Reducing the Impact of Ethnic Tensions on Economic Growth – Economic or Political Institutions?

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October 2011

PRELIMINARY DRAFT. PLEASE DO NOT QUOTE WITHOUT PERMISSION.

ABSTRACT

We use a standard growth regression model and show that ethnic tensions reduce per capita growth rates. We also find evidence that "good" economic and political institutions improve per capita growth rates. More importantly, good economic institutions mitigate the effect of ethnic tensions on per capita growth while good political institutions do not. Consequently, it is foremost capitalist freedom that promotes peace and development.

JEL Classification Codes

O43, D74, D78, O17

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Section 1. Introduction

Economists have recently started giving a great deal of empirical and theoretical attention to ethnic divisions. One strand of the literature focuses on the impact of ethnicity on economic and social variables. For example, a rich collection of investigations reveal a complex interaction between ethnicity, institutions, conflict, and growth (see e.g. Easterly and Levine 1997, Keefer and Knack 2002, and Easterly, Ritzen, and Woolcock 2006). Generally speaking the literature in this area suggests that ethnic fractionalization and low quality institutions are highly correlated. Thus countries with high levels of ethnic fractionalization also tend to have poor institutions. These poor institutions dampen economic growth in countries with high levels of ethnic fractionalization. Our innovations speak to two areas not currently addressed.

First, these papers (Easterly and Levine 1997, Keefer and Knack 2002, and Easterly, Ritzen, and Woolcock 2006) tend to relate institutions to economic growth by generating an institutional index that include both economic (like the risk of expropriation) and political institutions (like voice and accountability or the rule of law). We explicitly separate political and economic institutions to investigate whether the effect of ethnic tension on growth can be mitigated by specific types of institutions. Specifically, we show that ethnic tensions do not explain variations in economic growth *only* in the presence of "good" economic institutions. In other words we try to find an answer to the question – as a matter of practical resource allocation, should a country's leaders' focus on political or economic institutions in trying to counter the effect of ethnic polarization on economic growth? In the

process we also show that the effect of ethnic polarization on economic growth is an artifact of the multi-polar aftermath of the demise of super-power rivalry.

Second, the above mentioned studies tend to conflate ethnic fractionalization with the lack of cooperation across ethnic lines. We note, citing previous studies in this area (e.g. Collier 2000), that the mere fact of ethnic fractionalization does not lead to conflict. To counter this general criticism we explicitly use a well respected measure of the level of actual ethnic clashes.

We introduce a brief review of the most relevant literature relating ethnic fractionalization to economic growth and our place in that literature in section 2. Our data and methodology is presented in Section 3. We state and discuss our results in Section 4. Section 5 concludes.

Section 2. Ethnic Conflict, Growth and Institutions

In a classic paper Easterly and Levine (1997) find that ethnic fragmentation has a significant impact on economic growth in Africa. Easterly, Ritzen, and Woolcock (2006) extend this analysis to include other regions of the world as well. In both these papers, however, they argue that ethnic fragmentation (or the lack of social cohesion) has a negative impact on social institutions that provide the framework for positive economic growth. Further Keefer and Knack (2002) suggest that polarization in a country can destabilize institutions which in turn may reduce economic growth. These papers suggest that there may be a reduced form chain of causality running from ethnic polarization to institutions to economic growth. Mistrust generated from ethnic divisions disallows the building of cohesive institutions. Without these cohesive institutions economic growth is stunted. Dani Rodrik (1999) points out that countries with both, weak institutions and lack of social cohesion, suffer the most

from external growth busting shocks. It is noteworthy that all these papers bring out the interaction between social cohesion, institutions and economic growth. Indeed, in the words of Dixit (2004, p. 8) "the empirical literature gives good support to the proposition that good governance causes higher incomes and growth."

Our contribution to this literature lies in separating out the kinds of institutions that might mitigate the destabilizing impact of ethnic divisions on economic growth. Specifically, we suggest that institutions that promote economic freedom reduce the impact of a lack of social cohesiveness on economic growth. As expected, political institutions also influence economic growth – however they cannot reduce the impact of the lack of social cohesiveness on economic growth.

We acknowledge the causal chain suggested by Keefer and Knack (2002) and Easterly, Ritzen, and Woolcock (2006). However, our paper, rather than focus on this causal chain of events uses some of the same data and a similar methodology to offer a differently nuanced view of the interaction between social cohesion, political and economic institutions and economic growth. Further, since our dataset spans the demise of the Soviet Union we also test if there is any difference to these interactions as a result of the move away from the bi-polar paradigm in international relations.

Individuals join groups because (among other reasons) within group cooperation yields benefits to these individuals. Within group co-operation can help in capturing rents (Hardin 1995). Accordingly, rent-seeking can promote the formation of competing special-interest groups (Buchanan 1980).

Ethnic identity provides a cost effective way to form such groups (Landa 1994). Such characteristics are easily observable, thereby lowering the cost of distinguishing insiders from outsiders. This ease of distinction makes it possible to identify non-cooperators within

the group, which reduces the transaction costs of punishing these non-cooperators and rewarding cooperators. Further, a shared culture strengthened by repeated interaction provides the trust needed to support the development of stable trading networks and credit markets. Moreover, the selfish gene can also be a reciprocal altruist (Dawkins 1976) – in a sense providing an evolutionary advantage to individuals who cooperate within their ethnic group. Hence the theory that ethnic identity can generate within group cohesion is fairly well established.

The same ethnic identity that facilitates within-group cooperation (see, e.g., Putnam 2000, Sen 2006) can also promote inter-group competition over resources (Easterly 2000) which in turn may impact economic growth.[1] Knack and Keefer (1997) find a link between ethnic homogeneity and economic growth – a link that operates through increased trust between people of the same ethnic background. In a later paper Keefer and Knack (2002) suggest a link between high ethnic tensions and low economic growth. Here, Keefer and Knack make a distinction between ethnic heterogeneity and ethnic polarization (this is a distinction we make as well) and suggest that social polarization arising out of ethnic differences corrode economic institutions that protect property rights and thus reduce economic growth. However, they use a measure of ethnic tensions to proxy the level of ethnic polarization in a country. Indeed, they seem to find evidence that the corrosive effect of ethnic polarization (as proxied by the ethnic tension variable) on economic institutions is robust even when a country has democratic processes. Moreover, ethnic heterogeneity leads to lower production of growth producing public goods (see e.g. Alesina, Baqir, and Easterly 1999). Social polarization rooted in ethnicity could therefore preclude the possibility of

[1] Easterly (2000) illustrates this by using a cocoa plantation as an example. A country may have a growth promoting comparative advantage in the plantation – but rent seeking ethnic groups with an incentive to try and get as large a slice of the plantation pie as possible reduce the incentive of producers to increase the size of the pie. In other words, the plantation languishes and the country does not grow.

building institutions that reduce the need to belong to a particular group to get access to resources. Then, both the lack of these institutions and the conflict itself would affect future growth. It is arguable that Keefer and Knack (2002) and Easterly, Ritzen, and Woolcock (2006) find evidence for this causal link between ethnic polarization, institutions and economic growth. However, a number of authors suggest that strong institutions can indeed generate the social cohesion – possibly across ethnic lines – that can help a country grow. Unquestionably ethnic diversity alone may not generate the level of polarization needed to stymie institutional development and therefore economic growth.

Easterly (2001) suggests that good institutions can substitute for ethnic groups in allocating resources – and have the added advantage of promoting economic growth. Heynemann (2000: 177) proposes that education can unbind ethnic ties and "create harmony within a nation of divergent peoples" by providing information about the nature and use of social contracts as well as the consequences from breaking these contracts. Moreover, there is no evidence that conflict is inevitable with ethnic heterogeneity. Horowitz (1985: 37–41) and Esteban and Ray (1994: 624) suggest that ethnic conflict is more likely when there are a few large ethnic groups in a country rather than when there are many small ethnic groups in a country. Further, Cashden (2001), for example, points out that the there is no correlation between ethnocentrism and xenophobia. Indeed Collier (2000) finds evidence that *relative* ethnic *homogeneity* is more likely to generate conflict. In his study of African countries he finds that the probability of conflict is highest (28%) in countries with a dominant ethnic group (45%-90% of the population).[2] This finding is echoed in Keefer and Knack (2002) who suggest that the polarization is highest when the largest ethnic group in a country has about a

[2] Interestingly enough Collier points out that conflict is lowest in African countries with many equally small ethnic groups i.e. extremely diverse countries. He attributes this to the high cost of raising armies from groups that are small to begin with.

37% share of the population. Thus the relationship between ethnic tension or polarization and ethnic heterogeneity increases at first with increasing heterogeneity, reaches a peak and then decreases. In countries with a large ethnic majority the minorities may be locked out of the resource allocation process and resort to violence. First of all, notice here that the minorities can be disadvantaged, and therefore resort to violence, in the resource allocation process only in the absence of good economic institutions. Second, these findings suggest that the mere existence of ethnic diversity does not imply polarization. Thus even a Herfindahl type index of ethnic fractionalization, let alone a simple percentage representation, may not capture the intensity of ethnic tensions. This, among other factors noted below, suggests the necessity of using a more direct measure of ethnic polarization. We attempt to accomplish this in our paper.

Overall, a review of the literature suggests that rent seeking entities formed along ethnic lines can be useful to individuals within those groups and consequently their formation is quite plausible. Further, the lack of social cohesion due to ethnic groupings affects institutions and therefore economic growth. However, institutions – once established – can mitigate the impact of growth reducing conflict. Indeed, the mere presence of different ethnicities in a nation does not make conflict inevitable. We propose the following question – what type of institution is better suited to mitigate the impact of ethnic conflict, where it exists, on economic growth?

Keefer and Knack (2002) provide evidence of a causal link between ethnic polarization and institutions which protect property rights. They also show that protecting property rights has a positive impact on economic growth. This suggests that "good" economic institutions are likely to mitigate the impact of ethnic polarization on economic growth. But what is the role of "good" political institutions in generating economic growth

relative to "good" economic institutions? It is this latter case that we set out to make. In other words, Keefer and Knack's (2002) paper makes the point that ethnic polarization generates a great deal of instability in government policy which in turn has a negative impact on growth. Our point, using some of the same data, is that "good" economic institutions can reduce the impact of ethnic polarization on growth while political institutions do not. We make this point using a dataset that spans the end of the Cold War. We use this opportunity to investigate whether superpower rivalry changes the nature of the impact of ethnic polarization on economic growth. Specifically, we expect that the end of the Cold War may have unleashed forces of polarization in countries hitherto reigned in by a combination of superpower largesse and bullying. Our findings suggest this may indeed be the case since ethnic tensions have no impact on growth during the Cold War though that changes with the end of the Cold War.

Section 3. Data and Methodology.

The main country characteristics for our panel data set are retrieved from the World Development Indicators (WDI) published by the World Bank Group. In order to analyze the various impacts of economic and political institutions on economic growth we utilize several ordinal scales compiled by others. Economic progress is measured by GROWTHPC, the annual percentage change in real GDP per capita. The latter is measured in constant 2000 dollars (GDPCONST2000PC). A proxy for human capital in a given country in a specific year is provided by PYRYEARS15 as supplied by Barro and Lee (2000). This variable tracks the average years of primary schooling for the part of the population that is over 15 years of age. Table 1 lists variable names and short descriptions of all our measures.

The detrimental results of ethnic tension on economic growth – as outlined above – have been well-established in the literature. A useful measure of such societal pressures is given by ETHTEN. This ordinal scale has a range from 0 to 6 with higher ratings being indicative of lower strains between ethnic groups within a country. This variable is proprietary to Political Risk Services, Inc. and available from the IRIS-3 file of their International Country Risk Guide. ETHTEN is a subjective variable. It is defined as "an assessment of the degree of tension within a country attributable to racial, nationality, or language divisions. Lower ratings are given to countries where racial and nationality tensions are high because opposing groups are intolerant and unwilling to compromise. Higher ratings are given to countries where tensions are minimal, even though such differences may still exist."[3] The ICRG data documentation claims that "To ensure consistency, both between countries and over time, points are assigned by *ICRG* editors on the basis of a series of pre-set questions for each risk component." (loc. cit.).

Most econometric studies involving ethnicity tend to use measures of ethnic, linguistic, or religious fragmentation (see for example Alesina et al. 2003). However measures that merely track ethnic, linguistic or other kinds of social fragmentation may not be a good proxy for the actual level of ethnic tensions.

First of all, tensions or conflict between ethnic groups are likely to be higher when there a few dominant groups than when there are a large number of small groups (see e.g. Horowitz 1995: 37–41, Collier 2000, and Esteban and Ray 1994: 624). The standard measures of fractionalization tend not to capture this effect (Montalvo and Reynal-Querol 2005). However, measures of ethnic polarization introduced by Reynal-Querol (2002) have a tendency to perform consistently with the theoretical expectations of Horowitz (1995) and

[3] Available at http://www.prsgroup.com/ICRG_Methodology.aspx (accessed 10/18/2011).

Esteban and Ray (1994). An ethnic polarization index, rather than measure the degree of fractionalization along ethnic or other lines in a nation tends to "capture how far the distribution of the ethnic groups is from the (1/2, 0, 0, ... 0, 1/2) distribution (bipolar)" (Montalvo and Reynal-Querol 2005: 798). Regressions based upon this approach show that e.g. civil conflict rises with the degree of ethnic polarization rather than the level of ethnic fractionalization. This conflict is likely to leak into the economic performance of a country suggesting that it is ethnic polarization rather than ethnic fractionalization that is more likely to affect economic growth rates (Montalvo and Reynal-Queral 2005: 804).

Second, the notion of group identification itself is problematic for two reasons. For one there are many ways to define ethnicity. In the U.S e.g. one may classify Hispanics as an ethnic group (e.g. in the U.S. census data and other ethnicity reporting forms) even though "Hispanics" themselves may self-identify as Dominicans or Cubans etc. In fact, Fearon (2003: 198) argues that the "right list of ethnic groups for a country depend on what people in the country identify as the most socially relevant ethnic groupings." This suggests that both measures of ethnic fractionalization and polarization that depend on the judgment of the measure's creator rather than on the how the people of a country self-identify themselves are inherently flawed. In addition, this self identification itself may change with time. Fearon (2003: 199) points out that ethnicity may be endogenous to political, economic and social variables. For example, low levels of economic growth may lead to greater self identification with an ethnic group or clan that can ensure a larger share of the shrinking economic pie. These problems with both ethnic fractionalization and ethnic polarization data may be what leads to Alesina et al.'s (2003: 157) point that "indices of fractionalization constructed using measures of ethnicity, language or religion lead to substantially different results when they are entered in regressions to explain growth and government quality."

We try to avoid some of these problems by using ETHTEN though admittedly there is a trade-off between the subjectivity of the ETHTEN variable and the apparent objectivity of measures or ethnic fractionalization and polarization. However, Keefer and Knack (2002: 134–5) regress ethnic tensions (a variation of what we call ETHTEN here using the same data source) against an ethnic fractionalization measure (Sullivan 1991) and report that while ethnic tensions do rise with ethnic fractionalization initially, this relationship reaches a peak when the largest ethnic group consists of about 37% of the population. Thus, the ethnic

Table 1. Variable Names and Definitions

Variable Names	**Variable Descriptions**
GROWTHPC	GDP per capita growth (annual percentage change). [Source: WDI]
GDPCONST2000PC	GDP per capita (in constant 2000 dollars). [Source: WDI]
PYRYEARS15	Average years of primary schooling in the population over age 15. [Source: Barro and Lee (2000)]
ETHTEN	Ethnic Tensions measured on a scale from 0 to 6. Higher ratings indicate less ethnic tension. [Source: International Country Risk Guide]
PR	Measurement of political rights on a scale from 1 to 7. Higher ratings indicate lower degrees of political rights. [Source: Freedom House]
CL	Civil liberties judged on a scale from 1 to 7. Higher numbers are correlated with an environment of greater liberty. [Source: Freedom House]
POLFREE	Is the average of PR and CL.
EXPRO	Measurement of risk "outright confiscation and forced nationalization" of property on a scale from of 0 to 10. Higher ratings indicate less risk of expropriation of private investment. [Source: International Country Risk Guide]
REPGOV	Measures risk of a modification in a contract taking the form of a repudiation, postponement, or scaling down that foreign businesses, contractors, and consultants face due to "an income drop, budget cutbacks, indigenization pressure, a change in government, or a change in government economic and social priorities." Higher scores make such contract infringements less likely. [Source: International Country Risk Guide]
ECFREE	Simple mean of EXPRO and REPGOV.

tension data reported in the IRIS-3 file, though subjective, behaves as expected in the literature on ethnic conflict. This suggests that ETHTEN is a valid measure of the level of ethnic tension in a country. Since our focus is on the effect of actual ethnic tensions on economic growth, ETHTEN may be a more direct measure for our purposes than measures of ethnic fractionalization or polarization that are currently in use.

A number of reputable organizations provide numerical characterizations of the extent to which economic and political freedom is available in various countries. We utilize several of these published rankings to create two new variables, POLFREE and ECFREE. The former is the average of two indices, which encompass a measurement of political rights (PR) and civil liberties (CL) – obtained from Freedom House. In both cases higher ratings indicate lower degrees of political rights. Good political institutions foment political rights while also protecting civil liberties. Therefore, those two characteristics are functional proxies for the former. The average of EXPRO – higher ratings of which indicate less risk of expropriation of private investment – and REPGOV – the risk of having contracts repudiated – results in our measure of economic freedom (ECFREE).

Note that ECFREE tracks the insecurity of property rights and not the allocation of rights. In other words it tracks the outcome of existing legal institutions rather than index different types of legal institutions. Thus government arbitrariness with regard to property rights can lead to insecurity irrespective of how much redistribution there may be in a particular country. Tables A.1 and A.2 in the appendix present pairwise correlations of and descriptive statistics for all our variables. We note that the robustness of these measures is already well established – they are correlated with other available measures and these correlations are reported in Keefer and Knack (2002).

Implicitly we are proposing the existence of two kinds of governmental institutions, which can but do not necessarily have to go hand in hand. Economic freedom, on the one hand, is related to governmental institutions that are conducive to economic growth through the protection of property rights and the execution of voluntary contract arrangements. On the other hand, political freedom measures the ability to trade without inhibitions in the marketplace for ideas. The *People's Republic of China* is a prime example of both of these markets coexisting with great liberty in the first and almost insurmountable barriers to entry in the second.

Our econometric model follows the standard growth equations, which have their origin in the seminal paper by Solow (1956). We are assuming fixed effects to account for the variation in country characteristics. The econometrics of this approach is straightforward and has been discussed extensively elsewhere (Barro and Sala-i-Martin 2004). In addition, it is well known from the existing empirical literature that the chain of causality runs from institutions to growth (Dixit 2004: 8). We therefore have chosen not to worry about the possibility of simultaneity biases in our specification.

Besides the institutional variables, we take the standard approach of including the logarithm of average years of primary schooling as a proxy for human capital and the logarithm of per capita GDP lagged on year as a measure of physical capital endowment.[4] The general expression of the model is:

$$GROWTHPC_i = \alpha_i + \beta_1 \ln\left(GDPCONST2000PC\left(-1\right)\right) + \beta_2 \ln\left(PYRYEARS15\right) + \beta \mathbf{X}_i + \varepsilon_i$$

[4] Easterly (1997) is the most direct point of departure for our paper. We have therefore tried to keep the basic structure of that model. In addition much of our reasoning is based on that paper as well.

This equation hypothesizes that the change in observed real per capita growth in a country *i* is a function of capital endowments (human and physical) and a vector of regressors representing institutional variables. Epsilon is the error term.

Section 4. Results.

Our results are consistent with those reported by Easterly, Ritzen, and Woolcock (2006) and Keefer and Knack (2002). In other words, ethnic polarization does reduce economic growth. However, we make the case that institutions that reduce economic risk also reduce the effect of ethnic tensions on economic growth. We do not, unlike the Easterly, Ritzen, and Woolcock (2006) and Keefer and Knack (2002) papers, infer anything about a causal chain. We merely report that the marginal effect of ethnic tensions on economic growth persist for countries that have good political institutions but do not for those with good economic institutions. This suggests that economic institutions are better at tempering the impact of ethnic conflict on economic growth than political institutions. Moreover, we find that this is especially true after the end of the Cold War.

First of all, we observe that we find, as expected from our growth regression model, a robust convergence effect – the coefficient on the log of lagged per capita GDP is negative and significant. Further, in models 1 and 2, the human capital element of the population as estimated by educational attainment is positive and significant as expected. In model 1, however, we see that ETHTEN is positive (recall that higher numbers for ETHTEN means that ethnic tensions are lower) and significant, suggesting that more ethnic tensions are negatively related to economic growth per capita. This result confirms our expectations that greater ethnic tension reduces growth and as such caring and effective leaders should try to reduce these tensions in their development efforts. The question, of course, is how? The

institutional answer has almost become a throwaway line in the growth literature. However, it is clear to most investigators in this area that the institutional role in understanding growth is extremely important (Romer 2001: 144–9). We suggest that the effect of ethnic tensions on economic growth, even after controlling for the effect of political freedoms and civil liberties, can be ameliorated by enforcing property rights.

In model 2 we add POLFREE, a simple average of the index on political rights and civil liberties from Freedom House. We find, as expected, that not having these rights dampens economic growth (this result is a replication of previous results – see for example Table 12.3 on page 522 of Barro and Sala-i-Martin 2004). Presumably, transparency and accountability in government reduces rent seeking and deadweight losses that can have a negative impact on economic growth. However, POLFREE alone does not have any effect on the significance or the marginal magnitude (the coefficient on ETHTEN in both the models are about 0.7) of the impact of ETHTEN on per capita growth relative to model 1. This suggests that democracy and civil liberties, while important for growth, cannot reduce the impact of ethnic tensions on growth.

In model 3, however, we find that adding ECFREE changes the impact of ETHTEN on per capita growth. ETHTEN is no longer significant in this model while ECFREE is. Interestingly, educational attainment as measured by PYRYEARS is now insignificant as well. What is special about ECFREE?

Recall that ECFREE is a simple average of REPGOV and EXPRO. REPGOV measures the risk of a modification in a contract with the government of a country if fiscal conditions or political priorities (pressures for indigenization or changes in social priorities) change. EXPRO on the other hand measures the risk of outright expropriation or

Table 2. Regression Results for the Panel Data Set, fixed-effects (Dependent Variable: GROWTHPC) for full dataset 1983-1997.

Independent Variables	Model 1	Model 2	Model 3	Model 4
LOG(GDPCONST2000PC(-1))	–6.4926*** (–5.5168)	–6.4694*** (–5.5089)	–8.5545*** (–7.0067)	–8.4905*** (–6.9621)
LOG(PYRYEARS15)	7.1876*** (3.8931)	6.9346*** (3.7585)	2.1694 (1.0785)	2.0822 (1.0364)
ETHTEN	0.6924*** (3.5384)	0.6819*** (3.4913)	0.2339 (1.1114)	0.2366 (1.1259)
POLFREE		–0.4472*** (–2.4674)		–0.3746** (–2.0791)
ECFREE			0.7797*** (6.0213)	0.7606*** (5.8675)
C	39.8018*** (4.5549)	41.4718*** (4.7420)	58.0575*** (6.3287)	59.0604*** (6.4384)
Observation Information	Number of Cross Sections included = 86 Total panel observations = 1253	Number of Cross Sections included = 86 Total panel observations = 1253	Number of Cross Sections included = 86 Total panel observations = 1234	Number of Cross Sections included = 86 Total panel observations = 1234
Sample (adjusted)	1983 – 1997	1983 – 1997	1983 – 1997	1983 – 1997
F-statistic	3.7893***	3.8315***	4.2654***	4.2783***
Adjusted R^2	0.1639	0.1675	0.1907	0.1930

*** Significant at the 1% level. (t-values are in parentheses)
** Significant at the 5% level. (t-values are in parentheses)
* Significant at the 10% level. (t-values are in parentheses)

Table 3. Regression results based on dataset truncated by the Cold War.

Variables	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Log(GDPCONST 2000PC(-1))	-13.05*** (-4.8)	-13.98*** (-5.19)	-16.46*** (-5.72)	-13.34*** (-4.57)	-13.34*** (-4.59)	-15.52*** (-5.23)
Log(PYRYEARS15)	6.37*** (2.59)	4.94** (2.00)	4.6* (1.85)	11.30** (1.94)	11.61** (2.01)	3.59 (0.588)
ETHTEN	-0.009 (-0.02)	0.2 (0.51)	0.12 (0.27)	0.609* (1.87)	0.54* (1.67)	-0.07 (-0.2)
POLFREE		-1.44*** (-3.73)	-1.3*** (-3.23)		-0.73** (-2.15)	-0.83*** (-2.45)
ECFREE			0.52 (1.50)			0.987*** (3.73)
C	94.16*** (4.41)	107.18*** (5.02)	122.54*** (5.51)	87.8*** (4.02)	90.11*** (4.13)	112.27*** (5.02)
Observation Information	Number of Cross Sections included = 85 Total panel observations = 572	Number of Cross Sections included = 85 Total panel observations = 572	Number of Cross Sections included = 85 Total panel observations = 553	Number of Cross Sections included = 86 Total panel observations = 681	Number of Cross Sections included = 86 Total panel observations = 681	Number of Cross Sections included = 86 Total panel observations = 681
Sample(Adjusted)	1983-1989	1983-1989	1983-1989	1990-1997	1990-1997	1990-1997
F-Statistic	3.57***	3.78***	3.776***	2.335***	2.37***	2.55***
Adj. R^2	0.28	0.3	0.31	0.147	0.153	0.17

*** Significant at the 1% level. (t-values are in parentheses)
** Significant at the 5% level. (t-values are in parentheses)
* Significant at the 10% level. (t-values are in parentheses)

nationalization of private property by the government. Together they capture the essence of property rights. Higher scores reflect a greater respect for property rights. Thus, protecting property rights seem to reduce the impact of ethnic tensions on economic growth.

First of all, protecting property rights should be important for generating growth just because it creates the right incentives to retain and therefore create wealth. Second, recall that ECFREE captures the outcome of existing legal institutions rather than index different types of legal institutions. In other words, high values of ECFREE suggest high levels of property rights protection *for all ethnic groups* in a country. The notion of property right protection that cuts across ethnic lines reduces the incentive for individuals to join an ethnically defined interest group to protect and increase their wealth. This reduces conflict and therefore mitigates the impact of ethnic polarization on economic growth.

Further, given that POLFREE does not seem to reduce the impact of ethnic tension on growth while ECFREE does, policy makers subject to resource constraints ought to pay more attention to the development of economic institutions in countries rife with ethnic strife. The high cost of achieving any consensus in ethnically polarized societies (Easterly 2001) makes the appropriate use of scarce political and other resources particularly crucial. The allocation of institution building resources may mean the difference between success and failure for developing countries.[5] The trade-offs inherent in this process certainly has an impact on economic development (Rodrik 2001). The results reported here should offer some guidance to policy makers interested in making their countries better off.

[5] It may be possible, in a different paper, to test the hypothesis that a focus on democratic process without any attempt at building economic institutions may actually hinder the development process. Indeed the correlation between poor institutions and high ethnic conflict (see Keefer and Knack 2002 and Easterly, Ritzen, and Woolcock 2006) may provide indirect support for this hypothesis. Such a finding would be consistent with the thrust of this paper.

Note also that in models 3 and 4 PYRYEARS, our measure for educational attainment, does not have a significant marginal effect on economic growth. This result is interesting because results in most growth investigations suggest that educational attainment ought to be significant (Barro and Sala-i-Martin 2004: 524). In fact we find this result in our models 1 and 2; i.e. in models that do not include ECFREE. This suggests that protecting private property rights captures the effect of educational attainment on economic growth. This result echoes Murphy, Shleifer, and Vishny's (1991) point that talented individuals will turn to rent seeking in the absence of the protection of property rights. Educated folks unsure of whether they can reap the benefits of productive activity are likely to turn to rent seeking. This rent seeking would have a growth dampening effect. It is therefore not surprising when the introduction of ECFREE takes away the significance of the impact of PYRYEARS on economic growth.

The results reported in Table 2 suggest that POLFREE significantly increases the per-capita growth rate though it does not affect the growth reducing effect of ETHTEN. ECFREE on the other hand mitigates the growth reducing effect of ETHTEN and improves growth performance for countries. Thus, in a correctly specified model ethnic tensions do not matter on average for explaining variations in growth rates. These results are reported in the context of other results that are consistent with major results in the literature and therefore suggest a robustness that could be useful to policy makers in ethnic strife ridden countries trying to claw their way out of low level equilibrium traps. Moreover, the results reported from the model specifications one through four are robust to the inclusion of a time trend. In those scenarios the time trend is positive and significant while not

impacting the significance of any of the other explanatory variables.[6] Thus, while the issue of time persistence is always a problem with the sort of variables we are using in our models, controlling for it does not seem to have a major effect on our conclusions. In addition, typical growth regressions tend to have many variables thrown in as possible explanatory variables. Our specification is more parsimonious than most growth regressions because we felt that such an atheoretical approach abstracted away from the focus of our paper without adding any richness.

In table 3 we report the effect of the Cold War on our results. Our dataset spans the years 1983–1997 and therefore includes the time period over which the Soviet Union melted away. We chose 1989, the year the Berlin Wall fell, as the watershed year. We divided our dataset into two parts – from 1983 to 1989 and from 1990 to 1997. We find that during the Cold War era part of our dataset ethnic tensions do not have any effect on economic growth (see models 5, 6, and 7). However, in the post Cold War era our results mirror those found in the wider data set (see models 8, 9, and 10). The results in models 5 and 8 suggest that the political and institutional vacuum left in the detritus of a retreating Soviet Union exacerbated ethnic tensions – ETHTEN is significant in reducing growth only after the end of the Cold War. On the other hand the lack of political freedom certainly continued to have an impact on economic growth irrespective of the Cold War. POLFREE significantly reduces per capita growth in models 6, 7, 9, and 10. We believe that these results strengthen our point about the role of economic institutions in dampening the negative impact of ethnic polarization on economic growth. A combination of communist propaganda and jackboots

[6] We do not report these specifications here to preserve consistency across Tables 2 and 3. The limited degrees of freedom in the pre- and post-cold war periods reported in models 5 through 10 in Table 3 make the inclusion of a time trend variable impracticable for those specifications. Results for all our specifications with the time trend included are available on request.

kept ethnic tensions at bay within the ethnically heterogeneous Soviet sphere of influence. Moreover, the growth advantage lay with relatively ethnically homogenous western and western style societies. These effects are in agreement with our finding a significant POLFREE (driven by ethnically homogenous but fast growing western societies) and an insignificant ETHTEN (driven by ethnically heterogeneous but slow growing eastern bloc countries) in models 5, 6, and 7. The results reported in models 8, 9, and 10 are consistent with the idea that the removal of the Soviet yoke also unleashed rampant rent seeking in erstwhile eastern bloc countries that coalesced around ethnic lines in the absence or nascence of private property rights.

Section 5. Conclusion.

As a purely practical matter we recognize that political leaders may be stymied in their efforts to generate growth in developing countries by the lack of social cohesiveness. However, it may be easier (and possibly more moral) to devise public policy that focuses on economic freedom rather than on redrawing borders to facilitate some notion of social cohesiveness even if these efforts at consolidation have the best intentions. Of course, efforts at promoting good institutions by encouraging a common ethnic identity can rapidly degenerate into the sort of ethnic cleansing that continues to be a devastating part of the daily lives of large numbers of people. Thus, policies that focus on promoting economic freedom may reduce the relevance of the lack of trust across ethnic divisions by reducing the importance of ethnic divisions in providing societal benefits.

We believe that our point in this paper has a practical importance for countries ravaged by ethnic conflict. The foremost question in such an environment is what kind of institutions should leaders and policymakers focus their scarce resources on? Our results

suggest that while good political institutions are important for economic growth, countries being devastated by ethnic tensions ought to have a bias towards building good economic institutions.

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Appendix

Table A.1 – Descriptive Statistics

	GROWTHPC	GDPCONST 2000PC	PYRYEARS 15	ETHTEN	PR	CL	POLFREE	EXPRO	REPGOV	ECFREE
Mean	0.8680	5130.928	3.7112	3.9242	3.7464	3.8713	3.8089	7.2014	6.5250	6.8632
Median	1.5872	1621.267	3.7130	4	4	4	4	7	6.3000	6.8500
Maximum	89.8284	39368.63	7.7040	6	7	7	7	10	10	10
Minimum	–50.4872	56.5202	0.4000	0	1	1	1	1	1	1.5
Std. Dev.	7.0083	7473.616	1.6591	1.556681	2.201501	1.908913	2.015385	2.2267	2.2601	2.1706
Skewness	–0.2790	1.9300	0.0968	-0.456428	0.091427	0.046994	0.011334	-0.324070	-0.0594	-0.1302
Kurtosis	45.299	6.0991	2.3609	2.326699	1.490046	1.835552	1.608718	1.9610	1.9038	1.8311
Jarque-Bera	196,779.9	2,669.029	30.6733	94.67521	177.5533	104.7463	148.6018	107.9653	87.5316	103.2521
Probability	0.0000	0.0000	0.0000	0.0000	0.000000	0.0000	0.0000	0.00	0.0000	0.0000
Sum	2290.866	1,3412,245	6,127.286	6,930.300	6,901.000	7,131.000	7,016.000	1,2444.10	11,275.30	11,859.70
Sum Sq. Dev.	129570.9	1.46E+11	4,541.810	4,277.048	8,922.602	6,708.507	7,477.734	8,563.246	8,821.785	8,136.932
Observations	2639	2614	1651	1766	1842	1842	1842	1728	1728	1728

Table A.2 – Pairwise Correlation Coefficients between Regression Variables

	GROWTHPC	GDPCONST 2000PC	PYRYEARS15	ETHTEN	PR	CL	POLFREE	EXPRO	REPGOV	ECFREE
GROWTHPC	**1**									
GDPCONST 2000PC	0.0764	**1**								
PYRYEARS 15	0.1201	0.6065	**1**							
ETHTEN	0.0769	0.4617	0.4324	**1**						
PR	–0.1028	–0.5769	–0.5663	–0.4056	**1**					
CL	–0.0867	–0.6546	–0.6163	–0.4520	0.9122	**1**				
POLFREE	–0.0974	–0.6272	–0.6031	–0.4370	0.9805	0.9749	**1**			
EXPRO	0.2424	0.5848	0.5484	0.4569	–0.4791	–0.5008	–0.5003	**1**		
REPGOV	0.2311	0.6693	0.6127	0.4904	–0.5061	–0.5444	–0.5359	0.8901	**1**	
ECFREE	0.2436	0.6448	0.5970	0.4871	–0.5066	–0.5374	–0.5329	0.9724	0.9718	**1**