0.49	2.547	0.47
Child Enrolment	0.863	0.12	0.867	0.12	0.897	0.08
Flooring	0.770	0.27	0.798	0.25	0.826	0.24
Water Source	0.356	0.32	0.394	0.32	0.460	0.33
Participation						
HH Consumption	9.511	0.40	9.574	0.40	9.673	0.39
Control variables						
Urban / Rural	0.235	0.43	0.268	0.45	0.366	0.48
History of Communal Violence	0.372	0.49	0.351	0.48	0.329	0.47
Ethno-Demographic Fragmentation	0.109	0.17	0.195	0.22	0.138	0.15
District split between 95 and 05	0.195	0.40	0.227	0.42	0.195	0.40
Consumption Gini	0.360	0.08	0.358	0.07	0.372	0.08
Observations per district	218	153	223	151	230	156
Number of districts	*139*		*97*		*82*	

Source: Authors' Calculations

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[29] Research has shown that due to fears of repression, Chinese-Indonesians were inclined to hide their descent and/or language when being surveyed for the Indonesian Population Census (Suryadinata, Arifin, & Ananta, 2003). Something similar might have been at play in the IFLS survey.

When looking at the horizontal inequality variables (as measured by the group-weighted coefficient of variation), it is striking that almost all horizontal inequality averages are higher for linguistically diverse districts than for religiously diverse regions.[30] Based on this, it seems that socio-economic differences between ethno-lingual groups are more pronounced, although it could also be a result of using the GCOV as the measure for horizontal inequalities, as was discussed in the limitations. It is quite possible that such a process has happened here, given the demographic dominance of the Muslim population.[31]

The most severe horizontal inequality for all three configurations is the civil servant distribution. The inequalities in household consumption, flooring and the education dimension are relatively low across the board. The district means averages are fairly similar, with religiously diverse districts having the best outcome for all variables –malnutrition excepted. The sample statistics for the control variables show that ethnically diverse districts are more likely to be urban, and less likely to have experienced communal violence in the years 1990-1997.

The summary statistics for the 1997 dataset can be seen in table 5. The horizontal inequality variables largely paint the same picture, with linguistically diverse districts remaining the most unequal. New is the inclusion of the community participation variable. The district means of community participation are almost equal, but the GCOV variables vary considerably. This might point to certain groups being over- or underrepresented in the social life of the community. Interestingly, the gap in district means between linguistically and religiously diverse districts has been largely closed. Most socio-economic indicators have improved, with the exception of malnutrition and under- or unemployed. It seems that the high economic growth rate which Indonesia experienced in the early nineties trickled down to the general population (Booth, 2000).

The impact of the Asia crisis – which hit Indonesia mid 1997 – is unclear. While underemployment and unemployment worsened, other access variables (such as child enrolment) show a marked improvement. The most puzzling is malnutrition. This variable does worsen, although it is unclear whether this is a result of the crisis or a long-term trend. While theoretically an economic crisis can negatively affect nutrition, evidence that this happened in Indonesia due to the 1997 crisis is mixed (Waters, Saadah, & Pradhan, 2003). Given that the data was collected in 1997, it seems unlikely that the change in this achievement variable is entirely due to the crisis. The increased consumption seems to be another anomaly. Since skyrocketing inflation was a characteristic of the 1997 crisis, it seems likely that the real consumption levels decreased (Suryahadi et al., 2003).

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[30] Only the variables Under- or Unemployed and Adult Education are lower.
[31] This observation is strengthened by the ethno-demographic fragmentation indicator, which is lower for religiously diverse districts.

Table 5: Mean and Standard Deviation for survey year 1997

Variable	All districts		Linguistically diverse		Religiously diverse	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Deadly Ethno-Communal Conflict	0.089	0.29	0.157	0.37	0.126	0.33
GCOV Variables						
Child- & Infant Mortality	0.167	0.29	0.350	0.39	0.229	0.27
Malnutrition	0.166	0.26	0.344	0.32	0.230	0.23
Under- or Unemployed	0.145	0.24	0.310	0.33	0.193	0.21
Underpaid	0.133	0.21	0.262	0.22	0.199	0.25
Adult Education	0.040	0.05	0.079	0.06	0.061	0.04
Child Enrolment	0.017	0.05	0.038	0.06	0.020	0.05
Flooring	0.025	0.06	0.053	0.09	0.034	0.06
Water Source	0.136	0.31	0.262	0.34	0.208	0.42
Civil Servant Distribution	0.266	0.50	0.580	0.73	0.339	0.43
Community Participation	0.059	0.09	0.117	0.11	0.088	0.09
HH Consumption	0.008	0.01	0.015	0.01	0.012	0.01
District means						
Child- & Infant Mortality	0.176	0.16	0.172	0.15	0.141	0.13
Malnutrition	0.066	0.03	0.060	0.03	0.060	0.03
Under- or Unemployed	0.204	0.08	0.208	0.07	0.203	0.08
Underpaid	0.308	0.16	0.284	0.16	0.276	0.16
Adult Education	2.503	0.52	2.652	0.50	2.690	0.52
Child Enrolment	0.931	0.09	0.931	0.08	0.946	0.06
Flooring	0.833	0.23	0.903	0.16	0.882	0.19
Water Source	0.466	0.32	0.533	0.32	0.538	0.33
Participation	0.600	0.14	0.608	0.13	0.599	0.14
HH Consumption	10.144	0.39	10.270	0.37	10.258	0.39
Control variables						
Urban / Rural	0.256	0.44	0.361	0.48	0.368	0.49
History of Communal Violence	0.362	0.48	0.373	0.49	0.345	0.48
Ethno-Demographic Fragmentation	0.118	0.18	0.266	0.23	0.143	0.14
District split between 98 and 03	0.201	0.40	0.265	0.44	0.218	0.42
Consumption Gini	0.378	0.09	0.378	0.08	0.387	0.08
Observations per district	218.533	163.17	244.424	189.90	229.994	167.13
Number of districts	*147*		*83*		*87*	

Source: Authors' Calculations

Results

The results of the probit regressions for ethno-linguistic variables can be seen in table 6. A number of control variables had to be dropped to prevent collinearity with complete determination. For both the 1993 and 1997 the ethno-lingual estimation, is history of communal violence. Additionally, the urban/rural, district split and Gini control variables had to be dropped for the 1997 estimation. At first sight, the two years seem to be quite distinct from each other. In 1997, only two coefficients are statistically significant, much less than the 1993 estimation. The pseudo-R2 for both regressions is relatively high, though.

The 1993 estimation produces some counterintuitive results: the horizontal inequality variables that are significant at the 5% level all have a negative sign, implying that a reduction in horizontal inequality actually increases the probability of conflict. One possible explanation could be that linguistically homogenous districts (where the GCOV is by definition zero) were more likely to experience violence. The strong and highly significant positive result for ethno-demographic fragmentation (which by definition is zero for homogenous districts) suggests exactly the opposite, however. This apparent paradox is further addressed in the robustness tests, where a regression without homogenous districts will be run.

The 1993 estimation seems to be mainly driven by the adult education GCOV and the district mean of child- and infant mortality, while the district mean of participation and consumption inequality seem to be the main drivers of the 1997 probit.

Table 6: Ethno-lingual estimation results

Variable	1993 (1) Coeff.	St. Dev.	Signif.	1997 (2) Coeff.	St. Dev.	Signif.
GCOV Variables						
Child- & Infant Mortality	-6.367	[2.89]	**	1.771	[1.26]	
Malnutrition	-2.525	[1.50]	*	-2.964	[2.21]	
Under- or Unemployed	1.993	[1.20]	*	-1.868	[2.10]	
Underpaid	-8.128	[3.67]	**	0.713	[2.03]	
Adult Education	45.620	[26.86]	*	-0.780	[8.42]	
Child Enrolment	5.254	[6.34]		2.958	[9.54]	
Flooring	-8.736	[3.78]	**	-8.471	[6.84]	
Water Source	0.068	[1.41]		-1.450	[2.33]	
Civil Servant Distribution	-2.425	[1.17]	**	1.001	[0.67]	
Community Participation				2.968	[5.59]	
HH Consumption	18.680	[25.23]		89.140	[47.85]	*
District means						
Child- & Infant Mortality	20.020	[9.33]	**	-3.440	[3.73]	
Malnutrition	-45.240	[31.74]		-18.710	[17.69]	
Under- or Unemployed	5.987	[3.39]	*	2.947	[5.49]	
Underpaid	3.473	[2.21]		-4.294	[4.43]	
Adult Education	-0.977	[0.81]		-0.097	[1.49]	
Child Enrolment	-4.649	[3.54]		-14.440	[9.51]	
Flooring	-4.185	[2.69]		-2.237	[3.75]	
Water Source	3.661	[1.94]	*	1.434	[2.02]	
Participation				13.520	[5.23]	***
HH Consumption	1.695	[1.80]		0.716	[1.95]	
Control variables						
Urban / Rural	3.559	[1.44]	**			
History of Communal Violence						
Ethno-Demographic Fragmentation	8.014	[2.20]	***	5.283	[3.31]	
District split between 98 and 03	0.360	[0.60]				
Consumption Gini	-9.486	[7.41]				
Observations per district	-0.007	[0.00]	**	-0.001	[0.00]	
Constant	-11.600	[12.78]		-3.067	[23.31]	
pseudo R-sq	*0.643*			*0.607*		
N	*137*			*145*		
*Significance levels: * p<0.10, ** p<0.05, *** p<0.01*						

Source: Authors' Calculations

The probit estimation for ethno-religious variables is shown in table 7. Here the two years show more similar results, as well as higher significance levels, while the general measure of fit is not that different from the ethno-linguistic estimation. It can be observed that a) increasing horizontal inequality in adult education levels has a significant positive effect, b) increasing horizontal inequality

in consumption has a significant negative effect, c) a higher consumption district mean is also positively related to ethno-communal violence, as well as d) a history of communal violence. Remarkably, the significant effect of under- or unemployed inequality and district average of flooring is opposite for both years. The other coefficients that reach significant levels do so for only one of the two years, precluding any substantial conclusion.

Table 7: Ethno-religious estimation results

Variable	1993 (3) Coeff.	St. Dev.	Signif.	1997 (4) Coeff.	St. Dev.	Signif.
GCOV Variables						
Child- & Infant Mortality	-3.595	[3.00]		1.199	[1.07]	
Malnutrition	-14.930	[6.12]	**	-3.692	[2.45]	
Under- or Unemployed	0.915	[0.51]	*	-5.411	[2.99]	*
Underpaid	-5.698	[2.11]	***	0.947	[1.66]	
Adult Education	63.320	[17.32]	***	17.040	[6.59]	***
Child Enrolment	4.136	[6.82]		7.805	[3.21]	**
Flooring	-160.300	[40.45]	***	9.005	[8.59]	
Water Source	5.582	[1.56]	***	-0.740	[1.17]	
Civil Servant Distribution	-0.197	[0.76]		1.584	[0.67]	**
Community Participation				0.006	[4.38]	
HH Consumption	-190.400	[53.73]	***	-111.000	[43.10]	**
District means						
Child- & Infant Mortality	6.637	[3.29]	**	-0.877	[1.97]	
Malnutrition	0.573	[5.49]		-27.390	[14.09]	*
Under- or Unemployed	17.260	[5.95]	***	4.629	[2.87]	
Underpaid	-0.106	[2.16]		-4.464	[2.84]	
Adult Education	0.269	[0.96]		-2.939	[1.27]	**
Child Enrolment	-1.243	[1.85]		-2.609	[3.97]	
Flooring	-3.371	[1.38]	**	2.901	[1.50]	*
Water Source	2.634	[1.63]		0.842	[1.32]	
Participation				10.150	[3.46]	***
HH Consumption	2.261	[1.30]	*	3.086	[1.49]	**
Control variables						
Urban / Rural	1.333	[0.87]		2.736	[0.79]	***
History of Communal Violence	2.294	[0.94]	**	1.563	[0.74]	**
Ethno-Demographic Fragmentation	16.710	[4.79]	***	-2.181	[3.17]	
District split between 98 and 03	-0.057	[0.94]		-0.235	[0.95]	
Consumption Gini	3.914	[3.13]		2.474	[2.39]	
Observations per district	-0.001	[0.00]		0.002	[0.00]	**
Constant	-28.3	[11.90]	**	-33.890	[15.93]	**
pseudo R-sq	*0.681*			*0.550*		
N	*140*			*148*		
*Significance levels: * p<0.10, ** p<0.05, *** p<0.01*						

Source: Authors' Calculations

When comparing the religious to the linguistic regression, it can be seen that the variables that were significant in both 1993 estimations all move in the same direction, as does the 1997 district mean of participation. While significance levels vary, it seems that there is some common basis between the two types of ethnic classifications. This is not surprising, given that the religious and linguistic fault lines often overlap.

The results for the pooled time series cross-sectional probit estimation can be seen in table 8. Most of the district mean variables were not constant over time and were therefore not included, as well as the GCOV of flooring in the ethno-lingual regression. Since participation was only measured in 1997, it is left out as well. A time-dummy is included to check for time-dependent effects.

Table 8: Pooled time series cross-sectional estimation of both ethnic classifications

	Ethno-Linguistic (5)			Ethno-Religious (6)		
Variable	*Coeff.*	*St. Dev.*	*Signif.*	*Coeff.*	*St. Dev.*	*Signif.*
GCOV Variables						
Child- & Infant Mortality	-0.376	[0.46]		-0.085	[0.29]	
Malnutrition	-1.385	[0.59]	**	-3.637	[1.01]	***
Under- or Unemployed	-0.300	[0.46]		0.259	[0.16]	*
Underpaid	-1.216	[0.77]		0.254	[0.71]	
Adult Education	4.851	[3.98]		11.850	[3.22]	***
Child Enrolment	0.967	[3.03]		2.547	[1.68]	
Flooring				-6.511	[3.51]	*
Water Source	0.634	[0.48]		0.742	[0.33]	**
Civil Servant Distribution	0.117	[0.28]		0.718	[0.38]	*
HH Consumption	-0.369	[18.23]		-47.290	[18.71]	**
District means						
Child- & Infant Mortality	1.302	[1.23]		1.811	[0.93]	*
Underpaid	-0.708	[1.08]		-1.192	[0.69]	*
Control variables						
Urban / Rural	1.010	[0.37]	***	1.311	[0.29]	***
History of Communal Violence	1.548	[0.34]	***	1.116	[0.37]	***
Ethno-Demographic Fragmentation	4.079	[1.16]	***	-0.147	[1.07]	
District split between 98 and 03	-0.291	[0.49]		-0.161	[0.48]	
Consumption Gini	1.800	[1.83]		3.364	[1.55]	**
Observations per district	-0.003	[0.00]	***	0.000	[0.00]	
Time-dummy 1997	-0.049	[0.28]		0.010	[0.27]	
Constant	-3.370	[0.93]	***	-3.865	[0.82]	***
pseudo R-sq	*0.479*			*0.383*		
N	*282*			*288*		
Significance levels: * p<0.10, ** p<0.05, *** p<0.01						

Source: Authors' Calculations

The ethno-linguistic estimation is quite different from the two single-year regressions. Most of the indicators fail to reach significance, with the exception of the horizontal inequality of malnutrition. A higher level of inequality is still negatively related to the probability of ethno-communal conflict, although the effect is a lot smaller than in the 1993 regression. The control variables ethno-demographic fragmentation and urban/rural are both highly significant, as is the new indicator history of communal violence. The last variable is the main driver of the model, and it might be possible that its inclusion has caused some other variables to lose significance. This is indeed the case for the GCOV of under- or unemployed and the district mean of child- and infant mortality, although their coefficients remain small.

The ethno-religious estimation is more in line with the two single-year regressions. It is still the case that a) increasing horizontal inequality in adult education levels has a significant positive effect, b) increasing horizontal inequality in consumption has a significant negative effect, and d) a history of communal violence is positively related to the probability of conflict. The horizontal inequality indicator of under- or unemployed, which showed conflicting signs in the previous regression, is now negative and significant. Interestingly, the district mean of underpaid workers – which failed to produce a significance result before – is now a significant determinant, as is the control variable consumption Gini. The model seems to be mainly driven by the horizontal inequality in household consumption and adult education levels.

In sum, it can be argued that for ethno-linguistic groups horizontal inequality in malnutrition and the district mean of participation are determinants of conflict, as well as the control variables urban/rural, history of communal violence and ethno-demographic fragmentation. The GCOV of under- or unemployed and the district mean of child- and infant mortality might also play a role. When it comes to ethno-religious groups, horizontal inequality in adult education, under- or unemployed and consumption are determinants, as are the district mean of participation and the control variables urban/rural and history of violence. The GCOVs of malnutrition, flooring, water source and civil servant distribution, and the district means of child- & infant mortality, flooring and consumption might have an influence as well, but their results are somewhat ambiguous.

Robustness checks

To see if these tentative conclusions hold, a number of alternative specifications have been tested. It has been noted above that some indicators produce counterintuitive results, namely that a reduction in horizontal inequality actually increases the probability of conflict. It was suggested that this could be due to the inclusion of ethnically homogenous districts. To test this suggestion, a regression is run where all homogenous districts were dropped. Furthermore, a dummy dependent variable was chosen based on the relatively small range of casualties, with one large outlier. That outlier is the May 1998 anti-Chinese riot in multiple districts in Jakarta, leading to a total of 1188 deaths. Given the extraordinary scale of this violence, as well as the special nature of Jakarta as the largest metropolis and capital of Indonesia, it could be that its inclusion distorts the results. Therefore, a regression has been run where all districts of Jakarta have been excluded. Lastly, the potentially detrimental effect of communal violence on socio-economic indicators should be considered. It is quite possible that districts that experienced some form of deadly ethno-communal violence between 1990 and 1997 evolved differently from those who didn't. To see if this is indeed the case, a regression has been run where only districts without deadly communal violence between 1990 and 1997 were included. Since all these estimations involve dropping a number of observations, the statistical issues described in the methodology may play a role again. To attenuate this all robustness checks were done with pooled time series cross-sectional data. This has the result, however, that the effect of community participation could not be tested further.

The estimation with only ethnically diverse districts can be seen in table 9[32]. The tentative findings for the ethno-lingual groups seem to hold for the large part, with the exception of inequality in under- or unemployed and the district mean of child- and infant mortality. Interestingly, some of the horizontal inequality indicators that were significant for the '93 sample but not for the pooled regression become significant again. These are child- & infant mortality, malnutrition, underpaid and flooring, all of which have a negative sign. Lastly, the district split variable is significant, unlike the previous regressions. This might mean that it is only a determinant of probability of conflict in linguistically diverse districts, with the negative sign indicating that ethnically diverse districts that were split actually have a smaller chance of ethno-communal conflict. The ethno-religious estimation also seems in line with the provisional conclusions, with the exception of the GCOV of under- or unemployed and flooring. Horizontal inequality in child school enrolment is strongly positively related to ethno-communal conflict, for the first time. In short: the main findings are not very sensitive to a model which in- or excludes homogenous districts, although the model which excludes homogenous districts produces larger t-statistics for many variables.

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[32] As a reminder: missing indicators do not indicate statistical difficulties, but merely that the indicators were not statistically constant between the two surveys.

Table 9: Pooled time series cross sectional analysis using only ethnically diverse districts

	Ethno-Linguistic (7)			Ethno-Religious (8)		
Variable	*Coeff.*	*St. Dev.*	*Signif.*	*Coeff.*	*St. Dev.*	*Signif.*
GCOV Variables						
Child- & Infant Mortality	-1.348	[0.69]	*	-0.102	[0.34]	
Malnutrition	-2.050	[0.75]	***	-5.796	[1.70]	***
Under- or Unemployed	-0.633	[0.45]		0.116	[0.19]	
Underpaid	-1.524	[0.75]	**	-0.038	[1.08]	
Adult Education				13.970	[4.66]	***
Child Enrolment	1.065	[2.97]		6.394	[2.40]	***
Flooring	-7.122	[2.51]	***	-8.431	[8.86]	
Water Source	1.091	[0.47]	**	1.014	[0.48]	**
Civil Servant Distribution	0.228	[0.29]		1.469	[0.51]	***
HH Consumption				-60.250	[30.86]	*
District means						
Child- & Infant Mortality	2.005	[1.50]				
Malnutrition				-2.171	[8.64]	
Underpaid	-0.365	[1.25]		-1.318	[1.27]	
Adult Education				0.105	[0.66]	
Flooring				-0.700	[1.72]	
Water Source				-1.136	[0.95]	
Control variables						
Urban / Rural	0.738	[0.41]	*	2.914	[0.80]	***
History of Communal Violence	1.851	[0.37]	***	2.053	[0.45]	***
Ethno-Demographic Fragmentation	6.597	[1.37]	***	-2.278	[2.01]	
District split between 98 and 03	-1.106	[0.55]	**	-0.239	[0.80]	
Consumption Gini	0.277	[2.37]		5.791	[2.77]	**
Observations per district	-0.004	[0.00]	***	0.001	[0.00]	
Time-dummy 1997	0.181	[0.34]		0.129	[0.37]	
Constant	-2.029	[1.06]	*	-4.715	[2.34]	**
pseudo R-sq	*0.515*			*0.538*		
N	*180*			*169*		
Significance levels: * p<0.10, ** p<0.05, *** p<0.01						

Source: Authors' Calculations

The first thing worth observing in the probit regression without the province Jakarta (table 10) is the low pseudo-R2 (compared with the other regressions). It seems that the capital (with only ten observations) explains a large part of the variation of the other models. Nevertheless, the effects observed in the main pooled estimation remain significant, and their sign does not change. Exceptions are ethno-demographic fragmentation for the ethno-lingual groups, which does not seem to play a role outside of the capital, and inequality in under- or unemployed for ethno-religious groups. Conversely, the language GCOV for water source and religious GCOV for child enrolment

become positive determinants, although only at the lowest level of significance. To sum up: the model seems robust to the exclusion of Jakarta, with the exception of ethno-lingual demographic fragmentation.

Table 10: Pooled time series cross sectional analysis using only districts outside of Jakarta

	Ethno-Linguistic (9)			Ethno-Religious (10)		
Variable	*Coeff.*	*St. Dev.*	*Signif.*	*Coeff.*	*St. Dev.*	*Signif.*
GCOV Variables						
Child- & Infant Mortality	-0.058	[0.46]		-0.056	[0.25]	
Malnutrition	-1.101	[0.65]	*	-3.809	[1.24]	***
Under- or Unemployed	-0.306	[0.51]		-0.301	[0.92]	
Underpaid	-0.791	[0.74]		0.358	[0.71]	
Adult Education	4.005	[3.96]		9.854	[3.56]	***
Child Enrolment	1.524	[3.09]		2.916	[1.68]	*
Flooring				-4.495	[2.55]	*
Water Source	0.928	[0.49]	*	0.888	[0.31]	***
Civil Servant Distribution	-0.006	[0.31]		0.703	[0.36]	*
HH Consumption	4.082	[17.53]		-49.120	[22.98]	**
District means						
Child- & Infant Mortality	0.810	[1.18]		1.535	[0.88]	*
Underpaid	-0.965	[1.03]		-1.428	[0.69]	**
Control variables						
Urban / Rural	0.760	[0.34]	**	0.860	[0.28]	***
History of Communal Violence	1.218	[0.31]	***	0.838	[0.38]	**
Ethno-Demographic Fragmentation	2.196	[1.36]		0.053	[1.15]	
District split between 98 and 03	-0.194	[0.43]		-0.171	[0.45]	
Consumption Gini	1.626	[1.63]		2.878	[1.58]	*
Observations per district	-0.003	[0.00]	***	-0.001	[0.00]	
Time-dummy 1997	0.019	[0.29]		-0.075	[0.29]	
Constant	-2.896	[0.79]	***	-2.987	[0.75]	***
pseudo R-sq	0.298			0.255		
N	272			278		
*Significance levels: * p<0.10, ** p<0.05, *** p<0.01*						

Source: Authors' Calculations

The last robustness test is carried out using only districts without a history of communal violence (table 11). The time-dummy and district-split variables in the ethno-linguistic estimation were dropped to fix the issue of collinearity within certain covariate patterns. The district-split variable was dropped in the ethno-religious estimation because split districts predict failure perfectly.[33] Although

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[33] Stata dropped districtsplit automatically, as well as the 40 perfectly predicted observations.

statistical anomalies might have influenced the result,[34] the ethno-linguistic estimation has some marked differences compared to the previous pooled models. The horizontal inequality indicator of child- & infant mortality suddenly becomes positive, while the district mean goes the other way around. The distinction between urban and rural districts, and the degree of ethno-demographic fragmentation are no longer significant determinants. The direction of the coefficient of other significant indicators does not change.

Table 11: Pooled time series cross sectional analysis using only districts without a history of ethno-communal violence

Variable	Ethno-Linguistic (11)			Ethno-Religious (12)		
	Coeff.	*St. Dev.*	*Signif.*	*Coeff.*	*St. Dev.*	*Signif.*
GCOV Variables						
Child- & Infant Mortality	3.093	[1.37]	**	-0.199	[0.86]	
Malnutrition	-16.580	[6.86]	**	-13.360	[3.06]	***
Under- or Unemployed	-1.279	[2.02]		2.191	[1.07]	**
Underpaid	-0.436	[1.78]		7.417	[2.20]	***
Adult Education	24.030	[8.93]	***	24.190	[6.61]	***
Child Enrolment	32.460	[17.07]	*	-7.336	[5.15]	
Flooring	-18.000	[6.09]	***	-43.880	[14.07]	***
Water Source	5.677	[2.12]	***	4.623	[1.56]	***
Civil Servant Distribution	0.841	[0.96]		2.387	[0.73]	***
HH Consumption	2.874	[36.68]		-10.170	[28.27]	
District means						
Child- & Infant Mortality	-15.070	[9.10]	*	1.844	[1.33]	
Underpaid	-5.669	[4.99]		0.116	[1.08]	
Flooring	-6.664	[2.53]	***	-1.374	[0.57]	**
Control variables						
Urban / Rural	3.355	[2.06]		0.410	[0.38]	
Ethno-Demographic Fragmentation	2.729	[2.98]		-10.780	[3.23]	***
Consumption Gini	5.397	[4.66]		3.226	[2.06]	
Observations per district	0.005	[0.00]	**	0.000	[0.00]	
Time-dummy 1997				0.073	[0.60]	
Constant	-0.756	[2.74]		-2.737	[1.06]	**
pseudo R-sq	*0.709*			*0.538*		
N	*179*			*142*		
*Significance levels: * p<0.10, ** p<0.05, *** p<0.01*						

Source: Based on Authors' Calculations

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[34] The ethno-linguistic estimation has 106 failures (59,2%) completely determined.

The magnitude and t-statistic of most of the significant indicators in the original ethno-religious regression increase, while the sign remains the same. The exceptions are the consumption GCOV, Gini and urban/rural-dummy, which are no longer significant. Conversely, ethno-demographic fragmentation becomes a significant negative determinant, while the GCOV of underpaid turns out to be a significant positive determinant. In short, the model is rather sensitive to the alternative configuration where districts which experienced collective violence in the recent past were excluded. Especially the indicators urban/rural-dummy and ethno-demographic fragmentation behave rather differently in this estimation.

Change in horizontal inequalities over time

As has been discussed in the literature review, horizontal inequalities in themselves need not necessarily be a determinant of conflict. Some authors argue that it is rather their change over time and the corollary change in societal hierarchy that determines ethnic violence. This sub-hypothesis will be tested here. Horizontal inequalities are rather persistent over time, and therefore one should be cautious while trying to draw conclusions from a relatively short time period (1993-1997). Nevertheless, such an analysis can provide an insightful addition to the time-invariant estimations.

 The model calculates the difference between the horizontal inequality and district means indicators of both years. The regular control variables are included, and consumption Gini and ethno-demographic fragmentation both show the influence of their change over time as well. The results are shown in table 12.[35] It should be noted that due to collinearity in covariate patterns, the history of communal violence for ethno-linguistic groups could not be included. Both ethnic classifications show fairly different results. The number of significant variables and pseudo-R2 suggest that change over time in horizontal inequalities as well as district means plays a much larger role for linguistic groups than it does for religious groups.

Both converging and diverging horizontal inequalities can be significant determinants of conflict. Converging horizontal inequalities seem to be positively related when it comes to access indicators, such as under- or unemployed and child enrolment. Conversely, for achievement indicators such as malnutrition, underpaid and household consumption, it is diverging inequality that is the determinant. The influence of change in district means on ethno-communal violence is rather surprising: an improvement in socio-economic indicators is a positive determinant of conflict. Only the coefficients of malnutrition and household consumption move in the expected direction. One

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[35] In order to clarify: positive values express an increase in the indicator from 1993 to 1997, and vice versa.

should note the similarities between the ethno-linguistic and ethno-religious groups. The sign of the coefficient of significant indicators is always the same for the pair. Lastly, it seems that if a district becomes more ethno-linguistically diverse the probability of conflict increases as well. This might be a reflection of the tensions that could arise when migrant groups enter into a society, and corresponds with Mancini's finding that the influx of new migrants can be a positive determinant of conflict.

Table 12: Estimation results of change in variables over time

Variable	Ethno-Linguistic (13) Coeff.	St. Dev.	Signif.	Ethno-Religious (14) Coeff.	St. Dev.	Signif.
Change in GCOV						
Child- & Infant Mortality	-0.183	[0.67]		-0.385	[0.33]	
Malnutrition	0.916	[0.48]	*	0.418	[0.64]	
Under- or Unemployed	-5.912	[2.71]	**	-2.979	[1.33]	**
Underpaid	14.160	[5.47]	***	0.701	[1.07]	
Adult Education	1.628	[9.14]		0.020	[5.03]	
Child Enrolment	-31.190	[12.26]	**	3.875	[4.59]	
Flooring	14.750	[10.97]		9.073	[4.52]	**
Water Source	-9.687	[3.83]	**	-0.567	[0.44]	
Civil Servant Distribution	1.180	[0.78]		0.225	[0.73]	
Household Consumption	158.000	[67.21]	**	20.160	[15.82]	
Change in District Means						
Child- & Infant Mortality	-9.352	[5.14]	*	-3.981	[1.75]	**
Malnutrition	41.490	[18.05]	**	1.836	[4.98]	
Under- or Unemployed	-1.338	[3.64]		-4.157	[2.35]	*
Underpaid	-19.970	[7.52]	***	-0.215	[1.27]	
Adult Education	12.930	[5.91]	**	-1.144	[1.94]	
Child Enrolment	2.758	[2.89]		0.961	[1.77]	
Flooring	25.780	[10.34]	**	3.186	[2.45]	
Water Source	-16.620	[6.40]	***	-1.339	[1.18]	
Household Consumption	-8.422	[3.35]	**	-0.974	[1.16]	
Control variables						
Urban / Rural	7.873	[2.77]	***	1.340	[0.43]	***
District split between 98 and 03	-0.901	[0.74]		-0.477	[0.80]	
Δ Ethno-Demographic Fragmentation	16.710	[6.44]	***	-8.078	[6.73]	
Δ Consumption Gini	8.712	[3.17]	***	0.981	[1.93]	
Observations per district	-0.002	[0.00]		0.001	[0.00]	
History of Communal Violence				1.018	[0.56]	*
Constant	-6.377	[2.54]	**	-2.342	[1.03]	**
pseudo R-sq	*0.668*			*0.436*		
N	*137*			*139*		
*Significance levels: * p<0.10, ** p<0.05, *** p<0.01*						

Source: Based on Authors' Calculations

V.   Discussion & Conclusion

Horizontal Inequalities & Conflict

The summary statistics showed that the thirteen provinces covered by the paper were demographically dominated by the Muslim and Javanese (both ethnic Javanese and ethnic Sundanese) part of the population. They are accompanied by a small number of other religions and a substantial number of nationally small linguistic groups. Historically, the Javanese have been the main political, military and economic force in the archipelago – notwithstanding intra-group inequalities. The Indonesian context can thus be described as a situation in which the demographically largest group is also the most influential group.

The socio-economic data was collected in 1993 and 1997, while conflict data runs from 1998 to 2003. The divide is more or less simultaneous with the downfall of the New Order regime and the peak of the Asia financial crisis. This is important to keep this in mind while trying to establish any underlying linkages. The district means show improvement in many dimensions between 1993 and 1997, which cannot be verified for the later years. Furthermore, the strong concentrations in time and space of the violence makes establishing some form of a causal link with a time-persistent phenomenon such as horizontal inequalities a rather unviable undertaking.

That being said, the summary statistics showed that almost all *GCOV* indicators were higher for linguistically diverse districts than for religiously diverse regions. In other words: the inequalities between linguistic groups were the more pervasive. Furthermore, for most indicators the horizontal inequality increased more, or decreased less in ethno-linguistic diverse districts. Of all the different horizontal inequalities, the civil servant distribution was by far the most severe for both groups in both years. This is in line with the World Bank report that the civil service is a vehicle to benefit cronies of the regime, based on a patronage system (2003). Conversely, the inequalities in household consumption, flooring and the education dimension (adult educational attainment and child enrolment) were relatively low across the board.

Based on the regression analyses for ethno-linguistic groups, it can be observed that districts are more likely to experience ethnic strife if a) inequality in malnutrition is lower, b) inequality in water source is higher,[36] while c) inequality in flooring is lower, and the district d) is a *Kota* (urban), e) has experienced communal violence in the recent past, and lastly f) is demographically more fragmented – although the effect of the fragmentation fails to reach significance outside the capital.

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[36] While the sign of the effect of horizontal inequality in water source is constant, it is not always significant.

When analysing the regression estimates for ethno-religious groups, it can be observed that districts are more likely to experience ethnic strife if a) inequality in malnutrition is lower, b) inequality in water source is higher, c) inequality in adult education attainment is higher, while d) the district is a *Kota* (urban), and e) has experienced communal violence in the recent past. A more unequal civil servant distribution, a less unequal household consumption and a higher Gini-score are also positive determinants, although statistically less strong. Outside Jakarta and in religiously diverse districts higher inequality in child enrolment positively influences the probability of conflict.

It seems that there is some common basis between the two types of ethnic classification, as has been noted earlier. The sign of the main determinant, inequality in malnutrition levels, is rather puzzling. No explanation could be found in the model itself or in the literature. Usually, malnutrition indicators are based on measuring children instead of adults, which might explain the lack of information.

Similarly, the negative sign of the household consumption inequality coefficient (for ethno-religious estimations) seems counterintuitive, especially when it is compared to the Gini. The suggestion is that a higher vertical consumption inequality and a lower horizontal consumption inequality are both positive determinants of conflict. A possible explanation for this apparent paradox could be found in the formation of the groups. It might be that in this instance it is not ethnicity, but class differences – which are only captured by the Gini – that are a determinant of conflict. The negative sign of the consumption GCOV indicates that this is only the case when the horizontal inequality is low – otherwise attention is focused on inter-group inequalities.[37] This is yet another example of how multi-layered group issues can be, and the relative artificiality of categorising them in a scientific way.

More straightforward is the positive relationship between inequality in water source and ethnic strife, which is similar for both ethnic categorisations. When compared to religious inequality in the other housing coefficient – flooring, the signs seem to be contradictory. A partial explanation could be that expectations for both indicators are different. Hygienic water sources are usually provided by the community as a whole, an NGO or the government. People thus expect the government to supply these, and tensions are likely to rise rapidly if one group is advantaged over another. Flooring – and in general the house as a whole – is something people build or purchase themselves, and therefore no expectations are created. While this does explain the positive sign of water source, the rationale for the negative sign of flooring remains a grey area.

While the influence of community participation could only be measured once, its district mean turned out to be a highly significant positive determinant for both ethnic classifications. This suggests

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[37] Why this is only the case for the ethno-religious estimation remains a subject for further research.

that districts where relatively more people are actively engaged in community activities are more likely to experience conflict. It could be a reaction to simmering ethnic tensions, reasoning that increased participation in community initiatives would increase cohesion –making it an endogenous process. There are no sources to support this though, and the ban on discussing ethnic issues (and the consequent prohibition for local governments to design policies based on them) during the Suharto reign makes this explanation fairly unlikely.

One of the alternative hypotheses was that ethno-communal violence was a consequence of the process of decentralisation. The theory was that power distribution and group hierarchy needed to be redefined in newly formed districts, and that violence was a result of group leaders defending existing interests or trying to increase their power. In short, if districts that were split shortly after the decentralisation began were more likely to descend into ethnic conflict, then a greed-based explanation would become feasible. As can be seen from the results, the only time that the control variable district split is significant, is for the estimation using only linguistically diverse districts. The effect is reversed, however, suggesting that ethnically diverse districts that were split actually have a smaller chance of ethno-communal conflict. This is in line with the argument of Stewart et al, namely that diffusing power through decentralisation can be a good way to attenuate ethnic tensions (2008).

Lastly, the question was asked whether it was not just horizontal inequalities that could be a determinant of conflict, but also the direction in which they developed from 1993 to 1997. This was researched separately, with some interesting results. First, it seems that change over time in horizontal inequalities as well as district means plays a much larger role for linguistic groups than it does for religious groups. Second, both converging and diverging horizontal inequalities can be significant determinants of conflict, with converging indicators being mostly access indicators, and diverging indicators being mostly achievement indicators. This does not necessarily confirm Tadjoeddin's theory that in case of converging inequalities the previously privileged group is more likely to resort to violence, while for diverging inequalities the reverse is the case. To be able to say so, more research needs to be done into the narratives of each incident, and the long-term socio-economic development of the districts in which the incidents took place.

Conclusions

This research quantitatively investigated the relation between horizontal inequalities and ethno-communal violence. The analysis took place on the Indonesian district level, for both ethno-lingual and ethno-religious groups using deadly ethno-communal violence as the dummy dependent variable. The main research question was tested using two competing hypotheses, the cultural and the instrumental theories. Two sub-questions were also tested, namely if the decentralisation

process in itself was a driver of conflict, and if the convergence and divergence of horizontal inequalities over time could also be determinant of conflict.

The purpose of the paper was to provide insight into the drivers of (relatively) small-scale ethno-communal violence within an ethnically diverse state. Realising that these incidents – in which tensions after years of simmering suddenly escalate – are able to scar communities for many years afterwards should be a major incentive for policy makers to want to prevent it. Knowing the possible causes and remedying options gives the opportunity to actually shut the stable door before the horse has been stolen. The two competing hypotheses were that a) Ethnic diversity is a determinant of ethno-communal conflict, and b) that Horizontal inequalities are a determinant of ethno-communal conflict.

Ethnic diversity has indeed been a determinant of ethno-lingual communal violence, but the effect was only robust for estimations which included districts within Jakarta. Since capitals are usually ethnic melting pots, a high level of ethnic diversity alone seems insufficient as an explanation. In other words; although the cultural hypothesis cannot be wholly rejected, the results find little credence for it as well.

Horizontal inequalities turned out to determine ethno-communal conflict, although there are marked differences for linguistic and religious groups. The common basis is formed by horizontal inequalities in malnutrition and water source, with the coefficient of the former being negative and the latter positive. The main driver of the ethno-religious estimations has been adult educational attainment, which was positively correlated with the dependent variable. This points to a narrative where schooling - and the career chances that come with it - is something for the privileged groups, leading to frustration among the disadvantaged.

A puzzling aspect of the horizontal inequalities has been the negative coefficient of malnutrition for both types, and flooring and household consumption for religious groups, as well as the positive effect of the community participation district mean. The researcher was unable to adequately clarify why the coefficients moved counter-intuitively, leaving a number of questions yet to be answered.

Looking at the results from the angle of dimensions, as well as access and achievement indicators, it seems that achievement variables are *grosso modo* more reliable predictors than access variables. Not only are they more often significant, their confidence levels are higher and the coefficients move consistently in the same direction. This is not to say that access variables cannot be determinants of social unrest, but their 'performance' is not constant enough to draw strong conclusions.

The tentative results for the decentralisation sub-question seem to preclude a greed-oriented explanation of the communal violence, and might actually give evidence to the hypothesis of Stewart et al that decentralisation is a good way to address tensions resulting from horizontal inequalities.

Furthermore, both converging and diverging horizontal inequalities can be determinants of communal violence. In the Indonesian context this is more so for ethno-linguistic groups. This is remarkable, since the regular horizontal inequality indicators for these groups were just less likely to be statistically significant. It can thus be said that for ethno-lingual groups the change in horizontal inequalities is more likely to determine the probability of conflict, while the actual level of the horizontal inequality itself is more important for ethno-religious groups.

In conclusion, this paper adds to the existing knowledge on horizontal inequalities and conflict by looking at a broad range of horizontal inequality indicators. The diversity of Indonesia is reflected in the fact that there is not a single dimension with clearly the most explanatory strength. Rather, it is the combination of different facets of horizontal inequality that is able to cover the variation in the data. Instead of a strong concluding remark, it shows the complexities of ethnic conflict, involving many multi-layered groups, fluid perceptions and intricate leader-follower relations. This research should be regarded as a starting point for further research. Especially regional and group decomposition which are likely to present new insights in the particularities of different Indonesian islands and ethnic groups.

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