The Political Economy of Ethnicity

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Abstract: The paper investigates the effects of ethnic diversity on economic performance and the risk of violent conflict. Diversity has various detrimental microeconomic effects, tending to reduce public sector performance, increase patronage, and lower the level of trust among individuals. However, whether diversity adversely affects overall economic growth depends upon the political environment. Diversity is highly damaging to growth in the context of limited political rights, but is not damaging in democracies. The same relationship holds for the satisfactory performance of World Bank projects: in diverse societies, the risk of project failure is nearly doubled by the absence of political rights. There is a relationship between ethnic diversity and the risk of violent conflict, but it is non-monotonic. Those societies most at risk are the ones in the middle of the range of ethnic diversity. Highly diverse societies, such as are typical of Africa, are actually even safer than homogenous societies. A democratic Africa can thus reap the benefits which ethnic diversity provides in terms of a reduced risk of violence, while avoiding the potential costs of reduced growth. Both income levels and political rights are also important influences on the risk of violent conflict, and of its escalation into full civil war. Once a society has reached full scale civil war the balance of influences appears to change. The persistence of conflict, and the sustainability of a settlement, are more dependent upon ethnic composition and less dependent upon income and political rights, than are the initiation and escalation of violence. Hence, some peace settlements may need to change borders so as to increase (or reduce) the ethnic diversity of the state.

1. Introduction[1]

Most developing countries are ethnically diverse. For many years social scientists preferred to ignore the brute fact of ethnic identity. More recently, evidence is accumulating that it is detrimental to economic performance. Most notably, Easterly and Levine (1998) find that at the aggregate level diversity significantly reduces the growth rate, and offer this as the main explanation for the slow growth of Africa, the continent whose countries have the greatest ethnic diversity. Not surprisingly, this result has not been welcomed in Africa. The result does not itself provide an explanation as to why diversity might be detrimental, and it is hard to see any policy implications: it appears to carry only the message 'don't live here'. A related perception is that ethnic diversity increases the risk of violent conflict: for example, a recent World Bank document which surveys the literature concludes that 'ethnic diversity may lead to increased civil strife' (World Bank, 1997). This perception is fostered both by some graphic individual scenes of inter-ethnic violence, and by an aggregate correlation: Africa has not only the highest ethnic diversity, but the highest incidence of civil war. Potentially, this might even account for the detrimental economic effects of diversity.

Even if it can be established precisely how ethnic diversity is economically dysfunctional, it might appear to be a highly unhelpful line of research. There is nothing which a country can legitimately do about its ethnic composition, and illegitimate acts, notably ethnic cleansing, should hardly be encouraged. In this paper, I show that far from being unhelpful, research reveals both a hopeful and a practical message. I show that the effects of diversity are by no means as detrimental as is commonly thought. In one important and highly counter-intuitive respect diversity is beneficial. The belief that ethnic diversity increases the risk of violence turns out to be wrong. Beyond quite a low level of diversity, increased diversity reduces the risk of violence.

I argue that those effects which are detrimental have feasible political solutions. First, I consider the detrimental economic effects of diversity. I show that there is a political solution to these effects. Secondly, I consider the problem posed by moderate levels of ethnic diversity which increase the risk of violent conflict. Statistically, the average level of diversity in developing countries is around this peak (although most countries are either well above, or well below the average). I investigate whether there is a political solution to this high-risk range.

Section 2 summarises and extends the recent evidence on the relationship between ethnic diversity and economic performance. It then introduces political institutions, showing how these can be effective in neutralising the effects of ethnic diversity. Section 3 turns to the relationship between ethnic diversity and violent conflict. It shows that ethnic diversity is important as a cause of civil war, in the process by which minor rebellions escalate, and in determining the duration of conflict and the duration of postwar peace. Finally, I show that political institutions are important

in reducing the risk of violent conflict.

2. Ethnic Diversity, Political Institutions and Economic Performance

Easterly and Levine (1998) find that ethnic diversity is correlated with slow economic growth. They partially explain this by finding an association between diversity and poor economic policies. They infer from this, reasonably enough, that diversity may make it more difficult for the political process to arrive at cooperative solutions to problems, instead of fighting zero sum games. However, they find a residual negative effect of ethnic diversity over and above its effect via policy.

While Easterly and Levine focus upon ethno-linguistic diversity at the national level, Alesina *et al.* (1997) analyse its effects at the local level, using data on American cities. They find that ethnic diversity in American cities reduces the performance of city government in delivering a range of public services. They argue that diversity reduces the incentive to spend on productive public services while increasing rent-seeking expenditures. Related evidence concerns the public sector labour market in Ghana. Collier and Garg (1998) similarly use spatially disaggregated data, towns differing as to which tribe is locally dominant. They argue that unless restrained, kin groups will function as patronage systems, reducing the efficiency of promotions to the advantage of the dominant kin group. They find that in the public sector the locally dominant group exacts a 25% wage premium for its members, controlling for worker characteristics. By contrast, in the private sector there is no such premium, presumably because the private sector has a stronger incentive to restrain kin group patronage. Hence, in addition to worsening macroeconomic policies, ethnic diversity may reduce the efficiency of public service delivery.

Potentially, a third route by which diversity might damage economic performance is if it inhibited the formation of 'social capital' and trust, resulting in higher transactions costs. To date, the formation of trust has been investigated predominantly at the micro-level, notably by Putnam (1993). Ethnic fractionalisation has been considered an asset in building trust within the ethnic group, but its effect on society as a whole has not, to my knowledge, been investigated. Here I use internationally comparable data for 23 countries in which the level of trust is measured through attitudinal surveys which ask whether other people in the society can be trusted. Putnam makes trust endogenous to particular forms of social interaction. However, social interaction in turn must be endogenous to its costs, and so I take the more conventional economic route of explaining trust in terms of the costs which agents face in deciding whether to interact socially. Potentially, ethnic divisions constitute an additional barrier to social interaction and hence detract from trust. I proxy the costs of social interaction by the density of the telephone system and the spatial density of the population. The results are reported in Table 1, below.

Table 1: Is Ethnic Diversity a Barrier to Trust?

(Dependent variable, trust, on a scale of 0-100)

Variable	coefficient	t-statistic
Ethnic fractionalisation	-0.14	-1.3
Telephone density (ln)	16.35	6.2
Population density	-0.17	-3.0
Population density squared	0.00043	2.9

adjusted $r^2 = 0.62$
n = 23
F = 10.11

Before discussing the effect of ethnicity I will briefly comment on the other variables since they are of some interest in their own right. Trust turns out to be explicable in terms of the costs of social interaction with the telephone density highly important.[2] Population density enters as a quadratic: people trust their neighbours when they don't have many of them, but also when population density is very high. The effect of ethnic fractionalisation is unfortunately hard to interpret. It is not statistically significant at an acceptable level, but not so insignificant that it can reasonably be concluded that it is not important. The coefficient is negative and fairly large: the difference between the least and most ethnically diverse societies maps into a one standard deviation decrease in trust. This evidence thus weakly suggests that ethnic diversity is a barrier to the formation of trust.

To summarise, ethnic fractionalisation appears to be bad for economic performance on the evidence of economic growth, macroeconomic policy, city government performance, public sector wage determination, and the determinants of trust. I now introduce the effect of political institutions.

Democracy has the potential both to discipline governments into delivering reasonable economic policies and to provide a framework in which groups can negotiate mutually beneficial outcomes. I start with a baseline regression (Table 3) in which I explain average per capita GDP growth 1960-90 using a standard set of non-policy, structural characteristics, namely the initial level of per capita GDP, the rate of population growth, and whether the country is landlocked. I exclude all policy variables since these must be presumed to be endogenous to ethnic diversity. To this I add ethno-linguistic fractionalisation, scored on the range 0-100, and the extent of democratic

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[2] The telephone density might, of course, be proxying other factors, notably income. Since income is itself endogenous to trust it is not appropriate directly to control for it. However, the telephone system is much more significant and powerful than other forms of infrastructure which are equally correlated with income.

political rights, scored on the range 1 (fully democratic) - 7 (the absence of political rights).[3]

Table 2: Two Regressions of Growth on Ethnic Fractionalisation and Democracy

variable	Baseline Regression		Interaction Effect	
	coefficient	t-stat	coefficient	t-stat
constant	10.73	3.42	9.20	3.55
LnGDP	-0.90	-2.55	-0.81	-2.59
LnPopulation	-0.73	-2.05	-0.86	-2.54
Landlocked	-1.01	-1.85	-0.99	-1.84
ELF	-0.0156	-2.22	-	-
Political Rights	-0.26	-1.73	-	-
ELF*Political Rights			-0.0043	-3.22
	Adjusted r^2 = 0.16		Adjusted r^2 = 0.18	
	F = 4.63		F = 6.20	
	n = 94		N = 94	

All variables are significant: democracy raises the growth rate, fractionalisation reduces it. Ethnic diversity appears to be very detrimental: compared with a homogenous society, a maximally diverse society grows around 1.6 percentage points more slowly, and ends up with a steady-state income only around one fifth that of the homogenous society.

I now investigate how ethnic fractionalisation interacts with democracy. Potentially, the interaction effect could be positive or negative. At the risk of over-simplification I distinguish between performance politics and identity politics. In the former the political system assists in improving economic policies. It does this in two ways. First, it facilitates social capital and cooperation. Secondly, electors punish governments which deliver poor economic performance and sustain those which deliver good performance. By contrast, with identity politics citizens are reminded of differences and so build less social capital and are less able to cooperate. Their loyalty to a party is maintained irrespective of economic performance. Governments deliver

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[3] I proxy political rights using the Gastil Index. This is a subjective judgement of a number of underlying attributes, including the meaningfulness of elections, fairness of electoral laws and campaigning opportunities, the voting power of the electorate, the existence of political competition, evidence of political power shifting through elections, significant opposition voting, freedom from external or military control of domestic politics, minority self-determination or pluralism, decentralisation of political power, and the attempt of political agents to reach a consensus on national issues. Although subjective, the Gastil index is quite closely correlated with other indices such as those of Bollen and Humana (see the discussion in Fedderke and Klitgaard (forthcoming)).

patronage to loyalists rather than services to the median voter.

An implication of the result of Alesina *et al*. is that the interaction is likely to be negative. Ethnic diversity at the level of the American city appears to be associated with the shift from performance politics to identity politics. However, the interaction might well be positive. Democracy might provide institutions in which potentially costly disputes between ethnic groups are mediated. Cooperation might be sufficiently easy in homogenous societies that it does not depend upon democratic institutions, whereas in diverse societies these institutions make the difference between zero sum and cooperative solutions. An ethnically diverse society might thus gain more from democracy than a homogenous society because the latter has less need of dispute resolution. This need not conflict with the Alesina et al result. The ethnic diversity of a political decision process is endogenous to political boundaries. Decentralisation offers the possibility of shifting certain economic decisions into a different ethnic space. The USA has performance politics at the federal level ('it's the economy, stupid'), but identity politics at much of the local level. However, this is quite unusual and probably reflects the immigrant nature of the society. Most countries which have identity politics have it at the national level. This is because in most countries there is little ethnic diversity at the local level, while national boundaries are much larger than those of the ethnic groups. Hence, in such societies local politics is more likely to be performance politics. This, for example, is part of the rationale for regional decentralisation in Ethiopia: regional level democracy is ethnically fairly homogenous, despite diversity at the national level.

I now test how ethnic diversity and democracy interact by including the interaction term ELF*Political Rights in the regression. Once this term is included, both ethnic diversity and political rights become completely insignificant (not reported).[4] Their entire effect works through their interaction. Once these insignificant direct effects are eliminated from the regression, the interaction is the most significant variable in the regression. The coefficient is large and negative. Since political rights are measured on a diminishing scale of 1-7, this tells us that democracy massively reduces the problem posed by ethnic diversity. Specifically, in a completely undemocratic political system a homogenous society will grow at 3 percentage points more rapidly than a maximally fractionalised society. By contrast, in a fully democratic political system the growth differential narrows to a modest 0.4 percentage points. *The lack of political rights is economically ruinous in ethnically highly fractionalised societies.*

I now investigate the same relationship at the project level. I utilise the project evaluations of the Operations Evaluation Department (OED) of the World Bank for all evaluated projects from 1958 to 1996 in a total of 87 countries. OED classifies projects as satisfactory or unsatisfactory and its evaluation is independent of the bank staff responsible for the project. For a previous use of the data set and a more detailed discussion of its features, see Kaufmann et al. (1995). The dependent variable is the proportion of projects in a country which were classified as

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[4] Even when each is included separately along with the interaction effect their t-statistics are only 0.4 and 0.6 respectively, while the interaction effect is highly significant.

unsatisfactory. The explanatory variables were initially the same as for the growth regressions. However, neither being landlocked nor the rate of population growth were even remotely significant and were dropped. The baseline regression (Table 3) therefore includes GDP, as in Table 2, and the direct effects of ethnic diversity and political rights. Ethnic diversity was most significant when entered as the square of the ELF index. In this baseline the direct effects of ethnic diversity and political rights are qualitatively similar to those in the baseline growth regression: diversity and a lack of rights both increase the risk that a project fails, although the latter is not statistically significant. The second regression in Table 3 explores the interaction effect between diversity and political rights. Again, diversity is best proxied by the square of the ELF index. When the interaction term is introduced as an additional variable alongside the direct effects, both the direct effects become insignificant. When the direct effects are excluded, the regression with the interaction effect dominates the baseline regression. Thus, as in the growth regression, ethnic diversity and political rights only matter for the success of projects because of their interaction. An ethnically diverse society does not have a higher failure rate as long as it is fully democratic. However, in an ethnically diverse society political rights matter a lot. The failure rate on projects rises from 26% to 44% as we switch from a democratic to an undemocratic diverse society.

Table 3. Two Regressions of Project Performance on Ethnic Fractionalization and Democracy

	Baseline regression		Interaction Effect	
Variable	coefficient	t-statistic	coefficient	t-statistic
Constant	0.43	1.66	0.30	1.47
LnGDP	0.052	1.72	0.063	2.39
ELF2	-0.000015	-1.94	-	-
Political rights	-.013	-1.04	-	-
ELF2*Political rights	-	-	-0.000003	-2.22

Adjusted $r^2 = 0.19$ Adjusted $r^2 = 0.20$
F = 7.95   F = 11.82
n = 87   n = 87

Finally, when the same regressions are run controlling for nine time periods and 16 project types, the same results are found, with the interaction effect being more highly significant, and indeed the most significant variable in the regression.

To conclude, not only is the lack of political rights ruinous for growth in ethnically diverse societies, it is also ruinous for projects.

3. Ethnic Diversity, Political Institutions and Conflict

I now turn to the relationship between ethnic diversity and violent conflict. I summarise and extend the results of my previous and current work with co-authors (Collier and Hoeffler, 1998, 1998a, and Collier, Hoeffler and Söderbom, 1998). The risk of civil war is modelled as a cost-benefit calculation of rebellion.

The costs of rebellion are the cost of coordination and the opportunity cost. Recall that in the context of public service provision Alesina *et al.* find that ethnic fractionalisation increases the difficulty of cooperation. If cooperation is a necessary input into the initiation and maintenance of rebellion, ethnic diversity *among potential rebels* may actually tend to reduce the risk of violent conflict. This implies that the relationship between the ethnic diversity of the society and the risk of conflict would be non-monotonic. A society with two ethnic groups would have lower coordination costs for rebellion than a homogenous society since the rebels could identify themselves as ethnically distinct from government supporters. However, a society with twenty ethnic groups would have higher coordination costs for rebellion than a society with two ethnic groups (and potentially than a homogenous society) since potential rebels would need to cooperate across ethnic boundaries.

The other postulated cost of rebellion is the opportunity cost. This can reasonably be proxied by per capita income. At very low levels of income, people, and especially the teenage males who man most rebellions, have little to lose from joining rebel armies.

The benefits of rebellion are conditional upon military success, which is in turn dependent upon the financial capacity of the government to purchase defense. Clearly, actual defense expenditure is endogenous to the risk of war and so cannot be used to predict it. Instead, I proxy the taxable base of the economy by the share of primary exports in GDP, these being highly taxed in most societies. Conditional upon success, the benefits of rebellion depend upon its objectives. Some rebel groups aspire to secession. A simple proxy for the desire for secession is the size of the population: governments in countries with larger populations are less likely to satisfy the needs of their peripheral citizens (see Alesina and Spolaore, 1997). Other rebel groups aspire to capture the state. In this case a proxy for the gains from rebel victory is the taxable base which is being captured. Hence, the taxable base has an ambiguous net effect on the risk of rebellion, both reducing the chance of rebel victory and increasing the gain should victory be achieved. Since the net effect need not be monotonic in the taxable base, in the test of the model primary exports are entered as a quadratic.

The theory is summarised formally in (1). The probability of civil war increases with the net present value of the utility which the rebels achieve by war.

(1) $Uw = \int_{D}^{\infty} \{ p(T).g(T,P) / (1+r)^t \} \, dt - \int_{o}^{D} \{ f(Y,C) / (1+r)^t \} dt$

where:

p = probability of rebel victory
T = taxable base, proxied by primary export share in GDP
P = population (ln)
Y = opportunity cost, proxied by per capita income
C = costs of coordination, proxied by ethno-linguistic fractionalisation

The model is tested on the civil wars since 1960, using country characteristics as of 1960 or as close to 1960 as the data permits. The probit attempts to predict the 27 states in which civil wars occurred post-1960 from among the 97 states for which data are available. This is a good date for starting the analysis since prior to around 1960 many states were colonies and so underlying risks of civil war were largely suppressed. Hence, for example, the potential endogeneity of income to civil war risk is largely avoided. The results are shown in Table 4.

Table 4: Two Probit Regressions of the Occurrence of Civil War

Variable	Baseline		Political Institutions Added	
	coefficient	t-ratio	coefficient	t-ratio
constant	-1.543	2.14	-2.61	-2.66
Income	-0.001	2.70	-0.0004	-1.87
Primary	16.16	2.56	13.89	2.18
Primary2	-29.47	2.28	-27.71	-2.05
ELF	0.033	1.35	0.027	1.09
ELF2	-0.0004	1.60	-0.0003	-1.26
Population	0.0003	2.39	0.0002	2.26
Political Rights	-	-	0.225	1.80

Source: Baseline regression from Collier and Hoeffler (1998)

In the baseline regression all variables are significant with the expected signs. The risk of civil war is strongly related to the level of income: poverty sharply increases the risk of war. The effect of ethnic diversity is non-monotonic: moderately diverse societies are more at risk than homogenous societies, consistent with the reduction in the coordination costs of rebellion if potential rebels are ethnically differentiated from government supporters. However, highly ethnically diverse societies are even less at risk of civil war than ethnically homogenous societies, consistent with diversity among potential rebels increasing the coordination costs of rebellion. When these effects are applied to Africa, the high incidence of civil war on the continent is explained entirely by its low income: Africa's high ethnic diversity has made it less at risk from violent conflict than had it had the lower ethnic diversity found on average in other societies (see Collier and Hoeffler, 1998a). Natural resource exports increase the risk of war unless they are abundant, my interpretation being that the increased lure of capturing the state is eventually offset by the enhanced capacity of the government to defend itself and buy opponents off.

The second probit in Table 4 adds political rights measured as previously. Per capita income and democratic rights are correlated, and the introduction of the latter reduces the effect of income, although leaving it significant. The effect of ethnic diversity loses significance, but the coefficients are little affected. Political rights substantially affect the risk of civil war. Moving from the lowest to the highest level of rights has an equivalent affect to raising income from the mean to 2.4 times the mean. Thus, democratisation is worth around half a century of income growth in terms of its contribution to peace.

Although ethnically diverse societies are not directly prone to violent conflict, in the absence of democracy they are prone to poverty and this in turn makes them vulnerable to conflict. Recall that a maximally fractionalised society, if lacking in democratic institutions, grows 3 percentage points more slowly than a homogenous society. Since the mean per capita growth rate 1960-90 has been only 1.7 percentage points, this effectively condemns such societies to radically low incomes. Cumulatively, income growth lifts other societies out of poverty and so out of the risk of civil war. For example, compare a society with maximum fractionalisation and one with that level of fractionalisation which directly maximises the risk of war, which occurs when the index is 45. The completely fractionalised society is directly much safer. In units of income, complete fractionalisation is worth a 62% increase in income relative to the mean for equivalent safety. However, if the completely fractionalised society is also completely undemocratic, whereas the partly-fractionalised society is fully democratic, the latter will grow 1.4 percentage points more rapidly than the former. If the two societies start from the same level of income, the democratic society will have fully offset its higher risk of civil war arising from its dangerous fractionalisation by its higher income after only 34 years.

Hence, democracy reduces the risk of war both directly, through the enhanced capacity to mediate disputes, and indirectly, through higher income. In the most highly fractionalised societies the main contribution of democracy to peace is through its effect on income. This is partly because the contribution to income growth in such societies is much larger, and partly because, for a given income level, the risk of war in highly fractionalised societies is lower. In partially fractionalised societies the risk of civil war is at its peak, and the contribution of democracy to income growth is reduced. However, democracy also delivers a substantial direct reduction to the risk of conflict.[5]

Finally, I turn to the problems posed by the escalation of rebellion, by current civil wars, and by the preservation of peace in postwar situations. I show that these are subject to processes which are to an extent common across the three problems, but which are distinct from the risk of civil war in initially peaceful societies.

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[5] Unfortunately, while democracy has these two powerful conflict-reducing effects, the transition to democracy may involve a temporary phase of increased risk. This is indeed the core result of Gurr (1993). I do not revisit this problem in the present paper.

For the escalation of rebellion I utilise data by Gurr (1993), who distinguishes between six stages of rebellion, the bottom rung being political banditry and the top being civil war, in between being terrorism and guerrilla activities of varying scales. I use an ordered probit model to explain the passage from peace through these six stages. The core innovation in the important Gurr data set is its focus on disadvantaged ethnic minorities. However, in order to keep the results comparable with the other regressions I do not use this aspect of Gurr's data, and instead retain the 0-100 measure of ethno-linguistic fractionalisation. The Gurr data set does not cover as many countries as the previous samples, but is nevertheless substantial.

For the problems of civil wars continuing and of a postwar peace being broken I estimate hazard functions. These are variants on those estimated in Collier, Hoeffler and Söderbom (1998) which provides a fuller discussion of the methods and data used. The hazard functions model the duration of conflict and postwar peace respectively, measured in months. The civil war data is predominantly drawn from Singer and Small (1982, 1994) but is updated to 1997. The hazard functions are estimated using semi-parametric methods rather than the more restrictive Weibull specification. The hazard of peace during a civil war is estimated using the first and (where pertinent) second spell of war for each country in the data set, starting from 1960. The hazard of renewed war following a peace can only be investigated for countries which have at some stage settled a civil war and this restricts the sample. In order to increase the sample size this hazard is estimated for all countries which experienced a civil war post-1945. Since the focus of the present paper is not on the structure of the hazard but rather on the significance of explanatory variables, only the latter are reported.

The results for all three processes are reported in Table 5.

Table 5: The Escalation, Maintenance and Revival of Violent Conflict

Variable	Escalation		Maintenance		Revival	
	coefficient	t-statistic	coefficient	t-stat.	Coefficient	t-stat.
Income	-0.00008	-1.47	-0.00017	-0.92	-0.00004	-0.22
Primary	-5.48	-0.63	-	-	-	-
Primary2	5.25	0.20	-	-	-	-
ELF	0.053	1.92	0.0512	1.71	-0.05	-1.59
ELF2	0.00052	-1.85	-0.0006	1.74	0.006	1.72
Population (ln)	0.18	1.04	0.0693	0.32	-0.2385	-1.21
Political Rights	0.30	2.33	-0.839	0.72	-0.1517	-1.19
	N = 47		N = 45		N = 56	

Note, primary exports were completely insignificant in the hazard functions and were dropped to ease estimation.

These three results display a common pattern. First, ethnic diversity is always important, with a quadratic relationship, and is consistently more significant than in the probits of the causes of civil war reported in Table 4. Note that this is despite the much smaller sample sizes. Secondly, and by contrast, income, population and primary exports are no longer even remotely significant. Why should the relative importance of income and ethnic diversity change so substantially? Recall that income proxies the opportunity cost of joining rebellion whereas ethnic diversity proxies the cost of coordination. I think that the reason for the difference is that in the determination of *whether* a civil war occurs the decisive factor is whether would-be rebel leaders can persuade others to join them. Since this is initially a free choice of potential recruits, they weigh the opportunity cost. However, only a rebellion has started, whether it collapses or is maintained and escalated depends upon the capacity to sustain rebel cohesion. Ordinary rebel soldiers do not have the choice to quit. Indeed, all armies classify quitting as desertion and punish it severely. This diminishes the importance of income, since the calculus of individual choice is less important. However, rebel groups easily splinter and fight among themselves, and indeed this is a prime government strategy in coping with rebellion. I suspect that the quadratic relationship in ethnic fractionalisation proxies the difficulties of keeping the officer cadres cohesive.

The preservation of peace in newly postwar situations appears to be determined by the same process (but with opposite signs) which determines whether wars are sustained. This is plausible. Rebel organisations are not voluntarily disbanded during the early stages of a postwar peace, and the inability of rebels to sustain their cohesion helps to preserve the peace, just as it helps to avoid escalation of a conflict, and to avoid the perpetuation of civil war.

Political rights is the most significant variable in the escalation probit and has large effects. Democracy substantially reduces the risk that terrorist groups will be able to build up their support base sufficiently to escalate violence to full scale civil war. However, political rights appear to be less effective in reducing the duration of conflict once it has escalated to full scale war, and in reducing the risk of renewed conflict following peace.

Thus, the problem of avoiding civil war is to an extent distinct from the problems of preventing escalation, ending current wars, and sustaining new peace. The degree of ethnic diversity in the four processes is, however, common: homogenous societies are safer than moderately diverse societies, but highly diverse societies are even safer than homogenous societies. Political rights are very important in the prevention and escalation of conflict, but appear not to be so effective in achieving and sustaining settlements once civil wars are underway. Income is very important in preventing civil war, but less effective once there has been resort to violence, and there is little evidence for its importance in reducing the duration of war, or of sustaining postwar peace.

4. Conclusion

Ethnic identity and diversity has, until recently, been something of a taboo area in the analysis of economic performance. The recent evidence which has begun to break this taboo has seemed highly discouraging. Strong and specific mechanisms whereby ethnically fractionalised societies were liable to have worse economic performance than more homogenous societies have been established. Further, there has been a presumption, although not formally researched, that ethnic fractionalisation is the cause of civil war and other forms of violent conflict. This has been treated as a particularly disturbing set of results in Africa because it is the continent with the highest level of ethnic fractionalisation, the slowest growth, and the highest incidence of civil war.

In this paper I approached the analysis of ethnicity from a highly aggregated, cross-country perspective. This is clearly not a substitute for country-level studies, at which level many factors undetectable in the present approach will be detectable. The approach can, perhaps, be seen as that in which economics has a comparative advantage, and as a complement to country-based work which by itself faces the difficulty of identifying what is distinctive at the national level. I first found evidence for a further mechanism whereby ethnic fractionalisation can reduce income, namely by reducing trust, and so raising transactions costs. However, I then established two more hopeful sets of results. One was that political institutions matter more where a society has a potential problem of ethnic fractionalisation than in homogenous societies. Democracy has the capacity almost completely to offset the economic damage which can be done by a high level of fractionalisation. The other was that the relationship between ethnic fractionalisation and the risk of violent conflict is more subtle than has been thought. Highly fractionalised societies are actually directly safer than less fractionalised societies. Indeed, the high level of diversity in Africa is a source of strength, not of danger. It is the middle-levels of fractionalisation which are more dangerous for violence, whereas the effects of fractionalisation on economic growth are continuously negative. While the relationship between fractionalisation and conflict is complex, the contribution of political institutions to peace is, like their contribution to growth, substantial.

Since income is also an important determinant of the risk of conflict, democracy works twice over to reduce risks: it both directly defuses conflict and indirectly reduces the incentive for rebellion. Further, economic development works to reduce the risk of conflict.

The implications for societies with a high degree of ethnic diversity, such as Africa, are encouraging. As long as they have a high degree of political rights, such societies achieve the best of both worlds. Democracy effectively eliminates the potentially negative effects of ethnic diversity on economic growth, while the high diversity makes the society even safer from violent conflict than homogenous societies.

Finally, I focused on those societies already experienced in violence, and investigated the determinants of the continuation, escalation and resumption of violence in these societies. The three processes display similar patterns which are distinctive from the determinants of the risk of civil war in societies which have previously been at peace for substantial periods. In these processes ethnic fractionalisation is more important and income levels are unimportant. In such societies the maintenance or creation of extreme ethnic fractionalisation may be the best hope of peace. In these civil war societies federation to build highly fractionalised societies may be a more effective solution than economic development. However, such highly fractionalised societies must be democratic if they are not to suffer high economic costs.

References

Alesina, A., R. Baqir and W. Easterly (1997) 'Public Goods and Ethnic Divisions', mimeo, World Bank.

Alesina, A. and E. Spolaore (1997) 'On the Number and Size of Nations', *Quarterly Journal of Economics* **112**:1027-1056.

Collier, P. and A. Garg (1998) 'On Kin Groups and Wages in Africa', *Oxford Bulletin of Economics and Statistics* (forthcoming).

Collier, P. and A. Hoeffler (1998) 'On Economic Causes of Civil War', *Oxford Economic Papers* (forthcoming).

_____ (1998a) 'The Coming Anarchy? The Global and Regional Incidence of Civil War', mimeo, CSAE, Oxford.

Collier, P., A. Hoeffler and M. Söderbom (1998) 'On the Duration of Civil War and Postwar Peace', mimeo, CSAE, Oxford.

Easterly, W. and R. Levine (1998) 'Africa's Growth Tragedy', *Quarterly Journal of Economics.*

Fedderke, J. and R. Klitgaard (forthcoming) 'Economic Growth and Social Indicators: an Exploratory Analysis', *Economic Development and Cultural Change.*

Gurr, T.R. (1993) 'Why Minorities Rebel: A Global Analysis of Communal Mobilisation and Conflict since 1945', *International Political Science Review,* 14: 161-201.

Kaufmann, D. and Y. Wang (1995) 'Macroeconomic Policies and Project Performance in the Social Sectors', *World Development,* Vol. 23, pp. 751-765.

Small, M., and J.D. Singer (1982) *Resort to Arms: International and Civil War, 1816-1980,* Beverly Hills, Sage.

Small, M., and J.D. Singer (1994) *Correlates of War Project: International and Civil War Data, 1816-92,* Inter-University Consortium for Political and Social Research, Ann Arbor, Michigan.