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Can Institutions Resolve Ethnic Conflict?

William Easterly

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Summary findings

High-quality institutions—reflected in such factors as rule of law, bureaucratic quality, freedom from government expropriation, and freedom from government repudiation of contracts—mitigate the adverse economic effects of ethnic fractionalization identified by Easterly and Levine (1997) and others.

Ethnic diversity has a more adverse effect on economic policy and growth when a government's institutions are poor. But poor institutions have an even more adverse effect on growth and policy when ethnic diversity is high. In countries where the institutions are good enough, however, ethnic diversity does not lessen growth or worsen economic policies.

Good institutions also reduce the risk of wars and genocides that might otherwise result from ethnic fractionalization. However, these forms of violence are not the channel through which ethnic fragmentation and its interaction with institutions affect economic growth.

Ethnically diverse nations that want to endure in peace and prosperity must build good institutions.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to study the political economy of policymaking and institutions. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Kari Labrie, room MC3-456, telephone 202-473-1001, fax 202-522-3518, email address klabrie@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at weasterly@worldbank.org. November 2000. (32 pages)

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Can Institutions Resolve Ethnic Conflict?[1]

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World Bank

[1] Some of the results in this paper are based on earlier unpublished work with Ross Levine.

In 88 BC, King Mithriadates VI of Pontus invaded Roman territory in Asia Minor. He encouraged Asian debtors to kill their Roman creditors. Happy to reduce their credit card bills, the Asians massacred 80,000 Romans.[1]

Ethnic conflict is a tragic constant of human history. Ethnic conflict is still very much in the news today, from the Balkans to Central Africa to Indonesia to Nigeria. Ethnic conflict has a peaceful political dimension as well as the more publicized violent dimension. Recently, the economics literature has studied the effects of ethnic conflict on economic development.

Easterly and Levine [1997] document an adverse effect of ethnolinguistic fractionalization on income, growth, and economic policies. They offer this as an explanation for Africa's poor growth performance. Alesina, Baqir, and Easterly 1999a find that more ethnically diverse cities and counties in the US spend less on public goods. Goldin and Katz 1999 find lower public support for higher education in states with more religious - ethnic heterogeneity. Goldin and Katz 1997 likewise find lower high school graduation rates in states that had higher religious-ethnic diversity. Miguel 1999 likewise finds lower primary school funding in more ethnically diverse districts in Kenya. Mauro 1995 and La Porta, Lopez de Silanes, Shleifer and Vishny 1998 find that ethnic diversity predicts poor quality of government services. Mauro 1995 and Annett 1999 finds that linguistic or religious diversity leads to greater political instability, which Annett finds in turn leads to higher government consumption. Alesina, Baqir, and Easterly 1999b find a link from ethnic diversity to bloated government payrolls in US cities. Rodrik 1999 noted that ethnically polarized nations react more adversely to external terms of trade shocks. Svensson 1998 finds that more foreign aid proceeds are diverted into corruption

in more ethnically diverse places. Knack and Keefer 1997 find that ethnic homogeneity raises "social capital" or "trust," which in turn is associated with faster growth and higher output per worker. Alesina and La Ferrara 2000 and Zak and Knack 1999 also find that ethnic heterogeneity lowers "trust," using US data and cross-country data, respectively. Alesina and La Ferrara 1999 find that higher ethnic heterogeneity makes participation in social clubs less likely in the US, which is consistent with the idea that there is not much association across groups. Adelman and Morris 1967 also noted that "cultural and ethnic heterogeneity tend to hamper the early stages of nation-building and growth."[2]

There is a large political science literature that describes the formation of ethnically based political blocs. Rothchild (1991), one of the leading scholars of ethnic politics, avers that "ethnic and other rivalries" over "distributive goods" are "far-reaching"(p. 195).[3] For example, in Zambia, Scarritt (1993) describes how the Nyanja group (15 percent of the population) was in power through 1991 under the undemocratic rule of Kenneth Kaunda. The Bemba group (37 percent of the population) had been discriminated against under Kaunda because he feared they were opposition sympathizers. Food riots against the first IMF agreements in the late 80s took place primarily among the Bemba population. In democratic elections that were finally held in 1991, the Bemba group led the winning coalition, while the party supported by the Nyanja lost.

In Nigeria, likewise, the predominant (albeit far from the only) ethnic split has been between the Muslim North and the Christian South. Collier [1995] states flatly: "the Nigerian government is a Northern interest group. This group has never relinquished power since independence." Ake [1996] concludes that most of Nigeria's

elites "place their Nigerian identity below that of their local community, nation, or ethnic group" [p. 67]. Although Nigeria is a constitutional federation, the states rely on handouts of oil money from the central government. Oil is actually produced in the South. The competition for rents from oil often seems to divert resources away from human capital accumulation (as predicted by Tornell and Lane 1999). For example, public spending in Nigeria during the oil boom in the early 1990s increased by more than 50 percent, yet over the same period school enrollment shrunk due to tight education funding. The Nigerian dissident writer Wole Soyinka (1996) notes that a government-appointed commission of inquiry was unable to account for what happened to much of the 1990s government oil windfall. Most recently, a Southerner has finally become President of Nigeria under democratic elections, but tensions continue between Northern and Southern groups over issues like the introduction of Islamic law in Northern states.

The current Prime Minister of Ethiopia, Meles Zenawi, summed up the political economy of Africa in a speech at Harvard. He notes "ethnic, religious, and other sources of diversity are the hall-marks of African societies" and "Rent-seeking in our economies is not a more or less important phenomenon as would be the case in most economies. It is the centerpiece of our economies (Zenawi 2000)."

Ethnic groups may act selfishly in their own interest, because they may receive only spillovers from the human capital or knowledge of those in their own ethnic or neighborhood group (what Borjas 1992, 1995, 1999 has called "ethnic capital"). Case and Katz 1991 found there were strong neighborhood effects on economic and social outcomes for Boston inner city youths. Benabou 1993 and Durlauf 1996 suggest that inequality persists through neighborhood externalities, local school finance, and

endogenous segregation between rich and poor. Casella and Rauch 1997 argue that exporters with an ethnic connection to business groups inside the importing country have an advantage over those without such ties. The existence of "ethnic capital" makes for persistent income differentials between ethnic groups, which may exacerbate ethnic tensions. In Mexico, for example, the poverty rate among indigenous people is 81 percent, while it is only 18 percent among non-indigenous Mexicans.[4] Ethnic inequality may lead to some poor groups being unable to finance human capital accumulation, with such inequality lowering growth, as argued in general for inequality and growth by Galor and Zeira 1993. The exclusion of some ethnic groups from enterprise and human capital formation lowers the productive potential of the society that excludes them.

I. Growth regression with Institutions

Political economy explanations of development outcomes usually focus on "society's polarization and degree of social conflict" (Alesina 1994, p. 38). Societies that are ethnically divided are plausibly more prone to "polarization" and "social conflict." The adverse effect of ethnic diversity on growth may stem from the political economy "wars of attrition" (Alesina and Drazen 1991) that take place between ethnic groups. (Easterly and Levine 1997 found that this ethnic effect was not proxying for real wars fought along ethnic lines, because ethnic diversity was still significant after controlling for civil war). Each ethnically-based interest group tries to free ride on inflation stabilization, trade opening, privatization, or another costly policy reform, hoping that the costs will be borne by the group that initiates the reform. Although we could capture such policy reforms directly in the growth equation, there are many structural reforms that are hard to measure (such as lowering price distortions or privatization), so ethnic

diversity may show up in the growth equation because it represents a bad political economy equilibrium in some unmeasurable policies.

To change the metaphor, multiple ethnic groups are subject to "the tragedy of the commons" as each ethnic group over-extracts from a common resource like commodity export rents. Rather than protecting a valuable resource like cocoa plantations, in which a country might have a growth-promoting comparative advantage, ethnic groups may each try to extract rents from the commodity (with a strong incentive to get the rents before the other group does) until commodity producers are discouraged from producing. Such a bad political economy equilibrium with polarized ethnic groups can literally, to keep adding metaphors, "kill the goose that lays the golden egg."

Lower "trust" between diverse ethnic groups make it difficult to form the social networks ("social capital") that promote growth by disseminating advanced technology and economically useful knowledge, as argued by the literature cited above. Ethnic groups may have difficulty agreeing on the type of public goods, leading to less total spending on growth-promoting public goods -- as documented for US cities and counties by Alesina, Baqir, and Easterly 1999a. Again, we could measure such public services directly, but many of them are hard to observe directly. Ethnic diversity may then have a direct effect on growth through its effect on unobserved public services.

Institutions that give legal protection to minorities, guarantee freedom from expropriation, grant freedom from repudiation of contracts, and facilitate cooperation for public services would constrain the amount of damage that one ethnic group could do to another. Such pro-business rules of the game may prevent ethnic groups from expropriating business owners of a different ethnic group. Good institutions would thus

plausibly make a given amount of ethnic fractionalization less damaging for development. We can think of an interaction effect between quality of institutions and ethnic diversity that would work something like this:

(Ethnic conflict) = f(Ethnic diversity, Institutional quality)

where $f_1>0$, $f_2<0$, and $\partial^2(\text{Ethnic conflict})/(\partial\text{Ethnic diversity}\partial\text{Institutional quality})<0$.[5]

As a corollary, formal institutions that protect minorities and establish clear legal rules for business may be more valuable in ethnically divided societies than in homogeneous ones. In ethnically homogeneous societies, the web of social networks spanning the whole society will spawn informal institutions ("social capital" or "trust") that provide assurance against expropriation or breaking contracts. In ethnically divided societies, formal institutions fill the gap left by lower "social capital," and therefore are more productive at the margin than in homogeneous societies.

Poor institutions in Africa may reinforce the ethnolinguistic fractionalization explanation for Africa's poor performance. Many studies of Africa cite the hostile institutional environment as a factor explaining Africa's poor growth performance (see World Bank [1994]). These studies argue that the ability to resolve conflicts peacefully and quickly, to conduct business where the rules of the game are clear, and to have confidence in the bureaucracy may all influence investment and allocation decisions. In a society with ethnic conflict, such institutional shortcomings may be disastrous. Mauro [1995] and Knack and Keefer [1995] argue that corruption and other institutional factors are correlated with economic growth using data from country risk services for international investors.

Good institutions may thus mitigate ethnically-based social conflict that lowers growth. I find that the ethnic effect in the original Easterly and Levine 1997 growth regressions disappear if institutions are of sufficiently high quality. I average Knack and Keefer's [1995] measures from the International Country Risk Guide of (a)freedom from government repudiation of contracts, (b) freedom from expropriation, (c) rule of law, and (d) bureaucratic quality into an overall index of institutional quality. Data are available for many of the years in the 1980s. I average these across years 1980-1989 in computing the overall institutional quality index. Then, as in Barro [1997], I use the 1980s value for the 1970s and 1960s under the assumption that institutional quality changes slowly. This index, INSTITUTIONS, has a maximum possible value of 10 and potential minimum of 0. For example, Luxembourg has a institutional index value of 10, while Liberia and the Sudan have values of 2.9 and 2.7 respectively. Note that I am not directly measuring the political and social institutions that might foster, for example, rule of law. Rather I am measuring, as do others in the literature, the *outcomes* of institutional arrangements.

INSTITUTIONS is highly correlated (.87) with the general institutional ranking of the Business Environment Risk Guide (BERI) for 1980-1989 reported by Knack and Keefer 1995.[6] BERI data covers the 1970s and 1980s, so I can check my assumption of persistence over time. I find a correlation of .95 between the BERI averages for 1970-1979 and 1980-1989. I prefer to use the ICRG data however, because they cover more countries and because they were the principal variable in the seminal Knack and Keefer 1995 study.

INSTITUTIONS is also highly correlated with corruption. INSTITUTIONS has a correlation of .8 with Mauro's [1995] 1980-1983 index of corruption, which in turn has a correlation of .88 with Knack and Keefer's [1995] 1980-1989 index of corruption.

In Table I, I add the interaction term, INSTITUTIONS*ETHNIC to the most complete growth regression of Easterly and Levine 1997. The data still demonstrate that ethnic diversity is negatively associated with long-run growth. However, Table I's results imply that sound institutional arrangements mitigate the negative effects of ethnic diversity.[7] Indeed, the results indicate that ethnic diversity has a zero marginal effect on economic growth at maximum institutional development (INSTITUTIONS equal to 10). Because of concern about possible autocorrelation of the error terms in the pooled data, I also do the regression as a pure cross-section; I get similar results (Table I) on the ethnic variable and its interaction with institutions, although some of the policy variables are no longer significant in the small cross-section sample.

This result may be related to that of Collier 1999 that democracy eliminates the adverse effect of ethnolinguistic fractionalization on growth. I test whether democracy is more relevant than institutions by adding a variable ETHNIC*POLRIGHTS, where POLRIGHTS is the Gastil index of political rights from 1 to 7, where 1 is the most democratic. This variable is insignificant, with the wrong sign and a t-statistic of only .33. These results suggest that it is institutions rather than democracy that contain ethnic conflict.

Another possible concern is that ethnic fragmentation and its interaction with good institutions may simply be picking up the presence of violence destructive to growth. However, when I control for a measure of intensity of war (war casualties on

national territory), the results on ETHNIC and its interaction with INSTITUTIONS are unchanged, while the war variable is itself insignificant. Likewise, when I control for a dummy variable measuring genocide (to be described below), I find the growth effects of ETHNIC and its interaction with INSTITUTIONS to be unchanged, while genocide itself does not significantly lower growth.

Finally, it may be that ethnically diverse societies with good institutions are those that had less tension between groups to begin with. This problem creates difficult identification problems that I cannot resolve in this paper, but I do acknowledge the possibility.

II. Institutions, Ethnic Diversity, and Policy Choices

Next, I explore the effect of institutions on mitigating the adverse effects of ethnic diversity on policy. While ethnic diversity is given exogenously, countries may be able to adopt institutional arrangements -- clear property rights, freedom from expropriation, effective "rules of the game," and an efficient bureaucracy -- that mitigate the negative repercussions of diverse interest groups. Clear rules of the game may substantially reduce or eliminate costly rent-seeking behavior associated with ethnic diversity. For example, suppose that a multi-ethnic coalition is necessary to constitute a majority in an ethnically diverse country. Ministries might be parceled out among the various ethnic leaders, who seek gains for their own ethnic group at the expense of other ethnic groups. The ethnic leader in charge of the central bank might set an artificially overvalued exchange rate to tax commodity exporters (who may belong to a different ethnic group) and then hand out cheap foreign exchange to ethnic supporters. The result would be a high black market premium. The ethnic leader in charge of bank regulation might put controls on interest

rates to tax savers, and then hand out cheap loans to ethnic supporters. The result would be a negative real interest rate for depositors, flight of capital from the banking system, and low M2 to GDP ratios, which King and Levine 1993 find to be bad for growth. This kind of story applies to many ethnically diverse countries in Africa, where the commodity exports are concentrated in one ethnic group (e.g. Ashantis in Ghana), savings in another group (e.g. people of Indian origin in Kenya), and politicians belong to yet another group (e.g. coastal ethnic groups in Ghana, a coalition of the smaller African ethnic groups in Kenya). A pro-business set of institutions would prohibit such implicit expropriation of exporters and savers.

Alternatively, multiple ethnic groups might have conflicting interests on the kind of public services delivered by the state, as argued by Alesina, Baqir, and Easterly 1999a. For example, linguistically distinct groups would have different preferences for the language of instruction in the schools. They might reach a compromise lingua franca like Swahili, but they value schooling less because they cannot be taught in the language spoken at home. This would lead to less resources devoted to the common good, and thus lower schooling. Regionally separated groups might have trouble agreeing on the location of telephone networks, and thus wind up investing less in such networks -- leading to lower telephone density. Good institutions like an independent and efficient bureaucracy may be able to supercede such differences and act for the good of the nation as a whole.

I examine whether sound institutions mitigate the negative effects of ethnic fragmentation on policy choices by including the term INSTITUTIONS*ETHNIC in the regressions for policy indicators from Easterly and Levine 1997. Thus, I regress

measures of educational attainment, political stability, financial depth, the black market exchange rate premium, the fiscal surplus, and the number of telephones per worker on ETHNIC and the interaction term INSTITUTIONS*ETHNIC. For educational attainment, financial depth, the black market exchange rate premium (Figure 1), and the number of telephones per worker, I find in OLS regressions that (1) ethnic diversity causes a deterioration in the dependent variable (consistent with the results of Easterly and Levine 1997) and (2) institutions significantly mitigate the negative effects of ethnic diversity (Table II). In fact, the results indicate that in countries with very highly developed institutions, ethnic diversity does not significantly hurt policy choices. Institutional arrangements can overcome the negative implications of ethnic diversity. The coefficient magnitudes imply that the derivative of policies with respect to ETHNIC actually changes sign at very high values of institutions.

Although this suggests a reform strategy that focuses on improving a country's institutions, altering institutional arrangements is fundamentally more difficult than changing, for example, exchange rate policies [see North, 1990] and World Bank [1995]]. Moreover, INSTITUTIONS is itself negatively correlated with ETHNIC (simple correlation of –.33) -- so achieving a consensus for changing institutional rules of the game may be even more difficult in an ethnically diverse country.[8]

There may also be reverse causation from policies to institutions. For example, a black market premium creates incentives for corruption in foreign exchange allocation, which could affect my measure of institutional quality. Hence, I also conduct the analysis instrumenting for my interaction term INSTITUTIONS*ETHNIC.

I could follow Mauro [1995] in the idea of using colonial heritage as an instrument.[9] However, the form of Mauro's variable (dummy variables for former French colonies, former English colonies, etc.) is not suitable for this purpose since I need to find instruments uncorrelated with my dependent variables -- policies. National colonial traditions seem to be correlated with the choice of policies (former French colonies in Africa in the Franc Zone do not have black market premia, for example). A more plausible instrument for my purposes is the length of time the country has been independent, which could be interpreted as the length of time national institutions have had to develop. I normalize time since independence as the fraction of time since 1776 a country has been independent, as of the initial year of the decade for each decade observation. I also use the product of ethnic diversity and initial income (ETHNIC*INCOME) as an instrument, assuming that institutional development is a function of general economic development as represented by income.

The results (Table II) show no effect of ETHNIC and ETHNIC*INSTITUTIONS on the fiscal surplus and on the number of assassinations.[10] This accords with the result by Easterly and Levine 1997 that ethnic diversity does not affect the fiscal surplus or the number of assassinations, so there is no effect for INSTITUTIONS to mitigate.

Like Easterly and Levine 1997, however, I find that ethnic diversity causes lower schooling, less financial depth, a bigger black market exchange rate premium, and less infrastructure. For these effects, I find that sound institutions eliminate the negative effects of ethnic diversity on economic policies. Furthermore, when I do include the less than ideal instruments of colonial dummies for England, France, Spain, Portugal, etc., as in Mauro [1995], the results remain unchanged. I also tried instruments to account for

natural endowments, such as Sachs and Warner's [1995,1999] natural resource abundance measures, population size, and land area. The results were still unchanged.

I did a Hausman test of the over-identifying restrictions to see if ETHNIC*INCOME and "years since independence" are indeed excludable from these policy regressions.[11] I fail to reject the over-identifying restrictions; that is, I find no evidence that these instruments belong in the regression for policies directly. This is helpful since it tells us that institutions is not simply proxying for, say, income. Of course, the use of instrumental variables technique addresses causality only if the instruments are truly exogenous, an assumption which seems more well grounded for the years-since-independence variable than the income variable. When I use only the years since independence variable, or this variable combined with an interaction term (years-since-independence times ETHNIC), the pattern of signs and significance is unchanged (although coefficient magnitudes do shift).

I check whether this interaction term is really proxying for a direct effect of INSTITUTIONS on policy choices. Perhaps societies with good institutions are simply less prone to bad policy choices, regardless of their level of ethnic diversity. I find that ethnic diversity still causes lower schooling, lower telephone density, and lower financial development, and that INSTITUTIONS still mitigate this effect. The results on the black market premium are not robust to the inclusion of INSTITUTIONS separately, as the regression cannot distinguish the effects of ETHNIC, INSTITUTIONS, or their interaction.

III. War, institutions, and ethnic diversity

Although war is not the main theme of Easterly and Levine 1997 and is not the principal channel by which diversity affects growth, they do note that ethnic fractionalization is correlated with war casualties on national territory (data from Sivard 1993). It is obvious from experience ranging from Afghanistan to Sudan that ethnic conflict sometimes takes on this most violent of forms. Hence, it is interesting to see if good institutions that mitigate economic consequences of diversity can modify violent ethnic conflict as well.

The last lines of Table II confirm that ethnic fractionalization increases the likelihood of war casualties. However, once again good institutions are effective in mitigating this threat. Indeed at maximum quality institutions (INSTITUTIONS=10), the effect of ethnic fractionalization on war is cancelled out all together. This accords well with casual observation – ethnic differences may lead to civil war in Kosovo, Rwanda, and Sudan, but they do not in Belgium, Canada, or Switzerland.

Collier and Hoeffler 1998 find that the relationship between duration of civil war and ethnic diversity is quadratic, with peak civil war duration at ETHNIC=43. I tested a quadratic term for ETHNIC in my civil war regression, but found both ETHNIC and ETHNIC^2 to be insignificant in this case. The interaction term between ETHNIC and INSTITUTIONS continued to be significantly negative. The differing results from Collier and Hoeffler 1998 may be explained by my use of a different measure of intensity of civil war (casualties per capita rather than duration) and the inclusion of the institutional interaction effect.

I also tested whether INSTITUTIONS enters directly into the war casualties equation. The regression was not able to distinguish the separate effects of ETHNIC, INSTITUTIONS, and their interaction.

IV. Genocide, institutions, and ethnic diversity

Another violent manifestation of ethnic conflict is genocide, defined as state-sponsored killings whose victims are identified at least in part by their ethnic classification. According to Harff and Gurr 1996 "Geno/politicide is the promotion, execution, and/or implied consent of sustained policies by governing elites or their agents – or in the case of civil war either of the contending authorities – that result in the deaths of a substantial portion of a communal and/or politicized communal group."

The tragic history of genocide is a long one. A non-exclusive list of victims of ethnic massacres over the last millenium includes: the Danes in Anglo-Saxon England in 1002, the Jews in Europe during the First Crusade 1096-99, the French in Sicily in 1282, the French in Bruges in 1302, the Flemings in England in 1381, the Jews in Iberia in 1391, converted Jews in Portugal in 1507, the Huguenots in France in 1572, Protestants in Magdeburg in 1631, Jews and Poles in the Ukraine in 1648-54, indigenous populations in the US, Australia, and Tasmania in the 18th and 19th centuries, Jews in Russia in the 19th century, the French in Haiti in 1804, Arab Christians in Lebanon in 1841, Turkish Armenians in 1895-96 and 1915-1916, Nestorian, Jacobite, and Maronite Christians in the Turkish empire in 1915-16, Greeks in Smyrna in 1922, Haitians in the Dominican Republic in 1936, the Jewish Holocaust in German-occupied territory 1933-1945, Serbians in Croatia in 1941, and Muslims and Hindus in British India in 1946-47. [12]

Easterly and Levine 1997 noted that their measure of ethnolinguistic fragmentation was significant and positive in a probit equation for the occurrence of genocide. The measure they use (and I use here) is taken from Harff and Gurr 1996. Here I use this data to construct a dummy variable that takes on the value 1 if a genocide (defined to include either "communal victims" or "mixed communal and political victims" in Harff and Gurr's terminology) occurred at any time from 1960 to 1990. There are 16 countries that had a genocide over this period according to Harff and Gurr's classification. The 16 countries are Angola, Burundi, Burma-Myanmar, Ethiopia, Equatorial Guinea, Guatemala, Kampuchea-Cambodia, Nigeria, Pakistan, Paraguay, Rwanda, Sudan, Somalia, Uganda, and Zaire-Congo. Table III lists the dates and ethnic victims of the genocidal killings for these 16 countries.

Here I investigate whether the presence of high quality institutions lowers the probability of genocide for a given amount of ethnolinguistic fragmentation. Table IV shows the results. Regression [1] shows the basic result: ethnic fragmentation has a significant and positive effect on the probability of genocide, while the interaction term between ethnic fragmentation and INSTITUTIONS has a negative effect. Higher quality institutions make a given degree of ethnic diversity less likely to result in genocide. Figure 2 illustrates this result. Countries in the lowest third of institutional quality have an increasing probability of genocide as ethnic fragmentation increases. The probability is all the way up to .5 in countries that are in the highest third of ethnic fragmentation and the lowest third of institutional quality. This group includes genocides in Angola, Guatemala, Indonesia, Nigeria, Pakistan, Sudan, Uganda, and Zaire.

Conversely, countries in the upper two-thirds of institutional quality do not show an increasing probability of genocide as ethnic fragmentation increases. Most striking of all, countries in the upper third of institutional quality have NO genocides, regardless of their level of ethnic diversity. Examples of countries with high ethnic fragmentation but also high quality institutions include Canada, Malaysia, and Thailand.

In regression [2], I examine whether INSTITUTIONS enters the probit equation for genocide directly. As with some of my other results, the regression has trouble distinguishing among ETHNIC, INSTITUTIONS, and their interaction.

In regression [3], I test whether institutional quality is simply proxying for democracy, using the well-known Gastil index for suppression of democratic rights. The interaction with democracy is insignificant, while the institutional quality interaction effect remains significant. If we take institutional quality as a measure of economic and legal freedoms, these seems to be more important than political freedoms in mitigating the effect of ethnic diversity on the likelihood of genocide.

The price that this nation must pay for the continued oppression and exploitation of the Negro or any other minority group is the price of its own destruction.
--Martin Luther King Jr.[13]

V. Conclusions

Previous studies (Knack and Keefer 1995, Mauro 1995) have found strong institutional effects of corruption and lack of rule of law on economic growth. Easterly and Levine 1997 found direct and indirect effects of ethnic diversity on economic growth. I find that institutional factors interact with ethnic diversity, as they affect whether ethnic conflict is destructive or is contained by the rules of the game. Ethnic diversity has a more adverse effect on economic policy and growth when institutions are poor. To put it another way, poor institutions have an even more adverse effect on growth and policy when ethnic diversity is high. Conversely, in countries with sufficiently good institutions, ethnic diversity does not lower growth or worsen economic policies. Good institutions also lower the risk of wars and genocides that might otherwise result from ethnic fractionalization. Ethnically diverse nations that wish to endure in peace and prosperity must build good institutions.

This is a promising area for future research. It may be that the INSTITUTIONS variable is a proxy for more general legal safeguards for ethnic minorities. Economists should do more case studies of successful and unsuccessful examples of ethnic groups

co-existing within nations. The study of oppression of one ethnic group by another is a rich area for further investigation – what conditions facilitate or prevent oppression? How much does the answer depend on initial inequality between ethnic groups? How much does the answer depend on the definition of ethnicity? The study of ethnically-based war and genocide is also a fruitful area for further research. What can we learn from the abundant historical data about the possible economic or social determinants of ethnic war and genocide? What more can governments do to finally bring the sad history of ethnic conflicts to an end?

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Table I: Redoing Easterly and Levine 1997 Growth Regressions: Cross-section Averages and Pooled Decades (1960s, 1970s, 1980s)

Dependent Variable: Real Per Capita GDP Growth

Estimation Method	Cross-section averages	Pooled OLS decade data
Dummy variable for Sub-Saharan Africa	-0.023 (-1.91)	-0.015 (-2.15)
Dummy variable for L. America and the Carribean	-0.017 (-2.87)	-0.017 (-4.24)
Log of initial Income	0.154 (3.07)	0.100 (3.92)
Square of log of initial income	-0.012 (-3.63)	-0.008 (-4.62)
Log of Schooling	0.006 (0.83)	0.009 (1.62)
Assassinations	5.677 (0.461)	-13.763 (-1.53)
Financial Depth	0.005 (0.72)	0.011 (1.69)
Black Market Premium	-0.006 (-0.74)	-0.018 (-3.27)
Fiscal Surplus/GDP	0.093 (1.63)	0.179 (4.30)
Log of Telephones per worker	0.006 (1.79)	0.004 (1.76)
INSTITUTIONS (1 worst, 10 best)	0.002 (1.27)	0.001 (0.64)
ETHNIC*INSTITUTIONS	0.005 (2.05)	0.005 (1.98)
ETHNIC	-0.032 (-1.96)	-0.039 (-2.16)
No. of observations	39	171

Heteroskedasticity-consistent t-statistics in parentheses. Decade dummies not shown
See Easterly and Levine 1997 for data sources

Table II: Determinants of Policy Indicators (Pooled Decade Data except where otherwise noted)

		Independent variables					
Dependent variable	Estimation Procedure	C	ETHNIC	ETHNIC* INSTITUTION	INSTI-TUTIONS	R^2	No. of obs.
Log of Schooling	OLS	1.77	-0.873			0.18	265
		(33.31)	(-8.06)				
	OLS	1.686	-1.992	0.260		0.37	249
		(33.85)	(-12.12)	(9.70)			
	OLS-Cross section	1.829	-1.898	0.242		0.355	86
		(21.44)	(-6.69)	(4.84)			
	IV	1.613	-2.994	0.483			242
		(31.00)	(-12.45)	(10.41)			
	IV	1.137	-2.181	0.346	0.076		242
		(2.06)	(-2.46)	(2.37)	(0.89)		
Assassinations	OLS	3.54E-05	-7.9E-06			0.00	314
		(3.41)	(-0.45)				
	OLS	4.49E-05	0.0001	-2.5E-05		0.04	285
		(3.69)	(2.38)	(-3.16)			
	OLS-Cross section	5.08E-05	0.000156	-3.56E-05		0.04	97
		(1.72)	(1.58)	(-2.01)			
	IV	3.52E-05	-5.21E-05	9.99E-06			280
		(2.95)	(-1.63)	(1.14)			
	IV	1.64E-04	-2.52E-04	4.28E-05	-2.04E-05		280
		(2.84)	(-2.33)	(2.08)	(-2.25)		
Financial depth	OLS	0.471	-0.290				
		(15.28)	(-5.83)			0.10	300
	OLS	0.465	-0.756	0.099		0.23	272
		(14.35)	(-11.10)	(7.45)			
	OLS-Cross section	0.561	-0.869	0.108		0.25	94
		(11.80)	(-5.43)	(3.77)			
	IV	0.45	-1.008	0.155			270
		(13.37)	(-10.28)	(7.01)			
	IV	0.578	-1.216	0.189	-0.020		270
		(1.99)	(-2.59)	(2.39)	(-0.45)		
Black market premium	OLS	0.110	0.240			0.04	316
		(4.39)	(3.93)				
	OLS	0.139	0.877	-0.132		0.18	288
		(5.35)	(7.48)	(-7.54)			
	OLS-Cross section	0.232	1.026	-0.169		0.16	98
		(3.17)	(4.16)	(-3.81)			
	IV	0.152	0.896	-0.15			277
		(5.76)	(5.55)	(-4.93)			
	IV	0.364	0.539	-0.084	-0.034		277
		(2.27)	(1.75)	(-1.62)	(-1.39)		

Table II: Determinants of Policy Indicators (continued)

Dependent variable	Estimation Procedure	Independent variables: C	ETHNIC	ETHNIC* INSTITUTION	INSTI-TUTIONS	R^2	No. of obs.
Fiscal surplus/GDP	OLS	-0.034	-0.014			0.01	227
		(-7.38)	(-1.44)				
	OLS	-0.037	-0.045	0.007		0.03	214
		(-7.57)	(-2.27)	(2.17)			
	OLS-Cross section	-0.054	-0.067	0.014		0.04	79
		(-4.70)	(-1.68)	(1.81)			
	IV	-0.035	-0.023	0.002			214
		(-7.20)	(-1.17)	(0.52)			
	IV	-0.168	0.181	-0.031	0.021		214
		(-3.27)	(2.21)	(-2.25)	(2.64)		
Log of telephones per worker	OLS	4.863	-3.283			0.25	293
		(28.23)	(-10.54)				
	OLS	4.813	-7.722	0.930		0.53	274
		(33.24)	(-18.28)	(12.44)			
	OLS-Cross section	5.556	-8.608	1.003		0.64	88
		(26.49)	(-11.77)	(7.82)			
	IV	4.55	-11.668	1.80			267
		(30.48)	(-13.23)	(10.62)			
	IV	2.328	-8.132	1.230	0.343		267
		(2.26)	(-4.35)	(3.99)	(2.24)		
War casualties per capita	OLS	-0.00013	0.001628				321
		(-0.38)	(2.45)				
	OLS	8.15E-05	0.00543	-0.0008			297
		(0.23)	(4.63)	(-3.75)			
	OLS-Cross section	0.001	0.010	-0.001		0.04	97
		(0.51)	(1.84)	(-1.30)			
	IV	5.42E-06	0.004477	-0.00057			276
		(0.01)	(3.06)	(-2.02)			
	IV	2.36E-04	7.31E-03	-9.86E-04	1.67E-05		276
		(0.13)	(1.55)	(-1.24)	(0.06)		

t-statistics in parentheses. Instruments: ETHNIC, (Initial Income)*ETHNIC, Percentage of years since 1776 as an independent country

Table III: Lists of genocidal killings, 1960-90 (from Harff and Gurr 1996)

country	*Dates*[2]	*Communal Victims*[3]
ANGOLA	1961-62	Kongo tribe
BURUNDI	1965-73,	Hutu leaders (65-73)
	1988	Hutu civilians (88)
MYANMAR	1978	Muslims
ETHIOPIA	1984-89	Tigreans
EQUATORIAL	1969-	Bubi tribe
GUINEA	1979	
GUATEMALA	1966-84	Indians
INDONESIA	1965-66,	Ethnic Chinese (65-66),
	1975-end	East Timorese (75-end)
	of sample	
CAMBODIA	1975-79	Muslim Chams
NIGERIA	1966	Ibos living in the North
PAKISTAN	1971,	Bengali nationalists (71), Baluchi (73-77)
	1973-77	
PARAGUAY	1962-72	Ache Indians
RWANDA	1963-64,	Tutsi ruling class (63-64)
	1994	Tutsis, moderate Hutus (94)
SUDAN	1956-72,	Non-Muslim African Southerners (56-72)
	1983-end	Dinka, Shilluk, Nuba (83-end)
	of sample	
SOMALIA	1988-89	Issak clan (Northerners)
UGANDA	1971-79,	Karamojong, Acholi, Lango (71-79),
	1979-86	Karamojong, Nilotic, Bagandans (79-86)
ZAIRE	1964-65	Europeans

[2] When episodes began, ended, or repeated out of the sample dates, I show those dates also.
[3] Includes Harff and Gurr categories "communal victims" and "mixed communal and political victims"

Table IV: Probit equation for genocide (dummy=1 if genocide occurred during 1960-90)

Regression	[1]	[2]	[3]
C	-1.72	-0.583	-1.69
z-statistic	*-4.41*	*-0.42*	*-3.99*
Ethnolinguistic fractionalization (ELF), 1960	5.40	3.685	4.06
z-statistic	*3.87*	*1.53*	*1.81*
ELF*Institutions (80s)	-0.99	-0.627	-0.97
z-statistic	*-2.87*	*-1.10*	*-2.61*
Institutions		-0.237	
z-statistic		*-0.78*	
ELF*Suppression of democracy (70-90)			0.21
z-statistic			*0.69*
Observations	99	99	93

Figure 1: Black market premium, ethnic diversity, and institutions

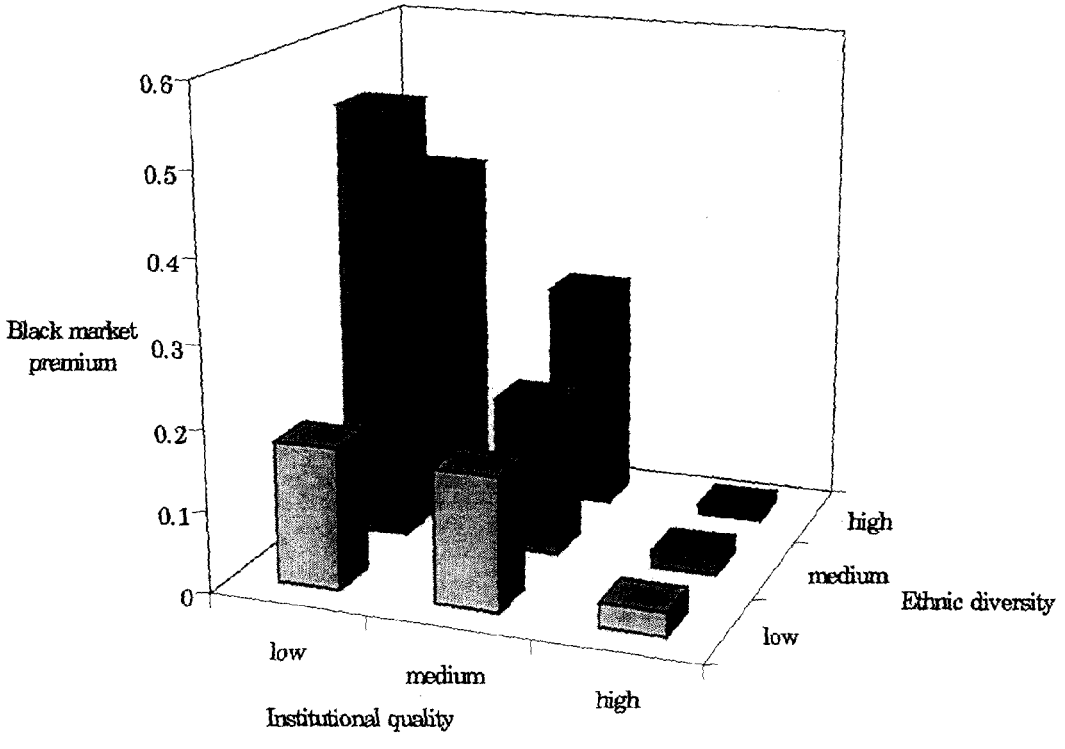
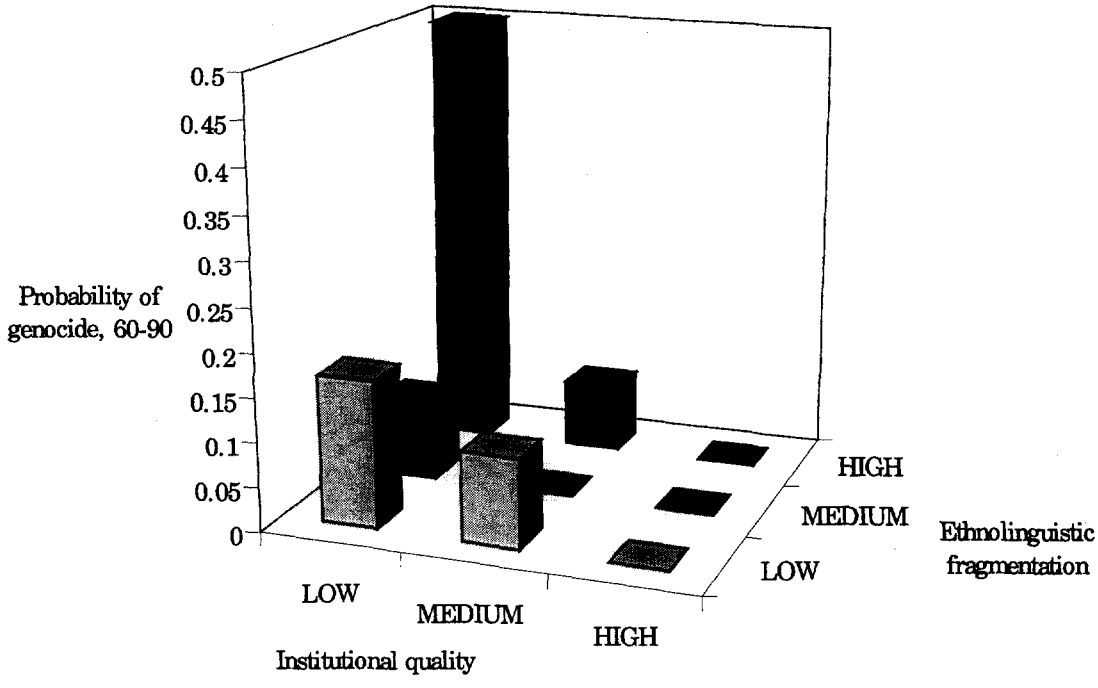


Figure 2: Probability of genocide, institutional quality, and ethnolinguistic fragmentation



Endnotes

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[1] Bell-Fialkoff 1996, p. 10-11

[2] p. 41, Adelman and Morris 1967.

[3] This analysis by social scientists represents a long tradition. See e.g. Greenberg (1980) who notes the "continuing reality of racial and ethnic domination." (p.5)

[4]Psacharopoulos and Patrinos 1994, p. 6

[5] This is similar to the formula proposed by Rodrik 1999 for response to shocks.

[6] The BERI index is made up of measures of (1)Bureaucratic Delay, (2) Contract Enforceability, (3)Nationalization Risk, and (4) Infrastructure Quality.

[7] Collier has a related result, that democracy eliminates the adverse effect of ethnic fragmentation on growth.

[8] Mauro 1995 earlier noted an association between ethnolinguistic fractionalization and corruption.

[9] A similar idea is Barro's [1997] use of (Spanish) colonial heritage as an instrument for inflation.

[10] I also failed to find any effect on the other 8 measures of political instability mentioned in Easterly and Levine, with the exception of constitutional changes, which matches their results.

[11] See the description in Greene, p. 617. I form residuals from the two stage least regression, then regress them on all of the exogenous variables (ETHNIC, INCOME*ETHNIC, YRSINDEP). The test statistic is equal to N times the R^2 of the second regression, where N is the number of observations. The test statistic is distributed χ^2 with one degree of freedom (two excluded exogenous variables minus one endogenous variable).

[12] Bell-Fialkoff 1996, p. 10-11

[13] From http://www.stanford.edu/group/King/speeches/Speech_at_the_great_march_on_detroit.html

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