Economics 270c
Development Economics

Lecture 6 – February 20, 2007

Lecture 1: Global patterns of economic growth and development (1/16)

The political economy of development
Lecture 2: Inequality and growth (1/23)
Lecture 3: Corruption (1/30) – Guest lecture by Ben Olken
Lecture 4: History and institutions (2/6)
Lecture 5: Democracy and development (2/13)
☆Lecture 6: Ethnic and social divisions (2/20)
Lecture 7: Economic Theories of Conflict (2/27)
Lecture 8: War and Economic Development (3/6)

Human resources
Lecture 9: Human capital and income growth (3/13)
Lecture 10: Increasing human capital (3/20)
Lecture 11: Health and nutrition (4/3)
Lecture 12: The Economics of HIV/AIDS (4/10)
Lecture 13: Labor markets and migration (4/17)

Lecture 14: Environment and development (4/24)
Lecture 15: Social Learning and Technology Adoption (5/1)

- Referee report #2 passed back in class next Tuesday

Lecture 6 outline

(1) Understanding Easterly and Levine (1997)

(2) Competing theories of ethnic diversity and public goods (Alesina et al 1999, Miguel and Gugerty 2005)

(3) Pande (2003) on reservations and public policy

(1) Easterly and Levine (1997, *QJE*)

- This influential article documents the correlation between country level ethnic diversity and a range of economic and public policy outcomes 1965-1990

(1) Easterly and Levine (1997, *QJE*)

- This influential article documents the correlation between country level ethnic diversity and a range of economic and public policy outcomes 1965-1990

- Following Mauro (1995), they get around the endogeneity issue in cross-country regression by using ethnolinguistic fractionalization (ELF), which they claim is historically determined and largely stable over time

- Unlike Mauro (1995), they do not attempt to pin down the precise channel through which high ELF affects economic outcomes (in his case, corruption)

(1) Easterly and Levine (1997, *QJE*)

- ELF was originally constructed by Soviet anthropologists in the 1960s

(1) Easterly and Levine (1997, *QJE*)

- ELF was originally constructed by Soviet anthropologists in the 1960s

- Like a Herfindahl index of industry concentration, it takes on values from 0 (all individuals belong to the same ethnic group) to 1 (total diversity):

$$ELF = 1 - \Sigma_i (P_i)^2$$

where the proportion of each ethnic group i is denoted P_i

TABLE III

ETHNOLINGUISTIC FRACTIONALIZATION INDEX (ETHNIC)

(66 COUNTRIES, 1960)

Country	ETHNIC	Country	ETHNIC
15 Most fractionalized:		15 Least fractionalized:	
Tanzania	93	Haiti	1
Uganda	90	Japan	1
Zaire	90	Portugal	1
Cameroon	89	Hong Kong	2
India	89	Yemen	2
South Africa	88	Germany	3
Nigeria	87	Burundi	4
Ivory Coast	86	Dominican Republic	4
CAR	83	Egypt	4
Kenya	83	Ireland	4
Liberia	83	Italy	4
Zambia	82	Norway	4
Angola	78	Iceland	5
Mali	78	Jamaica	5
Sierra Leone	77	Jordan	5

ETHNIC measures the probability that two randomly selected persons from a given country will not belong to the same ethnolinguistic group. The more groups there are, the higher ETHNIC. The more equally distributed the groups, the higher the ETHNIC.

Source. Taylor and Hudson [1972].

(1) Easterly and Levine (1997, *QJE*)

- Main result: high levels of ELF are associated with much slower economic growth during 1965-1990

$$GDP\ per\ capita\ growth_i = a + b(ELF)_i + cX_i + e_i$$

- Their estimate is b = -0.02 (t-statistic = 3.2). So going from ELF=1 to ELF=0 increases annual per capita growth by around 2 points on average

TABLE IV

ETHNIC DIVERSITY AND LONG-RUN GROWTH

(DEPENDENT VARIABLE IS GROWTH OF PER CAPITA REAL GDP)

Variable	(1)	(2)	(3)	(4)	(5)
Dummy for the 1960s	−0.072	−0.096	−0.186	−0.254	−0.224
	(−0.88)	(−1.15)	(−1.94)	(−2.66)	(−2.37)
Dummy for the 1970s	−0.074	−0.098	−0.182	−0.248	−0.217
	(−0.90)	(−1.17)	(−1.90)	(−2.59)	(−2.30)
Dummy for the 1980s	−0.094	−0.117	−0.198	−0.263	−0.232
	(−1.14)	(−1.40)	(−2.07)	(−2.76)	(−2.46)
Dummy variable for Sub-Saharan Africa	−0.013	−0.014	−0.012	−0.013	−0.013
	(−2.82)	(−2.98)	(−2.46)	(−2.53)	(−2.49)
Dummy variable for Latin America and the Caribbean	−0.022	−0.021	−0.017	−0.018	−0.019
	(−6.52)	(−5.88)	(−4.74)	(−4.90)	(−5.22)
Log of initial income	0.033	0.039	0.066	0.086	0.081
	(1.56)	(1.82)	(2.69)	(3.58)	(3.41)
(Log of initial income) squared	−0.003	−0.003	−0.005	−0.007	−0.006
	(−1.83)	(−2.09)	(−3.10)	(−4.25)	(−4.23)

TABLE IV
CONTINUED

Variable	(1)	(2)	(3)	(4)	(5)
Log of schooling	0.011	0.011	0.009	0.009	0.010
	(2.85)	(2.83)	(2.28)	(1.98)	(2.22)
Assassinations		−20.730	−14.874	−21.480	−21.862
		(−2.04)	(−1.56)	(−2.45)	(−2.45)
Financial depth			0.015	0.012	0.011
			(2.54)	(2.10)	(1.90)
Black market premium			−0.020	−0.019	−0.019
			(−4.63)	(−4.46)	(−4.52)
Fiscal surplus/GDP			0.088	0.171	0.158
			(2.88)	(4.82)	(4.40)
Log of telephones per worker				0.005	0.005
				(1.74)	(1.86)
ETHNIC	−0.020	−0.017	−0.016	−0.011	
	(−3.19)	(−2.74)	(−2.54)	(−1.53)	
AVG-ETHNIC					−0.020
					(−2.73)
No. of observations	78; 84; 90	75; 83; 89	44; 69; 72	40; 68; 64	41; 70; 67
R^2	0.31, 0.24, 0.35	0.27, 0.23, 0.36	0.43, 0.44, 0.51	0.43, 0.49, 0.61	0.45, 0.52, 0.60

TABLE VI

DETERMINANTS OF ECONOMIC INDICATORS

Dependent variable	C	ETHNIC	R^2	Number of observations
Log of schooling	1.508	−0.991	0.08,0.09,0.10	83; 85; 91
	(17.12)	(−6.21)		
Assassinations	1.24E-05	1.03E-06	−0.01,−0.06,−0.02	98; 105;
	(1.52)	(0.07)		105
Financial depth	0.417	−0.266	0.09,0.06,−0.02	94; 100;
	(11.44)	(−3.67)		103
Black market	0.070	0.252	0.05,0.08;−0.04	97; 107;
premium	(1.82)	(3.39)		106
Fiscal surplus/	−0.026	−0.013	−0.14,−0.02,−0.13	55; 87; 82
GDP	(−5.48)	(−1.37)		
Log of	4.331	−3.067	0.21,0.23,0.04	95; 103; 92
telephones	(18.95)	(−7.17)		
per worker				

D. Ethnic Diversity, Political Instability, and Policy Choices

Ethnically fragmented economies may find it difficult to agree on public goods and good policies. They also may be politically unstable. Table VI presents evidence on the effects of ethnic diversity on political instability and policy choices. The simple relationship between ethnic diversity and assassinations is insignificant. There is no evidence that ethnic diversity affects this manifestation of political instability. This lack of correlation is not unique to this indicator —out of a set of nine indicators of political instability, we found only one (constitutional changes) to be correlated with ethnic diversity. A related observation is that Africa does *not* have significantly above average political instability by these measures, despite its well-documented ethnic con-

(1) Easterly and Levine (1997, *QJE*)

- Interpretation issues

  (1) Is ELF really "exogenous"? What omitted variables could be related to ethno-linguistic diversity? An important one might be the country's history of political centralization (a la Bockstette et al 2004)

(1) Easterly and Levine (1997, *QJE*)

- Interpretation issues

  (1) Is ELF really "exogenous"? What omitted variables could be related to ethno-linguistic diversity? An important one might be the country's history of political centralization (a la Bockstette et al 2004)

  -- E.g., France in 1800 versus 1900

  -- Empires lead to linguistic and cultural homogenization (contrast China with Zambia again)

  -- Nunn (2005) finds that controlling for local exposure to the slave trade "knocks out" the predictive power of ELF in African countries

(1) Easterly and Levine (1997, *QJE*)

- Interpretation issues

  (1) Is ELF really "exogenous"? What omitted variables could be related to ethno-linguistic diversity? An important one might be the country's history of political centralization (a la Bockstette et al 2004)

  (2) What is the channel through which diversity affects public policy outcomes and economic growth? Not violence, but corruption, schooling, infrastructure, etc.

(2) Theories of diversity and collective action

- One set of theories emphasizes differences in preferences across ethnic groups (Alesina, Baqir and Easterly 1999 *QJE*)
  - These theories are open to the charge of assuming the existence of ethnic divisions rather than showing why they exist

in or out of the jurisdiction.[6] The members of the jurisdiction have to decide, by majority rule, on a public good, both on its size and type. Public goods can be of different types, and different individuals have different preferences over them. The generic individual i's utility function is given by

$$u_i = g^{\alpha}(1 - l_i) + c \tag{1}$$

$$0 < \alpha < 1,$$

where g is the public good, which can be located anywhere on an ideological line capturing different individuals' preferences; l_i is the preference distance between individual i's most preferred type of public good and the actual public good; c is private consumption. Income is exogenous and equal for everybody.[7] Private consumption is equal to disposable income:

$$c = y - t, \tag{2}$$

where y is the exogenous pretax income and t is the lump-sum tax which, by assumption, is identical for everyone. This is natural,

ASSUMPTION. Individuals vote first on the amount of taxation (thus on the size of the public good), and then on the type of the public good.

We now solve the model backward, starting with the following result, which derives from a straightforward application of the median voter theorem, and is a slight generalization of a result by Alesina and Spolaore [1997].

PROPOSITION 1. For any positive amount of public good g, the type chosen is the one most preferred by the median voter.

Let us now consider the choice of the size of the public good g. Individual i's preferred size is given by the result of the following problem:

$$\max U_i = g^a(l - \hat{l}_i) + y - g, \tag{5}$$

where $\hat{l}_i$ is the distance of individual i from the ideal type of median voter. This formulation incorporates the fact that the voters know that, after a decision is reached on the size of g, the type chosen is the one most preferred by the median voter. The solution of (5) (g_i^*) is

$$g_i^* = [a(1 - \hat{l}_i)]^{1/(1-a)}. \tag{6}$$

Define $\hat{l}_i^m$ as the median distance from the type most preferred by the median voter—in short the "median distance from the median." A straightforward application of the median voter theorem implies the following result:

PROPOSITION 2. The amount of public good provided in equilibrium is given by

$$g^* = [a(1 - \hat{l}_i^m)]^{1/(1-a)}. \tag{7}$$

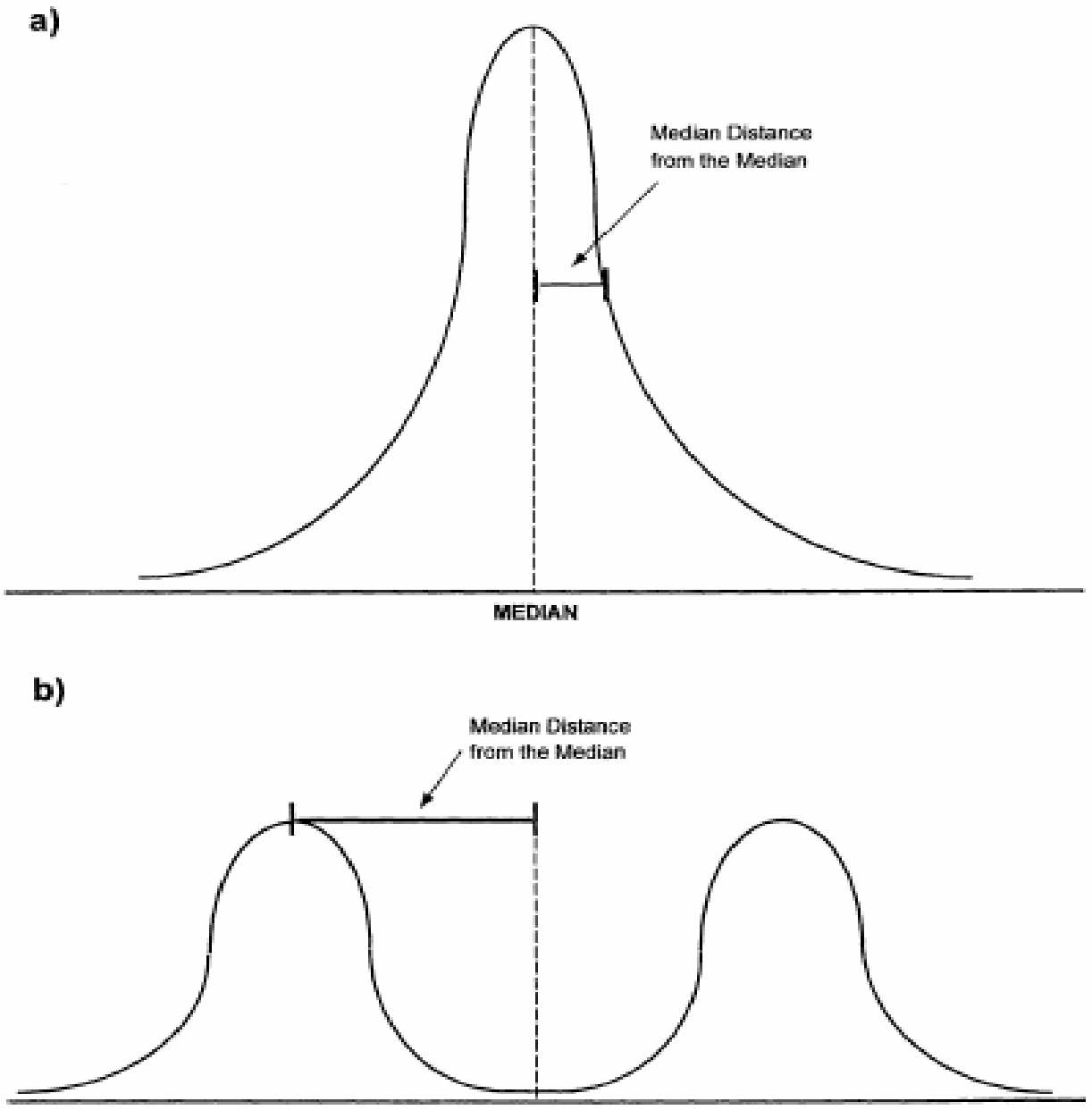


FIGURE I
Examples of Different "Median Distances from the Median"

(2) Theories of diversity and collective action

- One set of theories emphasizes differences in preferences across ethnic groups (Alesina, Baqir and Easterly 1999 *QJE*)
  - These theories are open to the charge of assuming the existence of ethnic divisions rather than showing why they exist

- Another set of theories instead focus on differences in the ability of communicate, coordinate, and sanction members within an ethnic group versus across ethnic groups (Miguel and Gugerty 2005 *JPubE*)
  - These theories may be most appropriate for local collective action in poor countries, small communities

(3) Pande (2003, *AER*)

- What is the impact of legislative reservations for under-represented groups on policy outcomes?

- Empirical focus on scheduled caste / scheduled tribe (SC/ST) groups in India and reservations in state legislatures (roughly 25% of the total)

  -- In other contexts (e.g., Latin America) reservations for women are also common

TABLE 3 -- ECONOMIC CHARACTERISTICS OF SCHEDULED CASTES AND SCHEDULED TRIBES: 1991

Variable	Scheduled castes	Scheduled tribes	Non-SC/ST population
Overall population share	16.4	7.9	75.4
Within group characteristics:			
Urban population share	18.7	7.3	29.2
Literacy rate	37.4	29.6	57.8
Labor force participation rate	36	42	32.8
Percent labor force	77.1	90	62.1
in the primary sector			
Percent population below	48.32	51.96	31.43
poverty line			

All numbers are from 1991 census, except poverty figures which is from the Indian National Sample Survey (1993-94), Planning Commission Estimates. The primary sector includes those employed in agricultural and allied activites. Within group characteristics are reported as a percentage of the group population.

(3) Pande (2003, *AER*)

- In India certain seats (majoritarian voting rule) are reserved for SC/ST politicians, and not necessarily in heavily SC/ST areas

(3) Pande (2003, *AER*)

- In India certain seats (majoritarian voting rule) are reserved for SC/ST politicians, and not necessarily in heavily SC/ST areas

- Thus when a seat is assigned to SC or ST, the electorate does not change – just legislator identity

(3) Pande (2003, *AER*)

- In India certain seats (majoritarian voting rule) are reserved for SC/ST politicians, and not necessarily in heavily SC/ST areas

- Thus when a seat is assigned to SC or ST, the electorate does not change – just legislator identity

- Studies 16 Indian states during 1960-1992, and finds considerable variation in the extent of reservation over time (often related to the timing of the census, and state border changes). She conditions on time-varying state characteristics, including current SC/ST population share (Table 4)

TABLE 4 -- THE TIMING AND REASONS FOR RESERVATION CHANGES

Year of change	Reason for change	Commission responsible
1962	Double member jurisdictions abolished	Election Commission
1965	Creation of Haryana	Election Commission
1967	Revised in line with 1961 census	Delimitation Commission
1972, 1974, 1976	Revised in line with 1971 census	Delimitation Commission
1977, 1978, 1980	Revised in line with 1976 Area restriction removal act	Election Commission

(3) Pande (2003, *AER*)

- Under a wide range of theories, the identity (caste, religion, gender, etc.) of legislators should not matter for public policy choices

- Politicians are accountable to the same voters, and models assume they try to win the most votes possible

(3) Pande (2003, *AER*)

- Under a wide range of theories, the identity (caste, religion, gender, etc.) of legislators should not matter for public policy choices

- Politicians are accountable to the same voters, and models assume they try to win the most votes possible

- With strong parties that can commit to an electoral platform, the legislator has limited room for maneuver

  -- A finding that identity matters → imperfect policy commitment on the part of political parties

  -- Many models of electoral competition assume full policy commitment by political parties

Result 2 captures the idea that the impact of political reservation on policy depends on the ability of parties to commit their candidates to their preferred policies.

RESULT 2 *If parties can commit their candidates to policies then political reservation does not affect policy outcomes. However, if such commitment is absent then, relative to an equilibrium with no low caste candidates, political reservation increases the likelihood of targeted redistribution.*

TABLE 6 -- POLITICAL RESERVATION AND GENERAL POLICY OUTCOMES

	Total spending				Education spending				Land Reform			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SC reservation	-0.005	-0.009	-0.006	-0.004	-0.15	-0.141	-0.129	-0.115	0.007	0.008	0.01	0.016
	(0.005)	(0.005)	(0.005)	(0.007)	(0.122)	(0.121)	(0.116)	(0.146)	(0.013)	(0.013)	(0.013)	(0.015)
ST reservation	0.023***	0.028***	0.019***	0.019***	-0.542***	-0.385***	-0.252*	-0.380**	0.008	0.007	0.003	0.013
	(0.003)	(0.006)	(0.006)	(0.006)	(0.082)	(0.136)	(0.151)	(0.155)	(0.010)	(0.019)	(0.019)	(0.019)
SC census population share		0.011***	0.006	0.006		-0.039	-0.044	-0.068		-0.001	-0.005	-0.007
		(0.004)	(0.006)	(0.006)		(0.050)	(0.070)	(0.079)		(0.006)	(0.008)	(0.008)
ST census population share		-0.004	-0.011**	-0.011**		-0.168	0.015	0.078		0	-0.001	0.001
		(0.005)	(0.005)	(0.005)		(0.104)	(0.128)	(0.121)		(0.015)	(0.016)	(0.017)
SC current population share			0.012	0.011			0.025	0.17			0.01	0.016
			(0.008)	(0.009)			(0.101)	(0.141)			(0.015)	(0.015)
ST current population share			0.028***	0.029***			-0.587***	-0.691***			0.009	-0.014
			(0.007)	(0.008)			(0.177)	(0.192)			(0.020)	(0.020)
Other controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES
Adjusted R-squared	0.96	0.96	0.96	0.96	0.72	0.73	0.76	0.78	0.11	0.11	0.11	0.11
Number of observations	519	519	519	505	513	513	513	499	519	519	519	505

TABLE 7 -- POLITICAL RESERVATION AND TARGETED POLICY OUTCOMES

	Job quotas				SC welfare spending				ST welfare spending			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SC reservation	0.539***	0.493***	0.659***	0.675***	0.011	0.082	0.083	0.126	-0.524	-0.511	-0.436	-0.305
	(0.120)	(0.115)	(0.108)	(0.135)	(0.181)	(0.196)	(0.200)	(0.198)	(0.324)	(0.324)	(0.289)	(0.301)
ST reservation	0.199*	-0.316	-0.301	-0.371*	0.092	0.067	0.076	-0.024	0.713**	0.693**	1.019***	0.863***
	(0.109)	(0.204)	(0.225)	(0.223)	(0.103)	(0.104)	(0.108)	(0.127)	(0.335)	(0.330)	(0.301)	(0.325)
SC census population share		0.188***	-0.071	-0.113		-0.052	-0.055	-0.104		-0.063	-0.145	-0.195
		(0.065)	(0.073)	(0.081)		(0.077)	(0.080)	(0.068)		(0.151)	(0.170)	(0.169)
ST census population share		0.559***	0.842***	0.861***		-0.033	-0.028	0.07		0.033	0.19	0.317*
		(0.170)	(0.190)	(0.192)		(0.077)	(0.080)	(0.081)		(0.138)	(0.161)	(0.187)
SC current population share			0.648***	0.699***			-0.052	-0.092			-0.435**	-0.347**
			(0.132)	(0.172)			(0.121)	(0.123)			(0.189)	(0.172)
ST current population share			-0.675**	-0.689**			-0.12	-0.163			-0.576**	-0.706***
			(0.294)	(0.313)			(0.136)	(0.131)			(0.233)	(0.257)
Other controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES
Adjusted R-squared	0.88	0.9	0.9	0.91	0.76	0.76	0.76	0.76	0.83	0.83	0.84	0.84
Number of observations	519	519	519	505	274	274	274	274	298	298	298	298

TABLE 8 -- POLITICAL RESERVATION AND POLICY OUTCOMES: ROBUSTNESS CHECKS

	Non-linear census population controls	Lagged current population controls	State-specific piece-wise linear trend	Discontinuity sample
	(1)	(2)	(3)	(4)
PANEL A: Dependent variable: Total spending				
SC reservation	0.001	-0.005	-0.001	0.011
	(0.009)	(0.007)	(0.006)	(0.008)
ST reservation	0.016**	0.020***	0.025***	0.011
	(0.008)	(0.006)	(0.006)	(0.009)
PANEL B: Dependent variable: Education spending				
SC reservation	0.03	-0.103	-0.205	-0.238
	(0.197)	(0.157)	(0.135)	(0.223)
ST reservation	-0.358	-0.474***	-0.560***	-0.558**
	(0.247)	(0.159)	(0.150)	(0.236)
PANEL C: Dependent variable: Job quotas				
SC reservation	0.709***	0.590***	0.558***	0.345**
	(0.219)	(0.111)	(0.135)	(0.161)
ST reservation	-0.716**	-0.560**	-0.607***	-0.319
	(0.309)	(0.222)	(0.233)	(0.288)
PANEL D: Dependent variable: ST Welfare spending				
SC reservation	0.092	-0.233	-0.303	0.058
	(0.321)	(0.316)	(0.302)	(0.303)
ST reservation	0.705**	0.841**	0.864***	1.516***
	(0.303)	(0.353)	(0.326)	(0.359)

(3) Pande (2003, *AER*)

- What are the long-run implications of policies that create rents to group membership? Could this slow down the process of creating a more homogeneous society?

  -- There are strong incentives to maintain an SC/ST identity in India, given the employment and schooling advantages

(3) Pande (2003, *AER*)

- What are the long-run implications of policies that create rents to group membership? Could this slow down the process of creating a more homogeneous society?

  -- There are strong incentives to maintain an SC/ST identity in India, given the employment and schooling advantages

- Contrast this with the "nation-building" approach taken in Tanzania after independence, studied in Miguel (2004, *World Politics*)

(3) Pande (2003, *AER*)

- What are the long-run implications of policies that create rents to group membership? Could this slow down the process of creating a more homogeneous society?

  -- There are strong incentives to maintain an SC/ST identity in India, given the employment and schooling advantages

- Contrast this with the "nation-building" approach taken in Tanzania after independence, studied in Miguel (2004, *World Politics*)

  -- Can public policy (socialization during education, radio propaganda) increase patriotism and improve public outcomes?

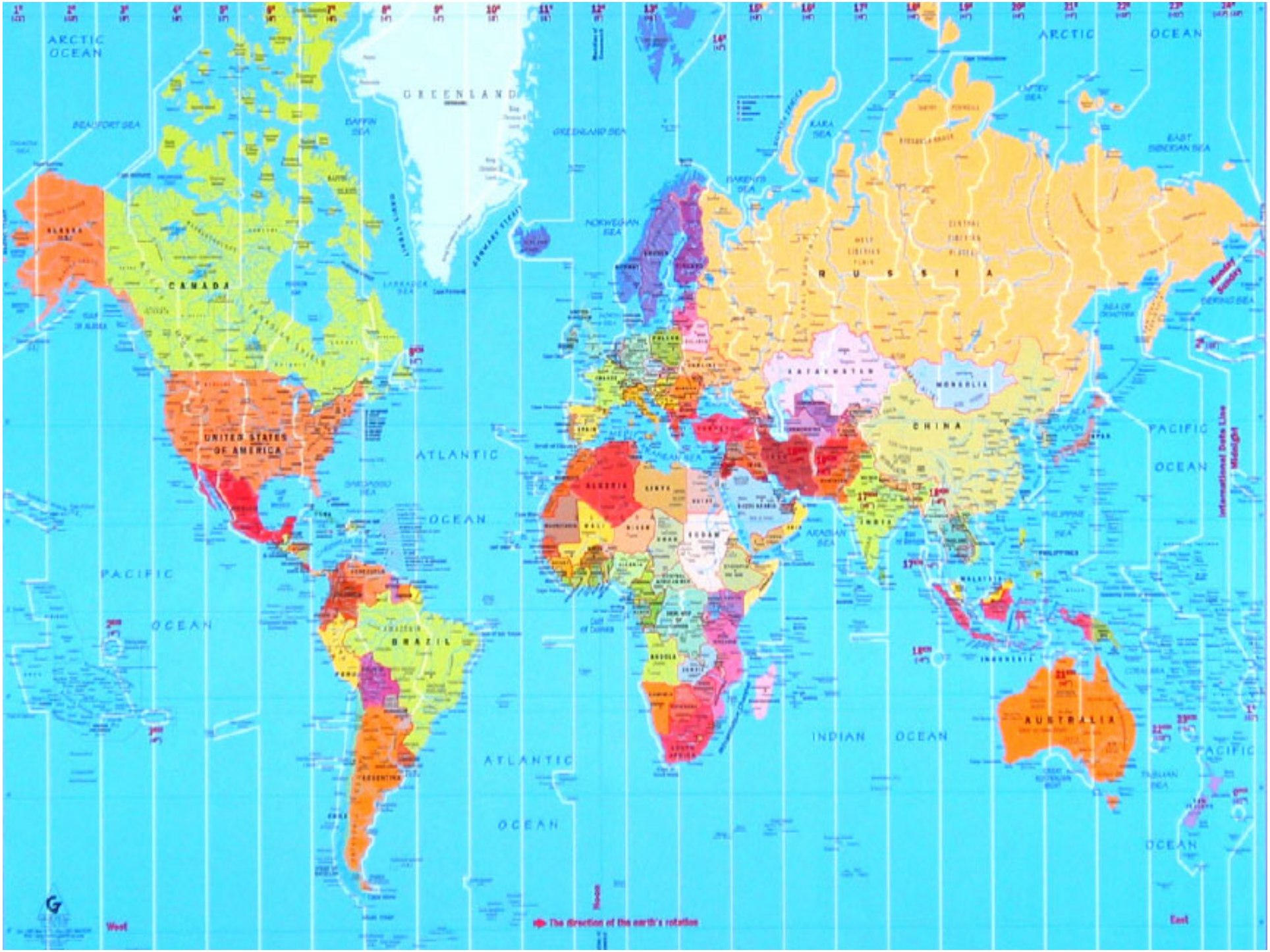
Whiteboard #1

Whiteboard #2

Whiteboard #3

Whiteboard #4

Whiteboard #5


ARCTIC OCEAN
GREENLAND
BEAUFORT SEA
BAFFIN SEA
GREENLAND SEA
NORWEGIAN SEA
BARENTS SEA
KARA SEA
LAPTEV SEA
EAST SIBERIAN SEA
CANADA
RUSSIA
ALASKA
UNITED STATES OF AMERICA
KAZAKHSTAN
MONGOLIA
CHINA
ATLANTIC OCEAN
PACIFIC OCEAN
BRAZIL
INDIA
INDONESIA
AUSTRALIA
INDIAN OCEAN
International Date Line
Midnight
West
East
The direction of the earth's rotation