Ethnic Distribution, Effective Power and Conflict

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Introduction

- **Conflict as Economic Problem:**
  - Political Instability, Poor Quality of Institutions, Bad Economic Policies, Disappointing Economic Performance
    (Alesina et al., 2003 (JEG); Easterly and Levine, 1997 (QJE); Mauro, 1995 (QJE); La Porta et al, 1999).
- **Ethnic Diversity/Conflict Nexus:**
  - Ethnic Dimension of Conflict,
  - Three Main Approaches + Climate Change Approach?
- **From Distributional Point of View:**
  - **Ethnic Fractionalization** (Alesina et al., 2003, JEG; Easterly and Levine, 1997, QJE.)
  - **Ethnic Polarization** (Montalvo and Reynal-Querol, 2005, AER.)
  - **Ethnic Dominance** (Collier and Hoeffler, 2004, OEP; Schneider and Wiesehomeier, 2008, JPR.)

- **Problem**
  - Still no broad consensus is reached on which distributional aspect of ethnic diversity is associated with conflict, *ceteris paribus* (*Collier and Hoeffler, 2004; Fearon and Laitin, 2003; (APSR); Fearon, Kasara and Laitin, 2007, (APSR); Hegre and Sambanis, 2006, (JCR); Sambanis, 2004, (JCR); Montalvo and Reynal-Querol, 2005, (AER); Cederman and Girardin, 2007, (APSR); Cederman, Min and Wimmer, 2009, (ASR).*)
  - Why should some aspects of diversity be related to instability? Recent contributions: Esteban and Ray, 2011 (AER), Esteban, Mayoral and Ray, 2012 (AER).
- **Possible Explanation:** The relevance of each distributional aspect depends on the features of the population distribution across ethnic groups.
- **Possible Solution:** A measure that "weights" different distributional aspects according to specific features of ethnic distribution.

The Aim of This Paper

- **Question**: Are distributional aspects of ethnic diversity important (if yes, which one?) or conflict is driven *exclusively* by other forces?
- **Starting Point**: Esteban and Ray's (1994) [ER] approach to social antagonism and conflict:
  - Alternative Definition of Groups' Power,
  - Groups may form coalitions.
- **Finish Line**:
  - Parametric Class of Indices of Conflict Potential (general in nature),
  - Role of groups' Power and Between-Groups Interaction in the determination of Conflict Potential,
  - Empirical Investigation of the relationship between the derived indices and the onset of (ethnic) conflict.

Starting Point: ER (1994) Social Antagonism

- $n \geq 2$ number of groups. Let $\pi_i > 0$ be group i's population share; $\sum_i \pi_i = 1$; $\Pi = (\pi_1, \pi_2, ..., \pi_n)$.
- ER conceptualize social antagonism (that arise from income polarization) as:

$$ER(\Pi) = K \sum_i \sum_{j \neq i} \pi_i \pi_j \; T(\pi_i, D_{ij})$$

where groups and between-groups distances, D_{ij}, are defined in terms of income $y_i > 0$, $\forall i$.

- Function $T(\pi_i, D_{ij})$ measures the "Effective Antagonism" felt by i towards j and is defined as:

$$T(\pi_i, D_{ij}) = \pi_i^{\alpha_{ER}} |y_i - y_j|; \; \alpha_{ER} \in (0, 1.6].$$

- Antagonism derives from alienation which is given by $|y_i - y_j|$, and it becomes "effective" once it is translated into "voicing or protest".
- How efficient groups are to do this is captured by $\pi_i^{\alpha_{ER}}$ where α_{ER} is the "polarization sensitivity parameter".
- If we assume $D_{ij} = 1$ if $i \neq j$ and $D_{ij} = 0$ if $i = j$, then:

$$ER_{\alpha_{ER}}(\Pi) = K \sum_i \pi_i^{1+\alpha_{ER}}(1 - \pi_i)$$

  which is a **discrete** version of $ER(\Pi)$.
- Total social antagonism (or conflict potential) is given as a product of two components:
  - Power component, $\pi_i^{\alpha_{ER}}$,
  - Interaction component, $\pi_i(1 - \pi_i)$.

- Using ethnic (or religious) instead of income attributes to define groups, and imposing $\alpha = 1$, $ER_{\alpha_{ER}}(\Pi)$ reduces to the *RQ* index of Discrete Ethnic (Religious) Polarization (Montalvo and Reynal-Querol, 2002, 2005):

$$RQ(\Pi) = K \sum_i \pi_i^2 (1 - \pi_i)$$

- For $K = 4$, the index ranges between 0 and 1.
- Power associated to each group is given by π_i for all i.
- Groups' power does not depend on n and Π_{-i}.
- In terms of probability, the *RQ* index can be interpreted as the probability that out of *three* randomly selected individuals, two of them belong to the same group.
- *RQ* attains its maximum at symmetric bimodal distribution.

- For $\alpha = 0$, $K = 1$ and ethnicity (religion or language) as a criteria to define groups, $ER_{\alpha_{ER}}(\Pi)$ reduces to the Gini's Heterogeneity Index (Gini, 1912) or Ethnic (Religious, Ethno-Linguistic) Fractionalization Index:

$$F(\Pi) = \sum_i \pi_i(1 - \pi_i)$$

- The Power of each group is constant and normalized to 1, hence, independent of π_i and n.
- The index is defined as the probability that two randomly selected individuals belong to different ethnic groups.
- $F(\Pi)$ assumes an increasing relationship between fractionalization/fragmentation and conflict vulnerability.

The P Index of Conflict Potential: Basic Specification

- Starting from ER, we define a function Φ that combines the group's effective power with the alienation felt towards others:

$$P(\Pi) = \sum_i \sum_{j \neq i} \pi_i \pi_j \ \Phi(\pi_i, \Pi, \hat{D}_{ij})$$

- In order to define $\hat{D}_{ij}$, we use discrete metric:

$$\hat{D}_{ij} = \begin{cases} 0 & \text{if } \ i = j, \\ 1 & \text{if } \ i \neq j. \end{cases}$$

- Assume $\Phi(\Pi, \pi_i, 0) = 0$ and let $\phi(\pi_i, \Pi) := \Phi(\Pi, \pi_i, 1)$ with ϕ not necessarily continuous in π_i. The P index becomes:

$$P(\Pi) = K \sum_i \phi(\pi_i, \Pi) \ \pi_i(1 - \pi_i).$$

Axiomatic Derivation of the Effective Power Function

- Group i's Effective Power is defined as:

$$\phi^n(\pi_i, \Pi) : [0,1] \times \Delta^n \to \Re_+$$

Axiom 1: Normalization

$$\sum_i \phi^n(\pi_i, \Pi) = 1, \quad i = 1, ..., n.$$

Axiom 2: Monotonicity

$$\phi^n(\pi_i, \Pi) \geq \phi^n(\pi_j, \Pi) \quad if \quad \pi_i \geq \pi_j, \quad \forall i, j; \quad i \neq j.$$

Case 1. Two Groups

- Given $\Pi = (\pi, 1-\pi)$, $\pi > 0$, we define the **Relative Effective Power** between groups $r(\rho)$ as:

$$\frac{\phi^2(\pi)}{\phi^2(1-\pi)} = r(\rho) \quad where \quad \rho = \frac{\pi}{1-\pi}$$

is the groups' **Relative Population Size**.

Axiom 3: Two Groups Relative Power Homogeneity (2GRPH)

Given Π and Π', let $\pi, \pi' < 1/2 \Leftrightarrow \rho, \rho' < 1$. Then, if $r(\rho), r(\rho') \neq 0$:

$$\frac{r(\lambda\rho)}{r(\rho)} = \frac{r(\lambda\rho')}{r(\rho')} = r(\lambda); \quad \forall\ \rho, \rho' < 1,\ \lambda > 0 \ \ s.t. \ \ \lambda\rho, \lambda\rho' < 1.$$

Lemma 1

Given $n = 2$, the Effective Power of a group with population share π satisfies *Normalization*, *Monotonicity* and *2GRPH*, iff:

$$\phi^2(\pi) = \phi^2_\alpha(\pi) \quad for \quad \alpha \in \Re_+ \cup \infty,$$

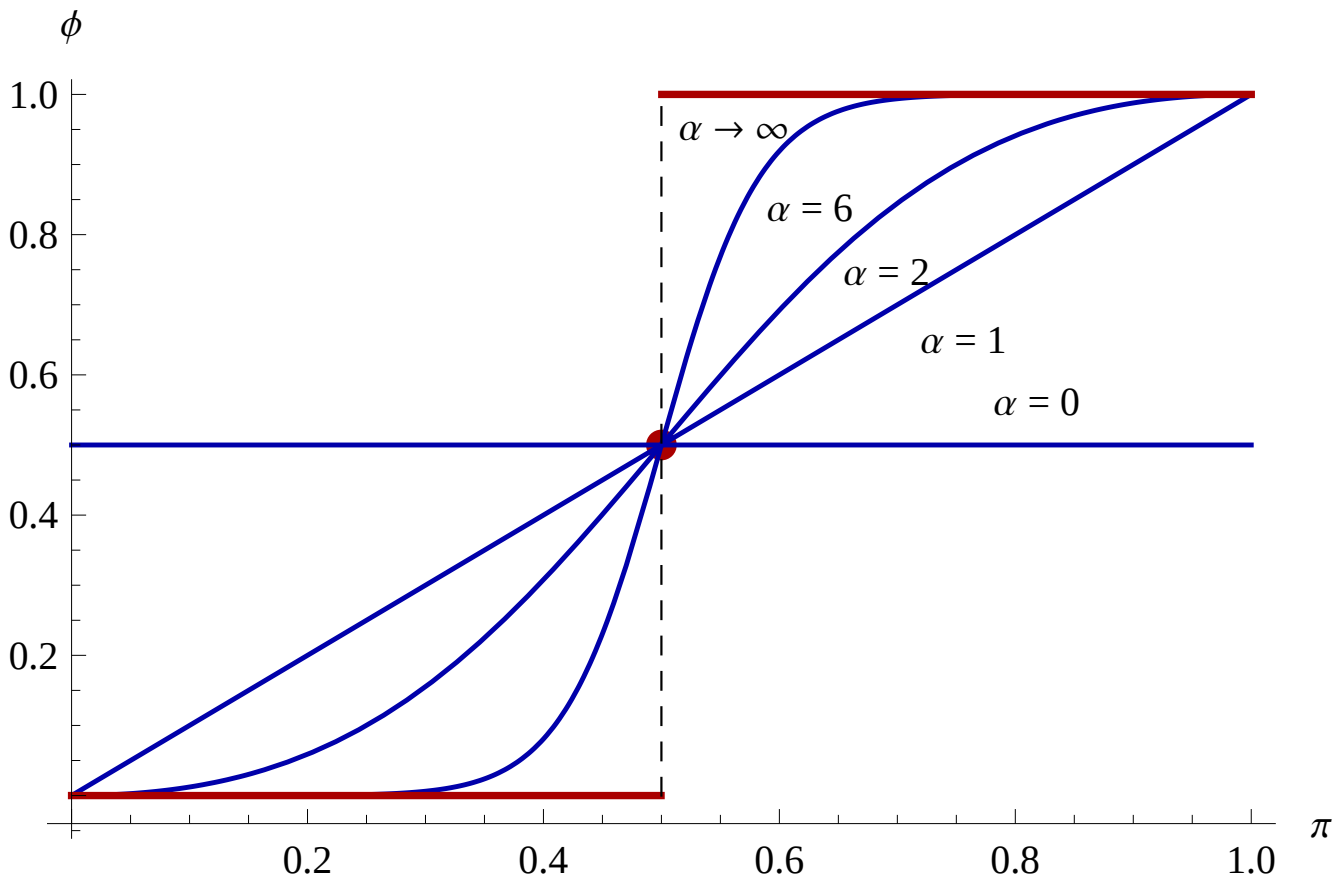
where

$$\phi^2_\alpha := \frac{\pi^\alpha}{\pi^\alpha + (1-\pi)^\alpha} \quad for \quad \alpha \geq 0, \quad and$$

$$\phi^2_\infty := \begin{cases} 1 & \text{if } \pi > 1/2, \\ 1/2 & \text{if } \pi = 1/2, \\ 0 & \text{if } \pi < 1/2. \end{cases}$$

- Analogies with Contest Function (Tullock, 1967, 1980; Skaperdas, 1996, ET.)

- **Figure 1**: Effective Power Function as a function of α; $n = 2$.



- α measures the **elasticity** of the relative effective power w.r.t. relative population size.

Case 2. Any arbitrary Number of Groups

- **Two Crucial Assumptions:**

A1. *Groups are allowed to form coalitions with other groups.*

A2. *We consider only bipartitions of the populations.*

- **Important**: we do *not* assume any endogenous mechanism of coalition formation - *symmetric distribution*.
- Let C_i be the set of all coalitions c, *s.t.* $i \in c$.
- Since we consider only bipartitions, the effective power of a coalition $c \in C_i$ is (**Lemma 1**):

$$\phi^2(c) = \phi^2(\sum_{j \in c} \pi_j)$$

- The **marginal contribution** of group i to the worth of a coalition c is (Shapley, 1953):

$$m_i(c) = \phi^2(\sum_{j \in c} \pi_j) - \phi^2(\sum_{j \in c} \pi_j - \pi_i)$$

- The sum of marginal contributions over all coalitions group i can theoretically belong to is:

$$M_i = \sum_{c \in C_i} m_i(c).$$

- The effective power of any group i is a function of M_i, such that the following two axioms are satisfied:

Axiom 4: The *Relative Effective Power* between any i and j

For any $i, j \in N, i \neq j$ and $n \geq 2$; $\exists g : \Re_+ \rightarrow \Re_+$ such that for $\phi^n > 0$ we have:

$$\frac{\phi^n(\pi_i, \Pi)}{\phi^n(\pi_j, \Pi)} = \frac{g(M_i)}{g(M_j)}$$

Axiom 5: n Groups Relative Power Homogeneity (nGRPH)

Given Π and Π' with the same n, $n \geq 2$, if $\phi^n(\pi_j, \Pi) > 0$ then:

$$\frac{M_i}{M_j} = \frac{M_i'}{M_j'} \Rightarrow \frac{\phi^n(\pi_i, \Pi)}{\phi^n(\pi_j, \Pi)} = \frac{\phi^n(\pi_i', \Pi')}{\phi^n(\pi_j', \Pi')}$$

Theorem 1

The Effective Power of group i satisfies Axioms 1 - 5 if and only if:

$$\phi^n(\pi_i, \Pi) = \frac{M_i^\alpha}{\sum_j M_j^\alpha}, \quad \forall i, j \in N; \quad i \neq j; \quad \alpha \in \Re_+ \cup \infty.$$

where M_i^α is obtained making use of $\phi_\alpha^2(c)$. Group i's effective power is defined as the **relative sum of marginal contributions**.

- Finally, the P index of conflict potential is:

$$P_\alpha^n(\Pi) = K \sum_i \frac{M_i^\alpha}{\sum_j M_j^\alpha} \pi_i(1 - \pi_i); \quad \alpha \in \Re_+ \cup \infty.$$

The P Index of Conflict Potential: Different α

Case 1: $\alpha = 0$

- When $\alpha = 0$, the effective power of each group is constant and equal to $1/n$.
- The P Index of Potential Conflict becomes:

$$P_0^n(\Pi) = 4\frac{1}{n}\sum_i \pi_i(1-\pi_i) = 4\frac{1}{n}F(\Pi)$$

- When all groups have the same size:

$$P_0^n(\Pi) = 4\frac{1}{n}\frac{n-1}{n}$$

- Not exactly the Fractionalization Index, but scaled by $4/n$.
- For a given n - same ranking order as $F(\Pi)$.

Case 2: $\alpha = 1$

- When $\alpha = 1$, the Effective Power of groups equals their respective population shares.
- Hence, the P index reduces to the RQ index of discrete ethnic polarization:

$$P_1^n(\Pi) = 4 \sum_{i=1}^{n} \pi_i^2 (1 - \pi_i)$$

- Hence, for the cases of $\alpha = 0$ and $\alpha = 1$, the groups' Effective Power depends, respectively, *only* on n and π_i and not on Π_{-i}
- For any $\alpha \neq 0$ and $\alpha \neq 1$, $\phi(\pi_i, \Pi)$ is a function of both π_i and Π_{-i}, for all $i \in N$.

Case 3A: $\alpha \to \infty$.

- Effective Power of groups converges to their respective **Relative Penrose-Banzhaf Index** of voting power (β) in a simple majority game (L. Penrose, 1946; J.F. Banzhaf, 1956).

$$P_{\infty}^{n}(\Pi) = \begin{cases} 4\pi^{*}(1-\pi^{*}) & \text{if } \pi^{*} > 1/2, \\ 1-\theta_{n}(1-P_{0}^{n}(\Pi)) & \text{if } \pi^{*} = 1/2, \\ 4\sum_{i}\beta_{i}\pi_{i}(1-\pi_{i}) & \text{if } \pi^{*} < 1/2. \end{cases}$$

where

$$\theta_{n} = \frac{n}{2^{n-1}+n-2}.$$

and π^{*} indicating the relative size of the largest group.

- Value function (Lemma 1), however, different from Penrose-Banzhaf algorithm - "parity condition".

Case 3B: $\alpha \to \infty$; $n = 3$.

$$P_{\infty}^{3}(\Pi) = \begin{cases} 4\pi^{*}(1-\pi^{*}) & \text{if} \quad \pi^{*} > 1/2, \\ \frac{2}{5} + \frac{3}{5}P_{0}^{3}(\Pi) & \text{if} \quad \pi^{*} = 1/2, \\ P_{0}^{3}(\Pi) & \text{if} \quad \pi^{*} < 1/2. \end{cases}$$

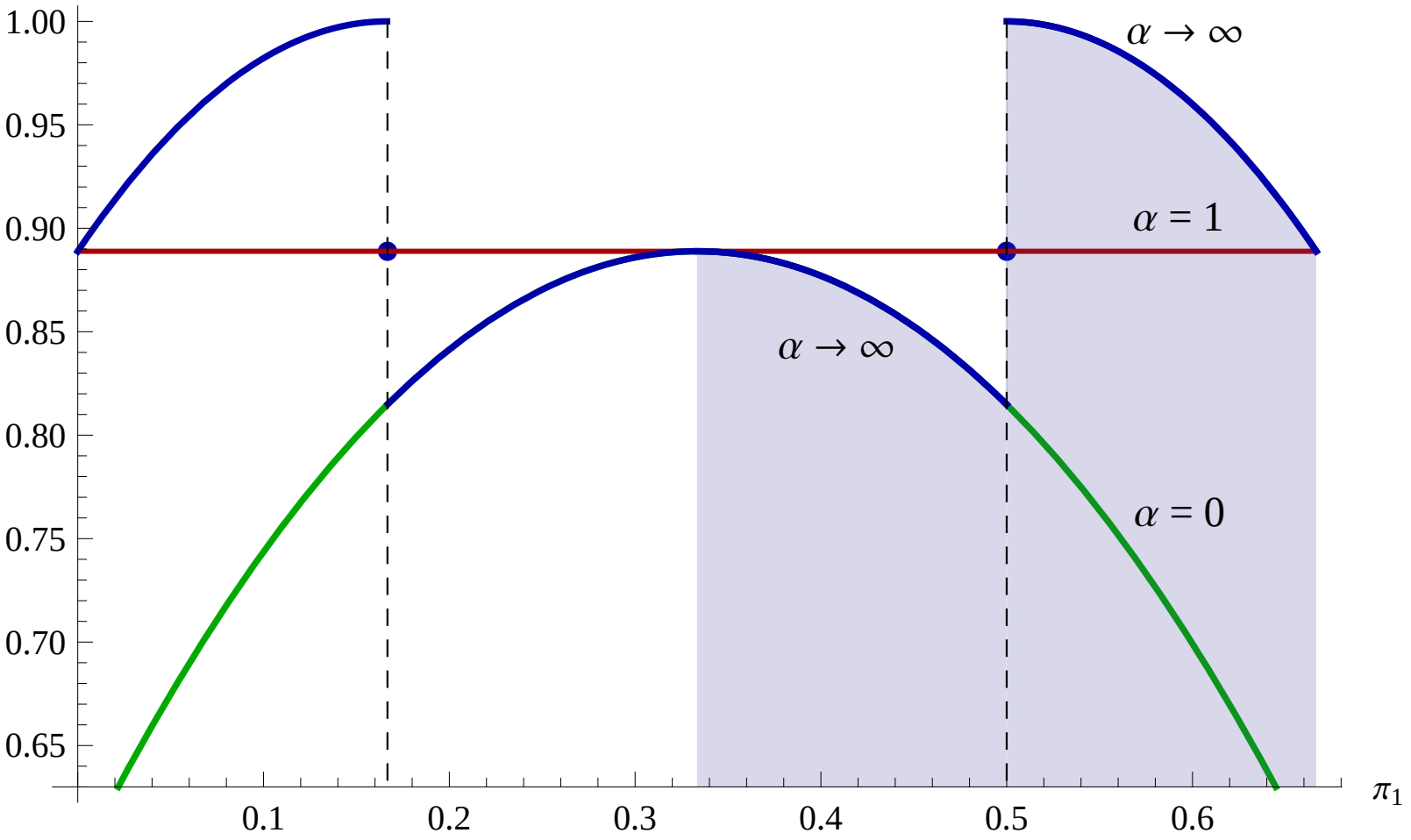
- With $n > 3$ and $\pi^{*} < 1/2$, the PB Voting Power is *not* equal to $1/n$:

$$\begin{aligned} \Pi = (0.34, 0.31, 0.2, 0.15) &\quad \Rightarrow \quad 1/3,\ 1/3,\ 1/3,\ 0. \\ \Pi = (0.45, 0.25, 0.2, 0.1) &\quad \Rightarrow \quad 1/2,\ 1/6,\ 1/6,\ 1/6. \\ \Pi = (0.25, 0.25, 0.25, 0.25) &\quad \Rightarrow \quad 1/4,\ 1/4,\ 1/4,\ 1/4. \end{aligned}$$

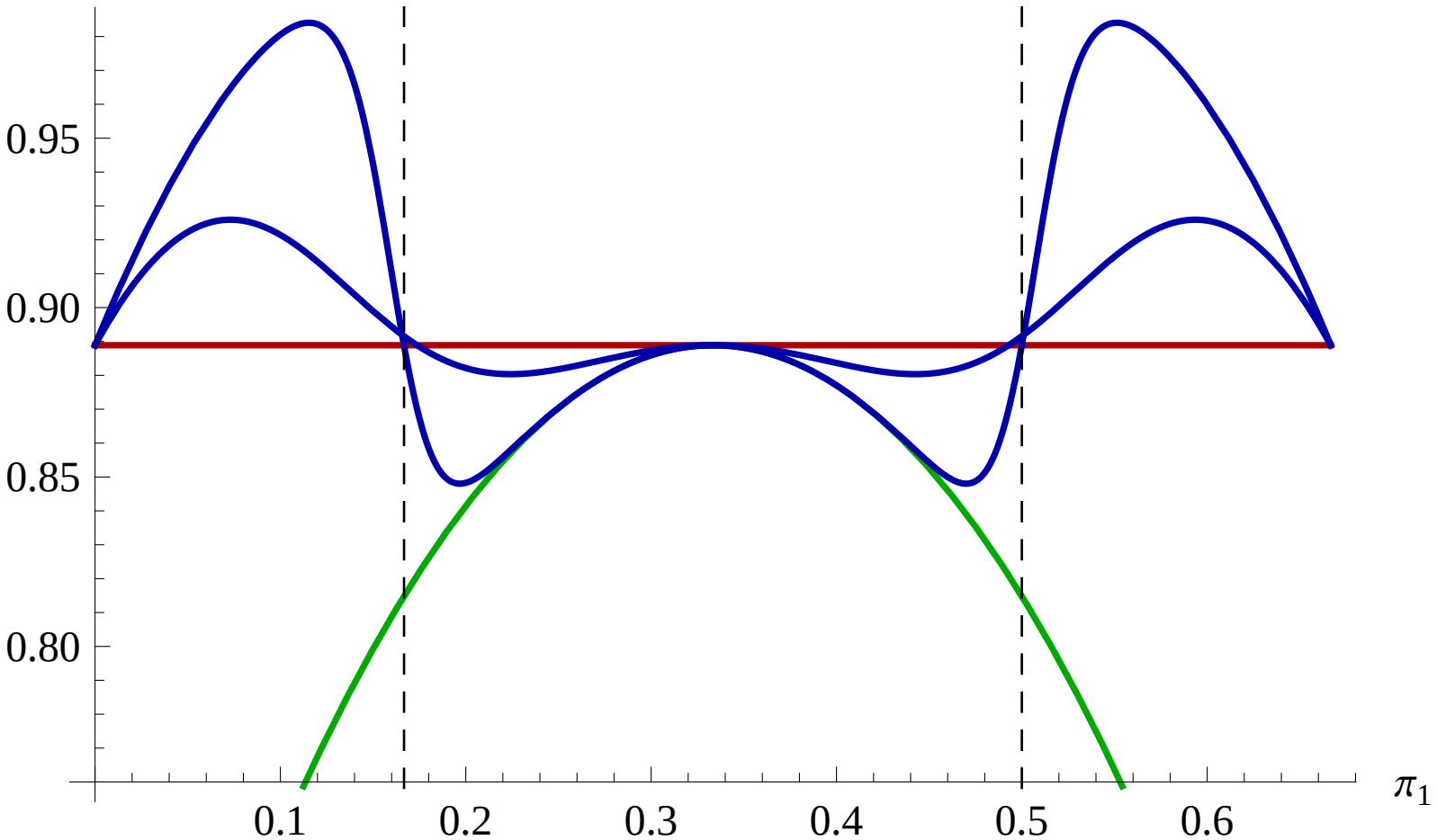
Example: Three Groups

- We consider the case of 3 groups because:
  - *With $n = 2$ all the indices are the same,*
  - *RQ index is insensitive to population transfers when $\pi_i = 1/3$ for some i,*
  - *With π_i fixed for some i, the indices can be expressed as a function of the relative size of only one group ($\sum_i \pi = 1$).*
- Relative size of one group is fixed to $1/3$: We want to compare alternative population distributions with the uniform distribution.
- **Figure 2**: *P* Index for $\alpha = 0$, $\alpha = 1$, and the extreme element $\alpha \to \infty$.

- **Figure 2**: P Index for $\alpha = 0$ (green), $\alpha = 1$ (red) and $\alpha \to \infty$ (blue).



- **Figure 3**: P index for $\alpha = 0$ (green), $\alpha = 1$ (red) and $\alpha > 1$ (blue)



Ethnic Diversity and Conflict: An Empirical Investigation

- **Sources of Data**: Ethnic Power Relations Data Set - EPR (Cederman, Min and Wimmer, 2009)
- **Estimation Method:** Logistic Regression, Rare Event Logistic Regression, Random Effect Logistic Regression.
- **Dependent Variables:** Ethnic conflict Onset (≥ 25 battle-death [BD]), Low and Intermediate Intensity Ethnic conflict Onset ($25 \leq BD < 1000$).
- **Explanatory Variables:** Fearon and Laitin (2003); Hegre and Sambanis (2006); Cederman, Min and Wimmer (2009, 2010).
- **Robustness Checks:** Time and Regional Controls, Dummy Variables for Dominance, Ethnic Exclusion and Political Competition Variables.

Results

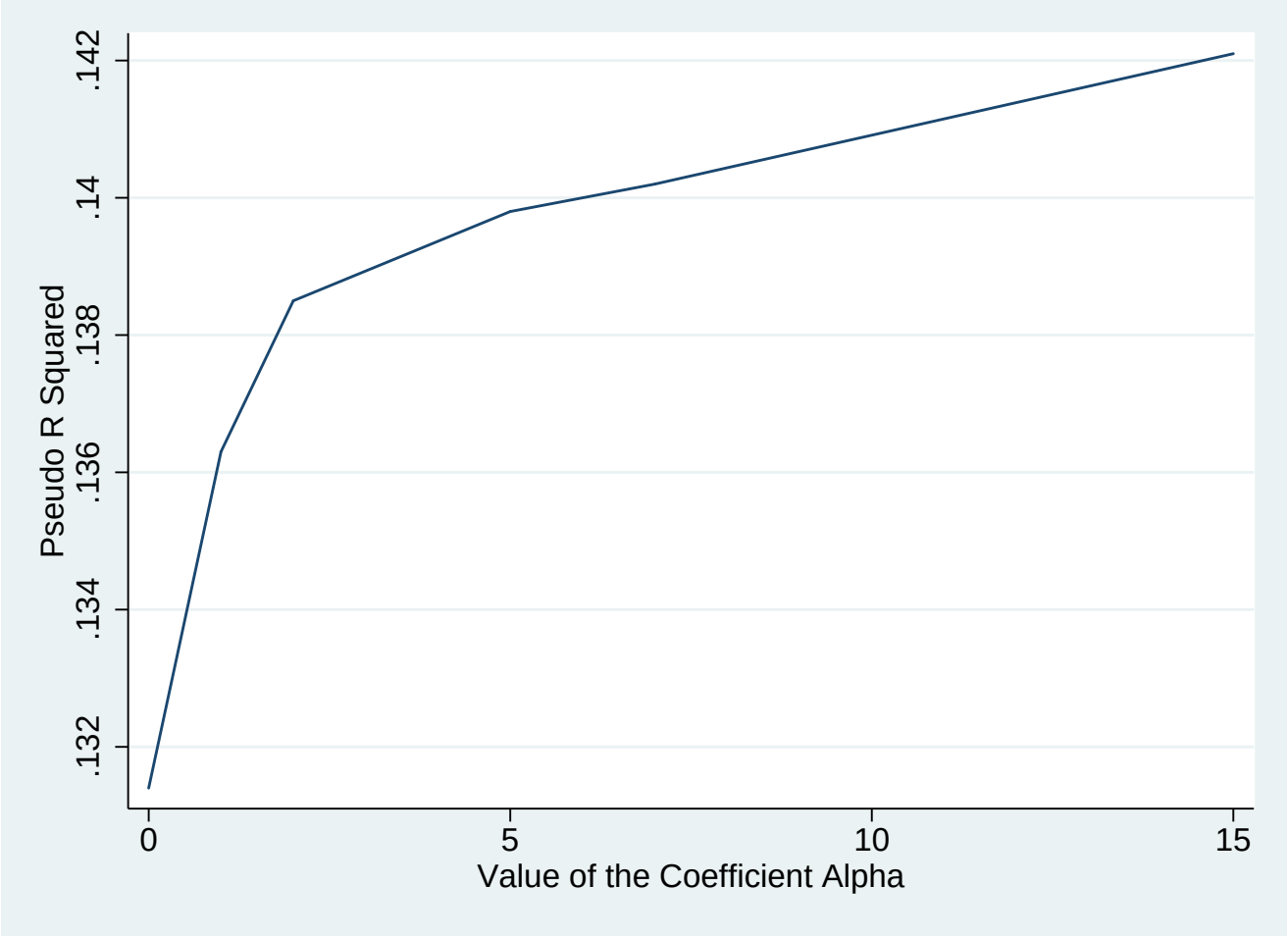
- Features of ED *do* matter if properly combined into one single measure.
- Among all diversity indices, only the P_∞^n is significantly different from 0. Moreover, the goodness of fit increases with α: the highest value is obtained for $\alpha \to \infty$.
- Dominance Dummy Variables lose significance when included with P_∞^n in the regression.
- If P_∞^n increases from the average to the maximum value, the probability of conflict increases by 81.31% compared to 39.42% for the RQ index; 1SD $P_\infty^n + 52\%$ and $RQ + 23\%$.
- The results are robust to the inclusion of political exclusion and competition variables, regional and time controls as well as different estimation techniques.
- Analogous results for the Low and Intermediate Intensity Ethnic Conflicts.

Regression Results: Ethnic Conflict Onset - Baseline Model

EW Onset	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Gdp/L	**-0.128*** **	**-0.129*** **	**-0.132*** **	**-0.121*** **	**-0.125*** **	**-0.128*** **	**-0.132*** **	**-0.135*** **
	0.044	0.044	0.044	0.043	0.044	0.045	0.045	0.045
Population	0.389***	0.389***	0.389***	0.363***	0.375***	0.383***	0.390***	0.405***
	0.084	0.085	0.087	0.081	0.084	0.086	0.089	0.090
Democracy	0.223	0.239	0.258	0.171	0.206	0.231	0.259	0.298
	0.322	0.321	0.320	0.327	0.327	0.328	0.327	0.323
Anocracy	0.569**	0.571**	0.560**	0.541**	0.552**	0.562**	0.561**	0.580**
	0.234	0.234	0.237	0.225	0.227	0.228	0.232	0.244
Oil/L	0.013	0.013	0.012	0.011	0.012	0.013	0.013	0.012
	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.007
Mountains	0.186**	0.186**	0.192**	0.202**	0.189**	0.187**	0.192**	0.225**
	0.087	0.088	0.089	0.088	0.089	0.088	0.089	0.091
Instability	0.139	0.139	0.156	0.165	0.150	0.144	0.155	0.160
	0.255	0.255	0.252	0.258	0.260	0.259	0.253	0.247
NC State	0.333	0.312	0.276	0.339	0.327	0.311	0.276	0.225
	0.504	0.507	0.526	0.512	0.511	0.509	0.526	0.536
New State	2.167***	2.165***	2.194***	2.211***	2.180***	2.171***	2.194***	2.254***
	0.713	0.706	0.700	0.719	0.714	0.706	0.699	0.692
RQ	**1.335****				1.049			-3.161
	0.649				0.887			1.887
P($\alpha = 2$)		**1.560****				1.439		
		0.658				0.883		
P($\alpha \to \infty$)			**1.750*****				**1.766****	**4.218*****
			0.632				0.794	1.554
FRAC				1.119	0.462	0.209	-0.034	
				0.577	0.836	0.862	0.856	
Constant	-10.778***	-10.930***	-11.087***	-10.283***	-10.651***	-10.871***	-11.095***	-11.116***
	1.432	1.431	1.411	1.422	1.415	1.425	1.414	1.387
Time Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reg. Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N. Observations	6294	6294	6294	6294	6294	6294	6294	6294
N. Countries	138	138	138	138	138	138	138	138
Pseudo R^2	0.1363	0.1385	**0.1421**	0.1349	0.1367	0.1386	**0.1422**	**0.1463**
Wald Chi2	172.757***	167.142***	166.569***	205.979***	190.052***	175.048***	166.556***	168.655***
Bic	1041.887	1039.718	1036.111	1043.342	1050.287	1048.394	1044.856	1040.772
Aic	900.193	898.024	894.417	901.647	901.845	899.952	896.415	892.330

- **Figure 4**: P^{∞} *versus* RQ - number of conflict onsets

- **Figure 5**: Pseudo R^2 as a function of α.



Ethnic Conflict Onset - Exclusion and Competition

EW Onset	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Gdp/L	**-0.142*** **	**-0.142*** **	**-0.142*** **	**-0.142*** **	**-0.141*** **	**-0.140*** **	**-0.141*** **
	0.045	0.045	0.045	0.045	0.045	0.045	0.046
Population	**0.359*** **	**0.363*** **	**0.379*** **	**0.354*** **	**0.361*** **	**0.369*** **	**0.394*** **
	0.084	0.085	0.088	0.084	0.085	0.087	0.094
Excl. Pop.	**0.341*** **	**0.326*** **	**0.312*** **	**0.362*** **	**0.355*** **	**0.354*** **	**0.364*** **
	0.121	0.117	0.111	0.123	0.122	0.120	0.118
Center Segm.	**0.118*** **	**0.116*** **	**0.113*** **	**0.114** **	**0.138*** **	**0.158*** **	**0.177*** **
	0.044	0.044	0.042	0.051	0.049	0.048	0.050
Imperial Past	0.535	0.529	0.581	0.546	0.517	0.492	0.557
	0.574	0.567	0.560	0.583	0.570	0.570	0.579
Democracy	-0.050	-0.049	-0.042	-0.037	-0.065	-0.075	-0.077
	0.444	0.441	0.436	0.444	0.450	0.450	0.448
Anocracy	0.347	0.345	0.331	0.350	0.361	0.375	0.377
	0.233	0.233	0.239	0.229	0.230	0.232	0.240
Oil/L	**0.017** **	**0.017** **	**0.016** **	**0.017** **	**0.018** **	**0.019** **	**0.020** **
	0.008	0.008	0.008	0.008	0.008	0.008	0.008
Mountains	0.153	0.154	0.162	0.156	0.152	0.152	0.162**
	0.088	0.090	0.091	0.088	0.085	0.083	0.081
Instability	0.224	0.225	0.246	0.223	0.228	0.235	0.272
	0.269	0.269	0.266	0.269	0.270	0.268	0.266
NC State	0.095	0.074	0.009	0.123	0.084	0.047	-0.045
	0.471	0.484	0.516	0.453	0.472	0.486	0.512
New State	**2.331*** **	**2.324*** **	**2.323*** **	**2.354*** **	**2.325*** **	**2.312*** **	**2.315*** **
	0.718	0.715	0.713	0.714	0.717	0.712	0.707
EEurope*Y	**0.100*** **	**0.100*** **	**0.102*** **	**0.098*** **	**0.099*** **	**0.100*** **	**0.102*** **
	0.019	0.019	0.020	0.019	0.019	0.020	0.020
RQ	0.763				1.089		
	0.713				0.903		
P($\alpha = 2$)		1.060				1.685	
		0.708				0.914	
P($\alpha \to \infty$)			**1.465****				**2.253*****
			0.687				0.869
FRAC				0.322	-0.546	-1.084	-1.661
				0.677	0.865	0.921	1.016
Time Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reg. Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reg. Time Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N. Observations	6284	6284	6284	6284	6284	6284	6284
Pseudo R^2	0.1615	0.1629	0.1664	0.1603	0.1618	0.1639	0.1690
Wald Chi2	494.738***	475.630***	448.151***	453.790***	644.007***	628.446***	584.584***
Bic	1086.559	1085.211	1081.721	1087.701	1095.036	1092.940	1087.896
Aic	890.932	889.584	886.094	892.074	892.663	890.567	885.523

Ethnic Conflict Onset - Dominance Dummies

Logit EW Onset	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Gdp/L	**-0.150*** **	**-0.145*** **	**-0.142*** **	**-0.145*** **	**-0.143*** **	**-0.144*** **	**-0.144*** **	**-0.142*** **
	0.049	0.048	0.048	0.047	0.051	0.051	0.050	0.051
Population	**0.453*** **	**0.429*** **	**0.416*** **	**0.402*** **	**0.433*** **	**0.412*** **	**0.409*** **	**0.364*** **
	0.096	0.096	0.096	0.092	0.091	0.094	0.096	0.087
Democracy	0.267	0.267	0.284	0.258	0.229	0.252	0.282	0.196
	0.336	0.332	0.329	0.328	0.332	0.326	0.326	0.318
Anocracy	**0.635*** **	**0.605** **	**0.588** **	**0.566** **	**0.642*** **	**0.615** **	**0.605** **	**0.572** **
	0.243	0.240	0.240	0.237	0.242	0.239	0.241	0.232
Oil/L	**0.016** **	**0.015** **	0.014	0.013	**0.018** **	**0.017** **	**0.016** **	**0.016** **
	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
Mountains	**0.170** **	**0.164** **	**0.178** **	0.162	**0.196** **	**0.182** **	**0.193** **	**0.196** **
	0.080	0.082	0.086	0.083	0.080	0.081	0.083	0.083
Instability	0.087	0.106	0.132	0.127	0.096	0.110	0.129	0.136
	0.248	0.249	0.249	0.249	0.254	0.255	0.253	0.254
NC State	0.366	0.334	0.281	0.298	0.367	0.319	0.258	0.271
	0.501	0.505	0.521	0.534	0.485	0.496	0.518	0.519
New State	**2.160*** **	**2.150*** **	**2.178*** **	**2.175*** **	**2.180*** **	**2.161*** **	**2.190*** **	**2.203*** **
	0.714	0.706	0.696	0.698	0.729	0.712	0.700	0.712
CH (45-90%)	**0.614** **	0.487	0.332	**0.811*** **				
	0.275	0.278	0.291	0.306				
SW (60-90%)					0.445	0.478	0.405	**0.872** **
					0.257	0.265	0.261	0.358
RQ		0.943				**1.430** **		
		0.640				0.684		
P($\alpha \to \infty$)			**1.428** **				**1.717*** **	
			0.623				0.645	
FRAC				**1.742** **				**2.219*** **
				0.686				0.844
Constant	**-10.995*** **	**-11.134*** **	**-11.283*** **	**-11.124*** **	**-10.779*** **	**-11.226*** **	**-11.448*** **	**-10.988*** **
	1.472	1.457	1.435	1.398	1.487	1.463	1.453	1.434
Time Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reg. Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N. Observations	6294	6294	6294	6294	6294	6294	6294	6294
N. Countries	138	138	138	138	138	138	138	138
Pseudo R^2	0.1377	0.1399	0.1437	0.1449	0.1349	0.1404	0.1451	0.1448
Wald Chi2	129.707***	137.717***	146.344***	144.573***	140.809***	150.392***	152.067***	166.023***
Bic	1040.536	1047.064	1043.366	1042.108	1043.327	1046.558	1041.931	1042.264
Aic	898.842	898.622	894.924	893.666	901.633	898.117	893.489	893.822

Open Research Questions: Climate change and conflict?

- Climate Change and Conflict Nexus - as in the case of ethnic diversity NO consensus on empirical findings (Raleigh and Urdal, 2007; Theisen, 2008; Theisen, 2013; Buhaug and Theisen, 2012)
- One possible reason: Focus on groups and Across groups dynamics, rather than pure aggregates. It is not the overall level of resource scarcity and/or natural disasters that matters - *relative* rather than aggregate impact + (interest) groups' power (direct link to institutions and governance) (only in part in Butler and Gates, 2012 - no empirics).
- A distributional approach to conflict (Kovacic, 2014):
  - Ethnic, Political and Resource Distribution
  - Groups' Power versus Across-Groups Interaction