

## **Can institutions resolve ethnic conflict?<sup>1</sup>**

*Abstract:* High quality institutions, such as rule of law, bureaucratic quality, freedom from government expropriation, and freedom from government repudiation of contracts, mitigate the adverse economic consequences of ethnic fractionalization identified by Easterly and Levine 1997 and others. In countries with sufficiently good institutions, ethnic diversity does not lower growth or worsen economic policies. High quality institutions also lessen war casualties on national territory and lessen the probability of genocide for a given amount of ethnic fractionalization.

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February 2000

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<sup>1</sup> Some of the results in this paper are based on earlier unpublished work with Ross Levine. Views expressed here are not necessarily those of the World Bank or its member governments.

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.<sup>1</sup>

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. 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 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.”<sup>2</sup>

Easterly and Levine [1997] argue that the adverse effect stems from the political economy “wars of attrition” that take place between ethnic groups (not to mention real wars fought along ethnic lines). 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. Finally, ethnic groups may have difficulty agreeing on the type of public goods, leading to less total spending on public goods -- as documented for US cities and counties by Alesina, Baqir, and Easterly 1999a. In this paper I ask whether institutional development can mitigate the adverse effects of destructive ethnic group competition.

Institutions that give legal protection to minorities, guarantee freedom from expropriation, grant freedom from repudiation of contracts, and facilitate cooperation for public services would 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  $\partial^2(Ethnic\ conflict) / (\partial Ethnic\ diversity \partial Institutional\ quality) < 0$ .<sup>3</sup>

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. 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.

#### I. Growth regression with Institutions

Good institutions may mitigate ethnic conflict. I find that the ethnic effect in the original Easterly and Levine 1997 results 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.

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.<sup>4</sup> 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.

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.<sup>5</sup> Indeed, the results indicate that ethnic diversity has a zero marginal effect on economic growth at maximum institutional development (INSTITUTIONS equal to 10).

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, although we should probably take these results with a grain of salt since the two variables are so highly correlated that the result could depend on a few outliers.

## 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.

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, 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.<sup>6</sup>

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.<sup>7</sup> 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.<sup>8</sup> 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.<sup>9</sup> 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).

### III. War, institutions, and ethnic diversity

Although not the main theme of their paper, Easterly and Levine 1997 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<sup>2</sup> 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.

#### 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.<sup>10</sup>

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.

The succeeding columns of Table III test the results for robustness to alternative explanatory variables. Could institutional quality be simply proxying for per capita income? In regressions [2] and [3] I include income as a right-hand-side variable on its own and as an interaction effect with ethnic fragmentation. Income is significant on its own, but the effect of the interaction term between ethnic fragmentation and institutions remains significant. In regression [4], 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.<sup>11</sup>

## 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: Pooled  
Decades (1960s, 1970s, 1980s)**

Dependent Variable: Real Per Capita GDP Growth	
Variable	
Dummy variable for Sub-Saharan Africa	-0.015 (-2.15)
Dummy variable for L. America and the Carribean	-0.017 (-4.24)
Log of initial Income	0.100 (3.92)
Square of log of initial income	-0.008 (-4.62)
Log of Schooling	0.009 (1.62)
Assassinations	-13.763 (-1.53)
Financial Depth	0.011 (1.69)
Black Market Premium	-0.018 (-3.27)
Fiscal Surplus/GDP	0.179 (4.30)
Log of Telephones per worker	0.004 (1.76)
INSTITUTIONS (1 worst, 10 best)	0.001 (0.64)
ETHNIC*INSTITUTIONS	0.005 (1.98)
ETHNIC	-0.039 (-2.16)
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No. of observations	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**

Dependent variable	Estimation Procedure	Independent variables			R <sup>2</sup>	No. of obs.
		C	ETHNIC	ETHNIC*INSTITUTIONS		
Log of Schooling	OLS	1.77 (33.31)	-0.873 (-8.06)		0.18	265
	OLS	1.686 (33.85)	-1.992 (-12.12)	0.260 (9.70)	0.37	249
	IV	1.613 (31.00)	-2.994 (-12.45)	0.483 (10.41)		242
Assassinations	OLS	3.54E-05 (3.41)	-7.9E-06 (-0.45)		0.00	314
	OLS	4.49E-05 (3.69)	0.0001 (2.38)	-2.5E-05 (-3.16)	0.04	285
	IV	3.52E-05 (2.95)	-5.21E-05 (-1.63)	9.99E-06 (1.14)		280
Financial depth	OLS	0.471 (15.28)	-0.290 (-5.83)		0.10	300
	OLS	0.465 (14.35)	-0.756 (-11.10)	0.099 (7.45)	0.23	272
	IV	0.45 (13.37)	-1.008 (-10.28)	0.155 (7.01)		270
Black market premium	OLS	0.110 (4.39)	0.240 (3.93)		0.04	316
	OLS	0.139 (5.35)	0.877 (7.48)	-0.132 (-7.54)	0.18	288
	IV	0.152 (5.76)	0.896 (5.55)	-0.15 (-4.93)		277
Fiscal surplus/GDP	OLS	-0.034 (-7.38)	-0.014 (-1.44)		0.01	227
	OLS	-0.037 (-7.57)	-0.045 (-2.27)	0.007 (2.17)	0.03	214
	IV	-0.035 (-7.20)	-0.023 (-1.17)	0.002 (0.52)		214
Log of telephones per worker	OLS	4.863 (28.23)	-3.283 (-10.54)		0.25	293
	OLS	4.813 (33.24)	-7.722 (-18.28)	0.930 (12.44)	0.53	274
	IV	4.55 (30.48)	-11.668 (-13.23)	1.80 (10.62)		267

**Table II: Determinants of Policy Indicators (continued)**

Dependent variable	Estimation Procedure	Independent variables			R <sup>2</sup>	No. of obs.
		C	ETHNIC	ETHNIC*INSTITUTIONS		
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		
	IV	5.42E-06	0.004477	-0.00057		276
		0.01	3.06	-2.02		

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)**

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

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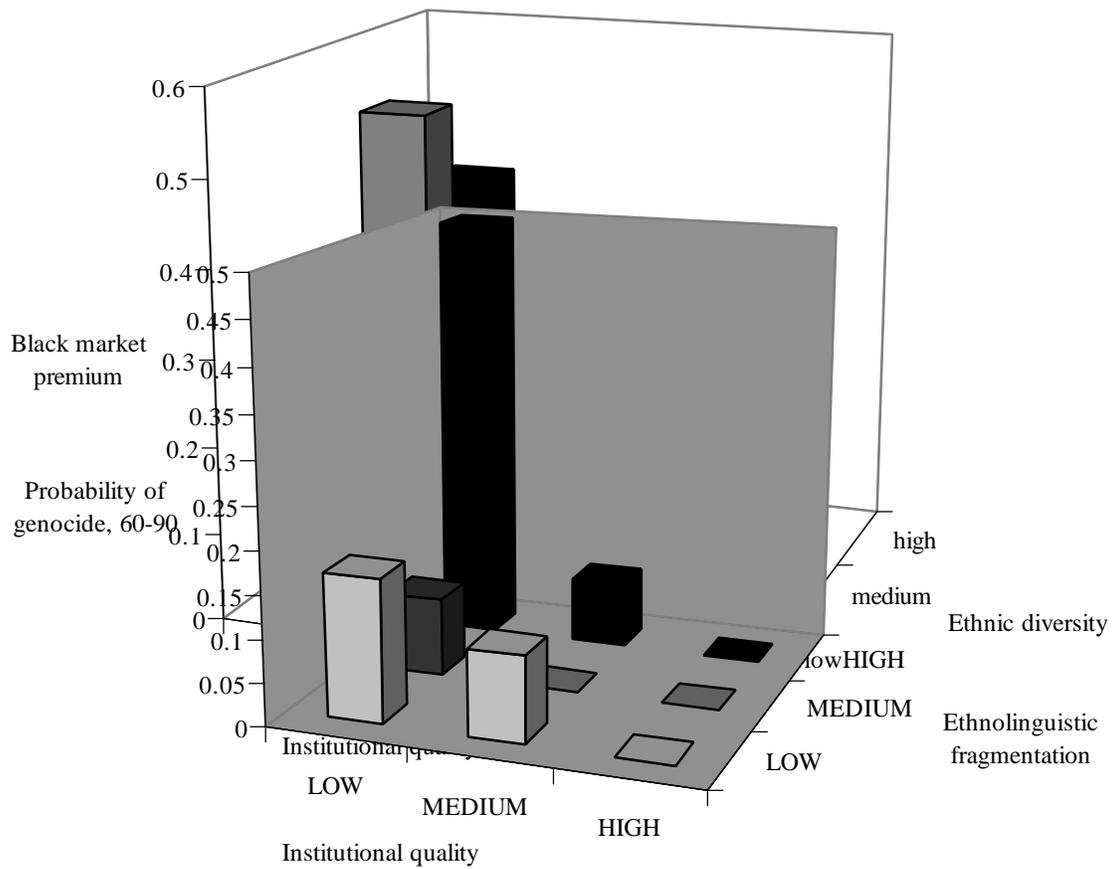
<sup>2</sup> When episodes began, ended, or repeated out of the sample dates, I show those dates also.

<sup>3</sup> 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]	[4]
C	-1.72	6.23	-1.52	-1.69
<i>z-statistic</i>	-4.41	1.58	-3.60	-3.99
Ethnolinguistic fractionalization (ELF), 1960	5.40	4.69	14.42	4.06
<i>z-statistic</i>	3.87	2.85	2.50	1.81
ELF*Institutions (80s)	-0.99	-1.14	-1.13	-0.97
<i>z-statistic</i>	-2.87	-2.60	-2.61	-2.61
Income, 1960		-1.07		
<i>z-statistic</i>		-2.00		
ELF*Income (1960)			-1.35	
<i>z-statistic</i>			-1.70	
ELF*Suppression of democracy (70-90)				0.21
<i>z-statistic</i>				0.69
Observations	99	94	94	93

**Figure 2: Probability of genocide, institutional quality, and ethnic fragmentation**



Endnotes

<sup>1</sup> Bell-Fialkoff 1996, p. 10-11

<sup>2</sup> p. 41, Adelman and Morris 1967.

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- <sup>3</sup> This is similar to the formula proposed by Rodrik 1999 for response to shocks.
- <sup>4</sup> The BERI index is made up of measures of (1)Bureaucratic Delay, (2) Contract Enforceability, (3)Nationalization Risk, and (4) Infrastructure Quality.
- <sup>5</sup> Collier has a related result, that democracy eliminates the adverse effect of ethnic fragmentation on growth.
- <sup>6</sup> Mauro 1995 earlier noted an association between ethnolinguistic fractionalization and corruption.
- <sup>7</sup> A similar idea is Barro's [1997] use of (Spanish) colonial heritage as an instrument for inflation.
- <sup>8</sup> 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.
- <sup>9</sup> 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  $\chi^2$  with one degree of freedom (two excluded exogenous variables minus one endogenous variable).
- <sup>10</sup> Bell-Fialkoff 1996, p. 10-11
- <sup>11</sup> From [http://www.stanford.edu/group/King/speeches/Speech\\_at\\_the\\_great\\_march\\_on\\_detroit.html](http://www.stanford.edu/group/King/speeches/Speech_at_the_great_march_on_detroit.html)