

Economics 270B
Ph.D. Development Economics

Professor Ted Miguel
Department of Economics
University of California, Berkeley

Lecture 1 – January 26, 2014

Lecture 1: Introduction to Economics 270B

- Lecturer: Prof. Ted Miguel (emiguel@berkeley.edu)
Office hours: Thursday and Friday afternoons. Please email Elisa Cascardi (ecascardi@berkeley.edu) for a slot

Lecture 1: Introduction to Economics 270B

- Lecturer: Prof. Ted Miguel (emiguel@berkeley.edu)
Office hours: Thursday and Friday afternoons. Please email Elisa Cascardi (ecascardi@berkeley.edu) for a slot
- Grader: Felipe Gonzalez (fgonzalez@econ.berkeley.edu) will hold extra discussion sections and office hours. Felipe's office hours are Tuesdays 9-11am in Evans 630.

Lecture 1: Introduction to Economics 270B

- Lecturer: Prof. Ted Miguel (emiguel@berkeley.edu)
Office hours: Thursday and Friday afternoons. Please email Elisa Cascardi (ecascardi@berkeley.edu) for a slot
- Grader: Felipe Gonzalez (fgonzalez@econ.berkeley.edu) will hold extra discussion sections and office hours. Felipe's office hours are Tuesdays 9-11am in Evans 630.
- bCourses page: syllabus, readings, assignments.

Lecture 1: Introduction to Economics 270B

- Student introductions: Please tell us your name, department / university, year, and research focus ...

AND

- Are you taking / have you taken the other courses in the development economics sequence (Econ 270A, 270C)?

Lecture 1: Introduction to Economics 270B

- Other forums for development economics research:
 - **Development economics seminar** (Economics 271), Mondays 4-5:30pm, Evans 648
 - **Development Student Lunch Workshop**: Tuesdays 12:30-1:30pm, Evans 648
 - **ARE Dept. Seminar**: Fridays 12-1:30pm, Giannini 201
 - **Pacific Development (PacDev) Conference**, Saturday March 21st (at U.C. San Diego this year)
 - **Center of Evaluation for Global Action (CEGA)**
 - **Development Impact Lab (DIL)**

I. Overview of International Economic Development

Lecture 1: Understanding economic growth and development (1/26)

Lecture 1B: Persistence of historical institutions and shocks
(read during holiday week of 2/16)

Lecture 2: The Psychology of Poverty (2/2)

II. Human Capital in Economic Development

Lectures 3-4: Education (2/9, 2/23)

Lectures 5-7: Health and nutrition (3/2, 3/9, 3/16)

III. Political economy

Lectures 8-9: Democracy, Corruption and Development (3/30, 4/6)
(guest lectures by Prof. Fred Finan)

Lecture 10: Ethnic and Social Divisions (4/13)

Lectures 11-12: The Political Economy of Conflict (4/20, 4/27)

- Prerequisites: Graduate economic theory, econometrics
- Grading:
 - Four referee reports – 40%
 - Two problem sets – 20%
 - Research proposal – 30%
 - Class participation – 10%
 - No final exam
- All readings are available on bCourses

(1) Referee reports on papers by job market candidates (40 percent):

-- Each referee report should be no more than 3 pages double-spaced. The report should start off with a one paragraph summary of the main argument of the article. You should describe your main 3-4 points in detail as if you were writing directly to the author. Conclude the report with more minor comments. A good referee report not only clearly states the shortcomings of the work, but also lays out constructive, detailed and realistic suggestions for improvement.

-- These assignments will allow you to read and critique papers on the research frontier of development economics, and get a concrete sense of the quality of work being done by leading Ph.D. candidates in the field.

-- Report 1 on Frank Schilbach (Harvard) "Alcohol and self-control: A field experiment in India", due Monday 2/9 [http://scholar.harvard.edu/files/schilbach/files/jmp_frank_schilbach.pdf]

-- Report 2 on Rebecca Dizon-Ross (Stanford/MIT) "Parents' perceptions and children's education: Experimental evidence from Malawi", due Monday 2/23
[<http://web.mit.edu/rdr/www/perceptions.pdf>]

-- Report 3 on Ameet Morjaria (LSE/Harvard) "Competition and relational contracts: Evidence from Rwanda's coffee mills", due Monday 3/9
[https://dl.dropboxusercontent.com/u/24297068/amorjaria_rwanda.pdf]

-- Report 4 on Thiemo Fetzer (LSE) "Social Insurance and Conflict: Evidence from India", due Monday 3/16 [<http://www.trfetzner.com/wp-content/uploads/JMP.pdf>]

* Extra credit option for each referee report: please critically assess the presentation of data in each of the referee report papers. You can receive one point of extra credit for each report if you also include a detailed discussion of the shortcomings of one particular table / figure in the paper, and the concrete modifications you would make to improve the presentation of the data. (This does not count toward the 3 page limit for the referee report itself. Please restrict yourself to 1 page for this additional discussion of data presentation.) For a classic treatment on the presentation of quantitative data, refer to: Tufte, Edward R. (1983). *The Visual Display of Quantitative Information*. Cheshire: Graphics Press.

- Prerequisites: Graduate economic theory, econometrics
- Grading:
 - Four referee reports – 40%
 - Two problem sets – 20%
 - Research proposal – 30%
 - Class participation – 10%
 - No final exam
- All readings are available on bCourses

(2) Two problem sets (20 percent):

Problem sets require manipulation and analysis of datasets using STATA or R. I will ask you to apply some of the methods and approaches from the course to real data, and ask you to interpret the results. These assignments will provide good practice in applying econometric methods to data, something many (if not most) of you will need to do in your own research.

-- Problem set 1, due Monday 4/6

-- Problem set 2, due Monday 4/20

(3) One research proposal, 8-9 pages (30 percent):

The research proposal should briefly (3-4 pages) survey an existing literature in Development Economics, and then describe a planned research project (5-6 pages). Proposals should be in 12 point font, double-spaced with 1 inch margins. Proposals exceeding 9 pages in length will lose credit. This assignment will encourage you to generate, refine and receive feedback on a research idea that might form part of your dissertation.

-- The research proposal is due Friday 5/1 at 2pm (uploaded on bCourses).

- Prerequisites: Graduate economic theory, econometrics
- Grading:
 - Four referee reports – 40%
 - Two problem sets – 20%
 - Research proposal – 30%
 - Class participation – 10%
 - No final exam
- All readings are available on bCourses

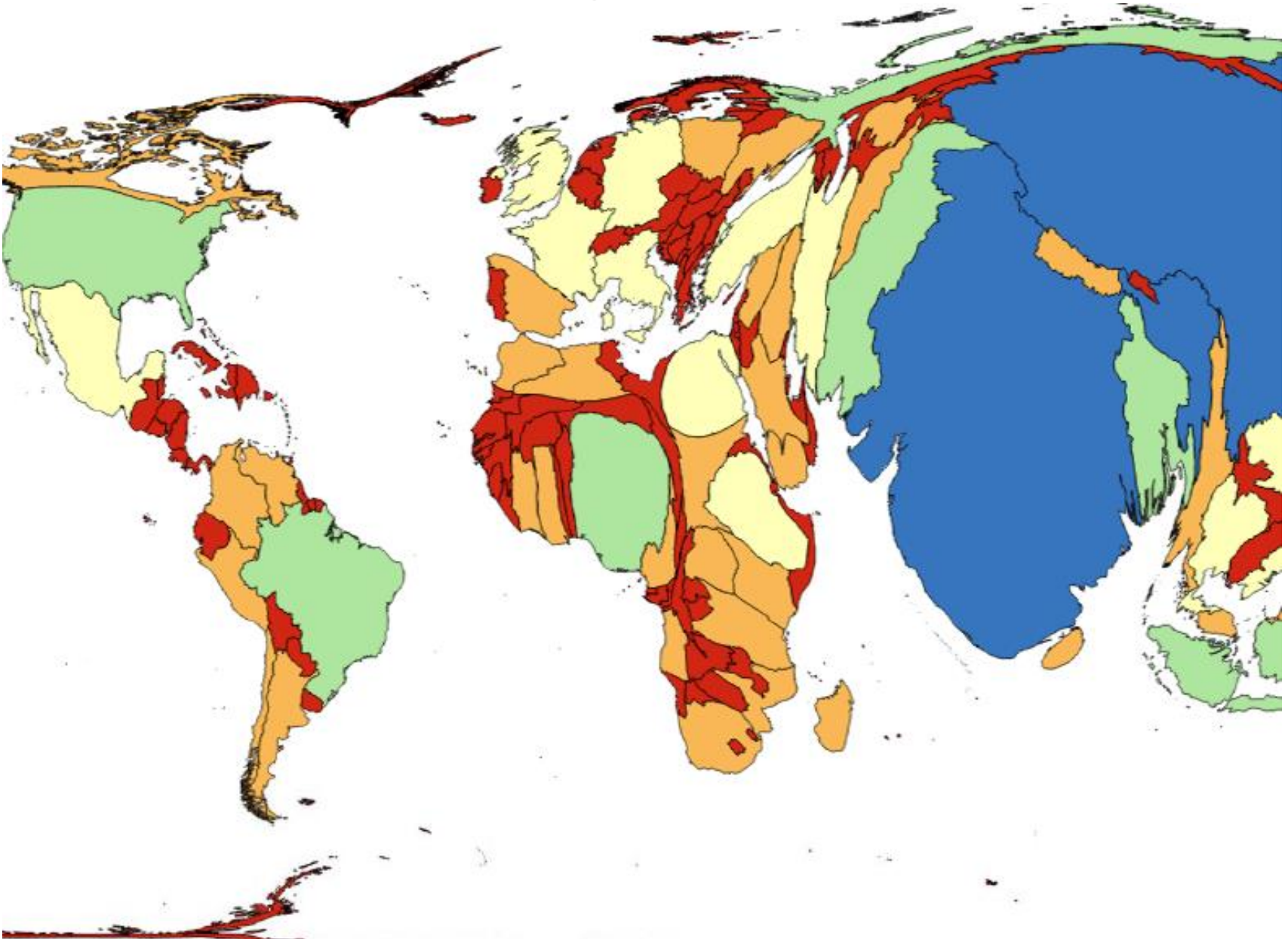
Any questions?

Lecture 1 outline

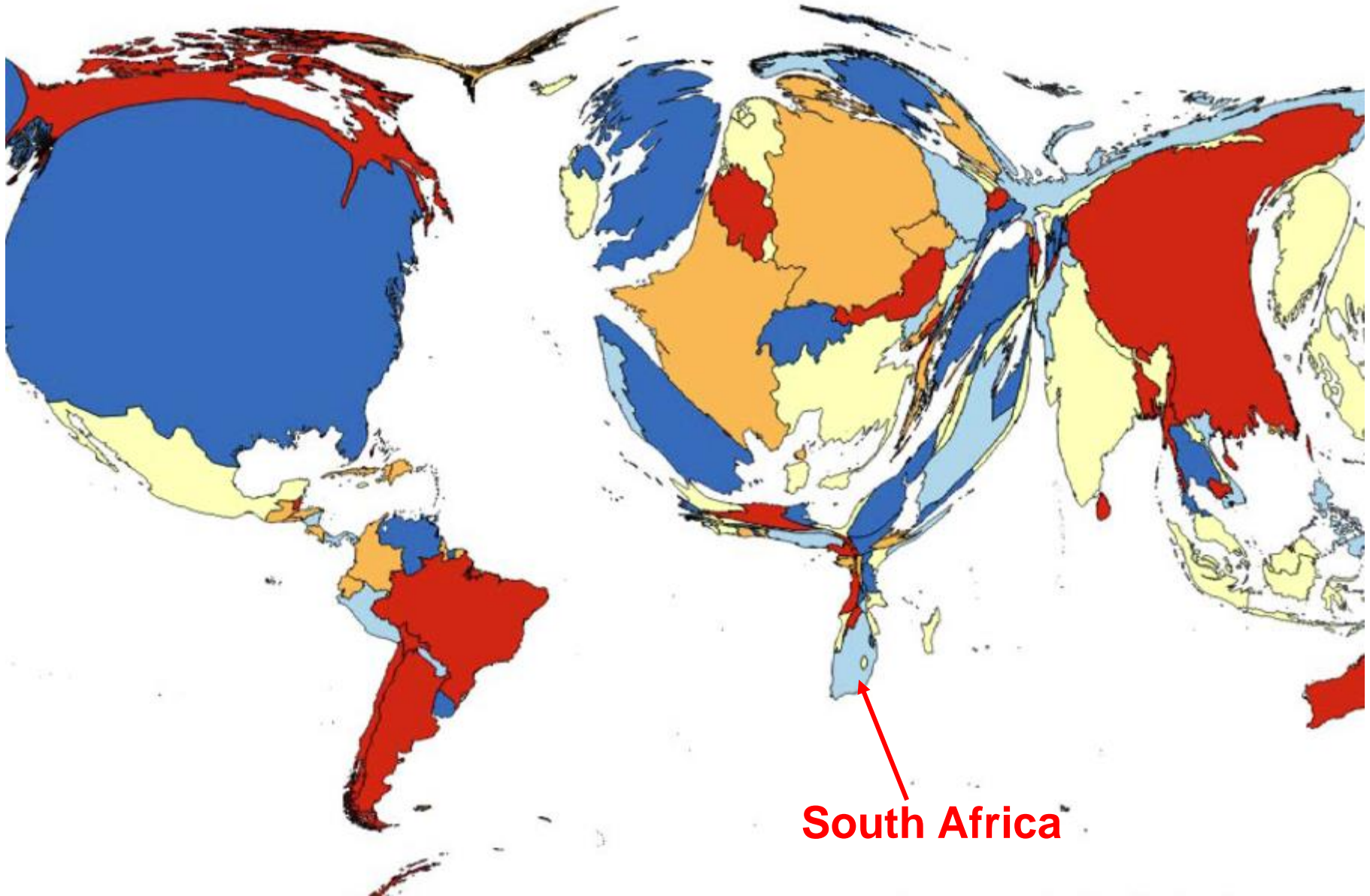
- (1) This Course
- (2) Development in human terms
- (3) The “big picture”: Spolaore and Wacziarg [2013]
- (4) Recent global patterns: Chen and Ravallion [2010]
- (5) Measuring wellbeing: Deaton [2005]



World map, area weighted by 2011 population



World map, area weighted by 2011 GDP



(2) Development in human terms

- Relevant themes:

- Lack of state capacity
- Poverty trap (nutrition/health)
- Corruption + political instability
- Aid - "Over-population"
- War - Credit mkt Property rights
- Risk-coping, inability to save
- Commodity shocks
- Labor markets + migration
- Ethnic/social divisions

(2) Development in human terms

- Relevant themes:

Corruption

Poverty traps

Land/asset ownership inequality

Health

Efficiency wages

(2) Development in human terms

- Relevant themes:

Corruption

Poverty traps

Land/asset ownership inequality

Health

Efficiency wages

Violent political conflict

Urban versus rural development

Population growth

Social (ethnic, religious) divisions

Others?

(3) Spolaore and Wacziarg (2013, *JEL*)

- What are the key determinants of global development?
- Inputs (physical and human capital) as well as access to technology matter. But what determines these?

(3) Spolaore and Wacziarg (2013, *JEL*)

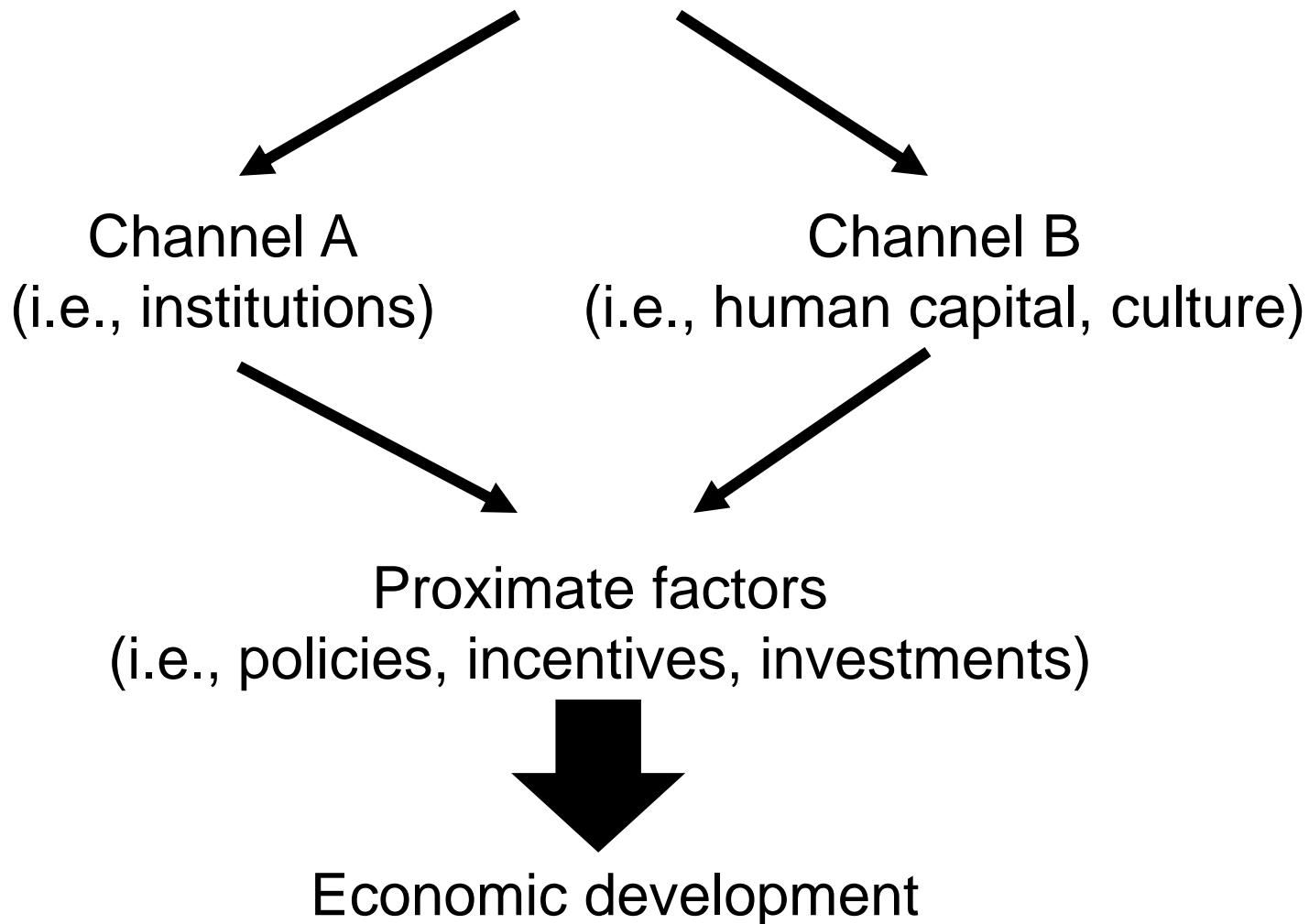
- What are the key determinants of global development?
- Inputs (physical and human capital) as well as access to technology matter. But what determines these?
- Research has searched for ever deeper causes of development outcomes over the past two decades:
Inputs → Policies, incentives → Institutions
- But what determines why certain places have institutions conducive to development while others do not?

(3) Spolaore and Wacziarg (2013, *JEL*)

- Research on these “deep” causes has exploded, with large sub-literatures studying various potential factors:

→ Geography; culture and informal institutions; historical events in the distant past (e.g., the rise of agriculture, the Slave Trade); and most recently genetic differences across populations (the focus of SW 2013)

“Deep” factors
(i.e., geography, genes, historical migration)



Bloom and
Sachs (1998)

TABLE 1
GEOGRAPHY AND CONTEMPORARY DEVELOPMENT
(Dependent variable: log per capita income, 2005; estimator: OLS)

Sample:	Whole World	Olsson–Hibbs sample ^a	Olsson–Hibbs sample ^a	Olsson–Hibbs sample ^a	Olsson–Hibbs sample ^a	Old World only
	(1)	(2)	(3)	(4)	(5)	(6)
Absolute latitude	0.044 (6.645)***	0.052 (7.524)***				
Percent land area in the tropics	−0.049 (0.154)	0.209 (0.660)	−0.410 (1.595)	−0.650 (2.252)**	−0.421 (1.641)	−0.448 (1.646)
Landlocked dummy	−0.742 (4.375)***	−0.518 (2.687)***	−0.499 (2.487)**	−0.572 (2.622)**	−0.505 (2.523)**	−0.226 (1.160)
Island dummy	0.643 (2.496)**	0.306 (1.033)	0.920 (3.479)***	0.560 (1.996)**	0.952 (3.425)***	1.306 (4.504)***
Geographic conditions (Olsson–Hibbs) ^b			0.706 (6.931)***		0.768 (4.739)***	0.780 (5.167)***
Biological conditions (Olsson–Hibbs) ^c				0.585 (4.759)***	−0.074 (0.483)	0.086 (0.581)
Constant	7.703 (25.377)***	7.354 (25.360)***	8.745 (61.561)***	8.958 (58.200)***	8.741 (61.352)***	8.438 (60.049)***
Observations	155	102	102	102	102	83
Adjusted R^2	0.440	0.546	0.521	0.449	0.516	0.641

Diamond
(1997)

Notes:

^aThe Olsson and Hibbs sample excludes the neo-European countries (Australia, Canada, New Zealand, and the United States) and countries whose current income is based primarily on extractive wealth (Olsson and Hibbs 2005).

^bFirst principal component of number of annual or perennial wild grasses and number of domesticable big mammals (all variables from Olsson and Hibbs 2005)

^cFirst principal component of absolute latitude; climate suitability to agriculture; rate of East–West orientation; size of landmass in millions of sq km (all variables from Olsson and Hibbs 2005).

Robust t statistics in parentheses.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE 3
REVERSAL OF FORTUNE
(Dependent variable: log per capita income, 2005; estimator: OLS)

Sample:	Whole World	Europe Only	Former European Colony	Not Former European Colony	Non Indigenous	Indigenous	Former European colony, Non Indigenous	Former European Colony, Indigenous
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
With European Countries								
Log of population density, year 1500	0.027 (0.389)	0.117 (1.276)	b	0.170 (2.045)**	b	0.193 (2.385)**	b	b
Beta coefficient on 1500 density	3.26%	22.76%		22.34%		20.00%		
Observations	171	35		73		138		
R ²	0.001	0.052		0.050		0.040		
Without European Countries								
Log of population density, year 1500	-0.246 (3.304)***	a	-0.393 (7.093)***	-0.030 (0.184)	-0.232 (2.045)**	-0.117 (1.112)	-0.371 (4.027)***	-0.232 (2.740)**
Beta coefficient on 1500 density	-27.77%		-47.88%	-3.08%	-32.81%	-11.72%	-51.69%	-26.19%
Observations	136		98	38	33	103	28	70
R ²	0.077		0.229	0.001	0.108	0.014	0.267	0.069

AJR

TABLE 5
THE HISTORY OF POPULATIONS AND ECONOMIC DEVELOPMENT
(Dependent variable: *log per capita income, 2005; estimator: OLS*)

Main regressor:	Years of agriculture	Ancestry-adjusted years of agriculture	State history	Ancestry-adjusted state history
	(1)	(2)	(3)	(4)
Years of agriculture	0.019 (0.535)			
Ancestry-adjusted years of agriculture		0.099 (2.347)**		
State history			0.074 (0.245)	
Ancestry-adjusted state history				1.217 (3.306)***
Absolute latitude	0.042 (6.120)***	0.040 (6.168)***	0.047 (7.483)***	0.046 (7.313)***
Percent land area in the tropics	-0.188 (0.592)	-0.148 (0.502)	0.061 (0.200)	0.269 (0.914)
Landlocked dummy	-0.753 (4.354)***	-0.671 (3.847)***	-0.697 (4.122)***	-0.555 (3.201)***
Island dummy	0.681 (2.550)**	0.562 (2.555)**	0.531 (2.216)**	0.503 (2.338)**
Constant	7.699 (22.429)***	7.270 (21.455)***	7.458 (22.338)***	6.773 (19.539)***
Beta coefficients on the bold variable	3.75%	17.23%	1.50%	21.59%
Observations	150	148	136	135
R ²	0.475	0.523	0.558	0.588

(3) Spolaore and Wacziarg (2013, *JEL*)

- Research on these “deep” causes has exploded, with large sub-literatures studying various potential factors:
 - Geography; culture and informal institutions; historical events in the distant past (e.g., the rise of agriculture, the Slave Trade); and most recently genetic differences across populations (the focus of SW 2013)
- The study of genetic factors is controversial: a naïve interpretation might lead to views on the “superiority” of some groups over others.
- This is the view that genetic characteristics have a **direct impact** on economic outcomes (e.g., discount rates)

(3) Spolaore and Wacziarg (2013, *JEL*)

- SW (2009, 2013) have a different interpretation: they focus to **barriers to the adoption** of the institutions, norms and technologies that allow for economic development
- I.e., when factories in the UK revolutionized industrial production in the 18th century, was it easier for societies more “similar” to the British to adopt their new approach?
- In this view, **genetic similarity / difference** across groups is a proxy for a range of cultural norms, “deep” values, and perspectives that differ across societies.
- They do not estimate a direct **genetic effect**.

	Direct Effect	Barrier Effect
Biological Transmission (genetic and/or epigenetic)	Quadrant I	Quadrant IV
Cultural Transmission (behavioral and/or symbolic)	Quadrant II	Quadrant V
Dual Transmission (biological-cultural interaction)	Quadrant III	Quadrant VI

“Historically rooted differences may generate barriers—e.g., via cultural, racial, and ethnic bias, discrimination, mistrust, and miscommunication—hindering interactions between populations that could result in a quicker diffusion of productivity-enhancing innovations across populations.” (p. 352)

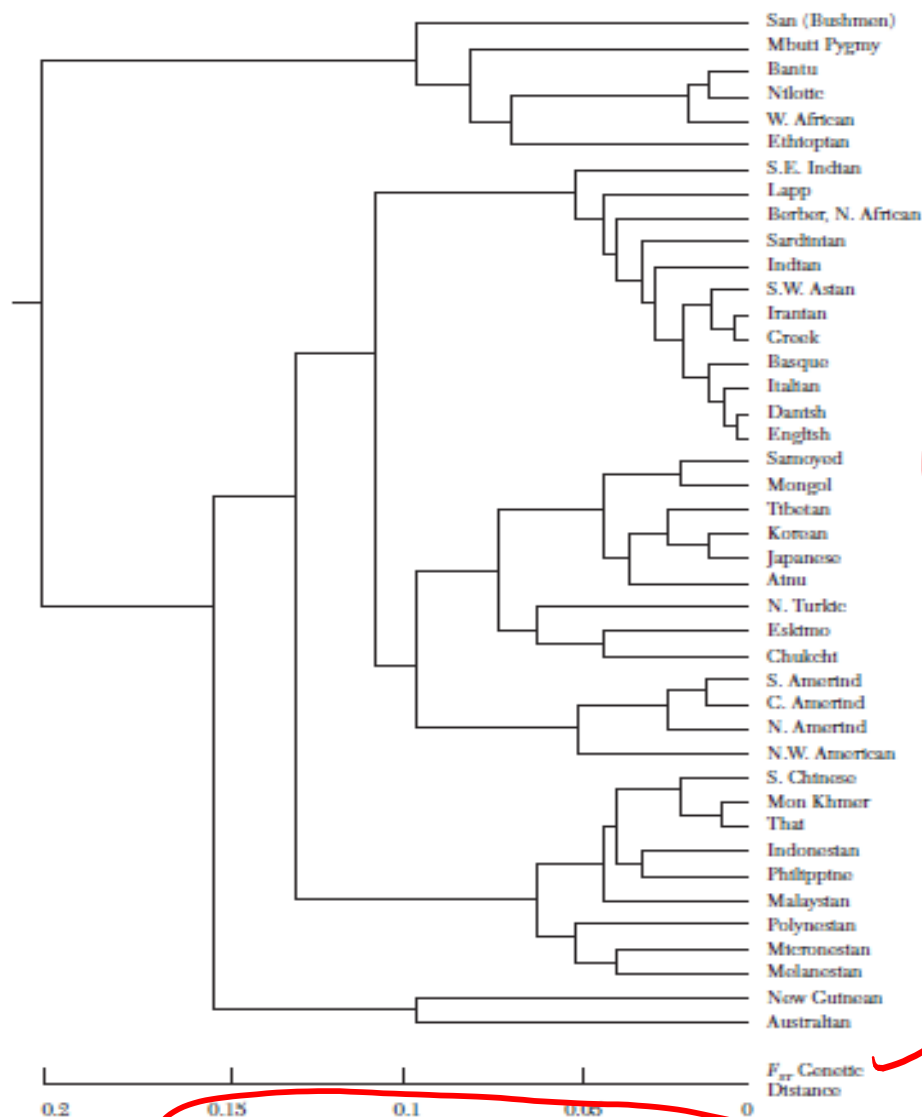
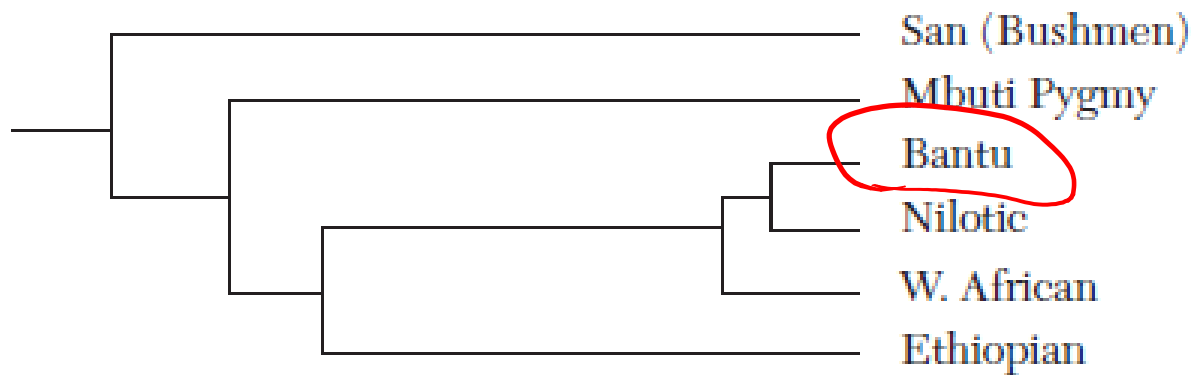


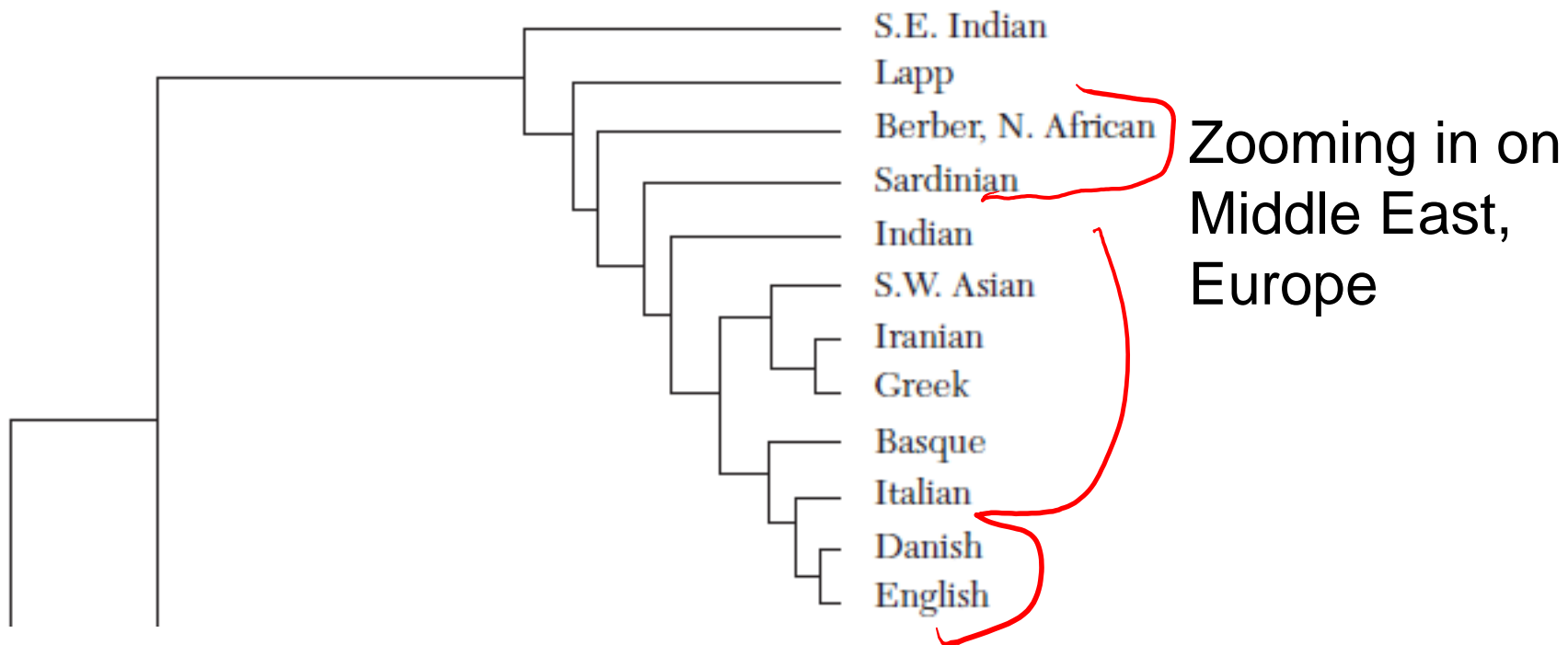
Figure 1. Genetic Distance among Forty-two Populations

Genetic distance, F_{ST} , captures length of time since two populations became separated. (In practice, use expected genetic distance across two populations, given population origins.)

Source: Cavalli-Sforza, Menozzi, and Piazza (1994).



Zooming in on
African populations



(3) Spolaore and Wacziarg (2013, *JEL*)

- Strong evidence for persistence of a wide range of cultural traits across generations, historically (e.g., Alesina, Giuliano and Nunn 2013 on gender attitudes, Clark 2007 on attitudes towards work in early modern England) to the present-day immigrants to the U.S. (Fernandez and Fogli 2009 on fertility outcomes)

TABLE 6
EUROPEANS AND DEVELOPMENT
(Dependent variable: log per capita income, 2005; estimator: OLS)

Main regressor:	Share of Europeans	Sample with less than 30% of Europeans	Control for years of agriculture	Control for state history	Control for genetic distance
	(1)	(2)	(3)	(4)	(5)
Share of descendants of Europeans, per Putterman and Weil	1.058 (4.743)***	2.892 (3.506)***	1.079 (4.782)***	1.108 (5.519)***	0.863 (3.601)***
Ancestry-adjusted years of agriculture, in thousands			0.105 (2.696)***		
Ancestry-adjusted state history				1.089 (3.108)***	
F_{ST} genetic distance to the United States, weighted					-4.576 (2.341)**
Constant	8.064 (24.338)***	7.853 (17.030)***	7.676 (21.984)***	7.195 (21.594)***	8.637 (20.941)***
Observations	150	92	147	134	149
R^2	0.526	0.340	0.580	0.656	0.545

Notes: All regressions include controls for the following geographic variables: absolute latitude; percent land area in the tropics; landlocked dummy; island dummy. Robust t statistics in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

(3) Spolaore and Wacziarg (2013, *JEL*)

- Can societies that are very “different” from wealthy societies ever hope to develop? Yes for several reasons:

(3) Spolaore and Wacziarg (2013, *JEL*)

- Can societies that are very “different” from wealthy societies ever hope to develop? Yes for several reasons:
 - 1) The existence of persistence does not mean perfect deterministic persistence: the R^2 in these regressions is always far less than 1.
- The economic record is full of sharp “turnarounds”:
 - E.g., China was an economic basket case from 1700-1978 but has had the world’s fastest growth since then; Sub-Saharan Africa had negative growth from 1975-2000 but rapid growth since then, etc.
 - Local “models” can be used to bridge learning gaps, e.g., Japanese industrialization a model for the rest of Asia.

(3) Spolaore and Wacziarg (2013, *JEL*)

- Can societies that are very “different” from wealthy societies ever hope to develop? Yes for several reasons:
 - 1) The existence of persistence does not mean perfect deterministic persistence: the R^2 in these regressions is always far less than 1.
 - 2) Cultural norms, institutions and other social outcomes are the product of human action and can be modified over time (i.e., through mass public education)
 - 3) The barriers to transmission of new ideas that promote development are falling over time in the era of the internet, common languages (Table 9)
- Other perspectives?

TABLE 9
HISTORICAL REGRESSIONS
(Dependent variable: Absolute difference in log per capita income, 1820 to 2005; estimator: OLS)

Income measured as of:	Income 1820	Income 1870	Income 1913	Income 1960	Income 2005
	(1)	(2)	(3)	(4)	(5)
Relative F_{ST} genetic distance to the English population, weighted	0.793 (0.291)**	1.885 (0.933)**	1.918 (0.955)**	4.197 (0.822)**	4.842 (0.877)**
Observations	990	1,431	1,596	4,005	10,878
Standardized Beta (percent)	14.31	23.06	20.93	31.56	28.50
Standardized Beta (percent), common sample ^a	10.98	16.37	15.53	9.00	7.77
R^2	0.36	0.30	0.29	0.22	0.23

Notes: All regressions include an intercept term as well as the following geographic control variables: Absolute difference in latitudes, absolute difference in longitudes, geodesic distance (1000s of km), dummy for contiguity, dummy if either country is an island, difference in percent land area in KG tropical climates, dummy if either country is landlocked, dummy if pair shares at least one sea or ocean, freight rate. Two-way clustered standard errors in parentheses.

^aCommon sample of 780 observations based on 40 countries for which data is available across all periods.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

Further thoughts on SW 2013?

Now onto something more mundane –

Can we even **measure** levels of economic development?

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- Estimates poverty measures in developing countries during 1981-2005, using the latest household survey data (HHS), national accounts (NAS) and price data (for purchasing power parity, PPP, adjustment)
 - Latest in a long line of papers that quantify global development, poverty, inequality (Sala-i-Martin 2006, Jones 1997, Ravallion, Datt, van de Walle 1991, etc.)

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- Estimates poverty measures in developing countries during 1981-2005, using the latest household survey data (HHS), national accounts (NAS) and price data (for purchasing power parity, PPP, adjustment)
 - Latest in a long line of papers that quantify global development, poverty, inequality (Sala-i-Martin 2006, Jones 1997, Ravallion, Datt, van de Walle 1991, etc.)
- Has global poverty fallen in recent decades – or not?
 - A controversial, politicized issue. Have widespread recent “market reforms” (e.g., China, India, Latin America) since the 1980s reduced poverty?

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- The two main innovations are: (i) use of a large number of household surveys (675 surveys from 115 countries), and most importantly, (ii) new PPP prices from the 2005 International Comparison Program (ICP) that included China and India for the first time.
- Over 90% of the population of low and middle income countries were surveyed within two years of 2005.

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- The two main innovations are: (i) use of a large number of household surveys (675 surveys from 115 countries), and most importantly, (ii) new PPP prices from the 2005 International Comparison Program (ICP) that included China and India for the first time.
- Over 90% of the population of low and middle income countries were surveyed within two years of 2005.
- 1.23 million households were interviewed in surveys for these 2005 poverty estimates alone. (!!)
- The World Bank Living Standards Measurement Study (LSMS) project, launched in the 1980s, and successor efforts have really borne fruit over the past few decades

(5) Deaton (2005, *REStat*)

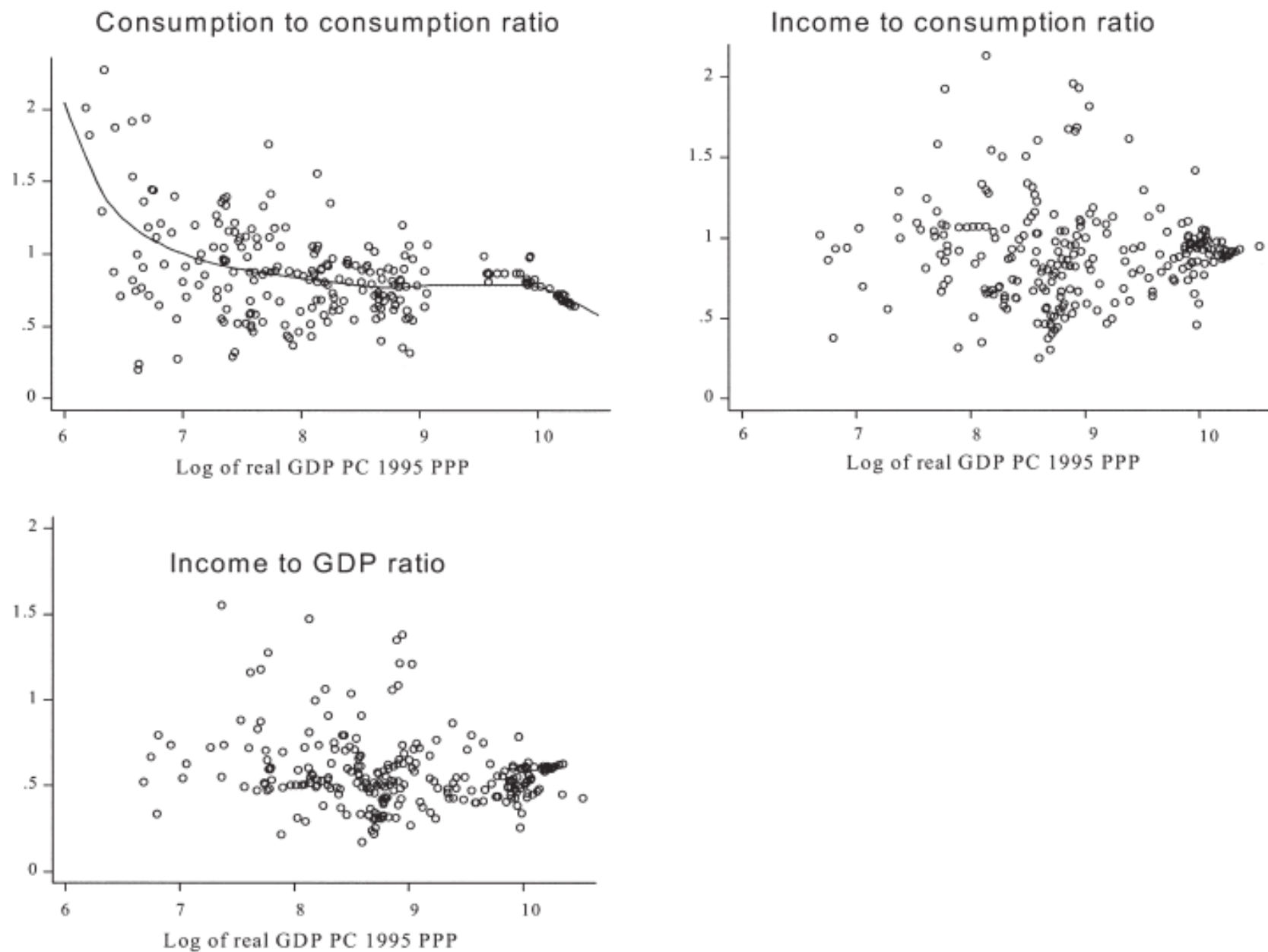
- National accounts system (NAS) data and household survey (HHS) data have yielded very different estimates regarding global income trends. Which is correct?
 - Chen and Ravallion (2010) combine both data sources in their “mixed method” estimates (discussed next), which has a long tradition in development economics
- This has major implications for our understanding of the impact of economic reforms in China and especially in India, where the NAS vs. HHS gap is particularly large
- Studying these measures also sheds light on data quality across regions

Ratio of means from household surveys vs. national accounts

TABLE 2.—RATIOS OF SURVEY MEANS TO MEANS FROM NATIONAL ACCOUNTS

		Unweighted		
	No. of Surveys	Mean Ratio	Standard Error	Standard Deviation
<i>Consumption to Consumption</i>				
All	277	0.860	(0.029)	0.306
EAP	42	0.819	(0.069)	0.224
EECA	59	0.847	(0.038)	0.230
LAC	26	0.767	(0.094)	0.329
MENA	20	0.955	(0.104)	0.300
OECD	33	0.781	(0.052)	0.097
SA	23	0.649	(0.063)	0.122
SSA	74	1.000	(0.061)	0.415

FIGURE 2.—RATIO OF SURVEY ESTIMATES OF MEAN INCOME OR CONSUMPTION PER CAPITA TO COMPARABLE NATIONAL ACCOUNTS ESTIMATES



There are two points to take away from these figures. First, the top left panels in both figures show a negative relationship between the ratio of survey to national accounts consumption on the one hand, and the GDP per capita on the other. This relationship is steepest among the poorest countries, is flatter in middle income countries, but resumes its downward slope among the rich countries. The continuous lines in the two top left graphs are locally weighted non-parametric regressions of the relationship using a bandwidth of 1.5 (units of real log GDP in PPP). Second, there is no similar relationship among the income surveys, either for the ratio of survey income to national accounts consumption, or for the ratio of survey income to GDP. At least some of the pattern in figure 1 must come from the fact that consumption is typically much easier to measure in surveys than is income in poor countries, where many people are self-employed in agriculture, whereas the opposite is true in rich countries, where most people are wage earners and are more reluctant to cooperate with time-consuming consumption surveys.

(5) Deaton (2005, *REStat*)

- Weaknesses of household survey (HHS) data:
 - 1) Surveys often (but not always) fail to include the rental value of owner-occupied housing
 - 2) Government services and NGO / non-profit related consumption activities are typically missed in HHS but captured (at least in theory) in NSA measures

(5) Deaton (2005, *REStat*)

- Weaknesses of household survey (HHS) data:
 - 1) Surveys often (but not always) fail to include the rental value of owner-occupied housing
 - 2) Government services and NGO / non-profit related consumption activities are typically missed in HHS but captured (at least in theory) in NSA measures
 - 3) Survey non-response / non-compliance / coverage, likely correlated with household income
 - 4) Recall periods (i.e., 1 week vs. 1 month) have a major impact on reported consumption levels
 - 5) The disaggregation of survey items has an impact
 - 6) The identity of the survey respondent matters

(5) Deaton (2005, *REStat*)

- Weaknesses of national accounts system (NAS) data:
 - 1) Household / informal sector production is partially missed in national accounts
 - 2) Illegal / regulated activities (e.g., smuggling) may be systematically missed in the national accounts data
 - 3) The construction of NAS data often uses outdated and poorly measured official statistics, input-output tables, and estimated crop yields

(5) Deaton (2005, *REStat*)

- Weaknesses of national accounts system (NAS) data:
 - 1) Household / informal sector production is partially missed in national accounts
 - 2) Illegal / regulated activities (e.g., smuggling) may be systematically missed in the national accounts data
 - 3) The construction of NAS data often uses outdated and poorly measured official statistics, input-output tables, and estimated crop yields

Do NAS (HHS) provide upper (lower) bounds on growth?

Do rescaling approaches (as in Sala-i-Martin 2006, and others) overstate global poverty reduction? Probably...

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- Different ways to compute global poverty:
 - (1) Survey-based method: relies exclusively on HHS data rather than NAS data (Ravallion's earlier work)
 - (2) Rescaling method: uses NAS data for mean income, HHS for dispersion. NAS aggregates are arguably more reliable (i.e., should include government transfers, owner-occupied rents) but have other limitations. See Sala-i-Martin (2006).
 - (3) Mixed method: Combines NAS and HHS consumption data in a Bayesian approach. Modeling consumption as log-normal, use the geometric mean of NAS (actually, predicted survey consumption conditional on NAS) and HHS mean consumption (basically)

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- Different ways to compute global poverty:
 - (1) Survey-based method: relies exclusively on HHS data rather than NAS data (Ravallion's earlier work)
 - (2) Rescaling method: uses NAS data for mean income, HHS for dispersion. NAS aggregates are arguably more reliable (i.e., should include government transfers, owner-occupied rents) but have other limitations. See Sala-i-Martin (2006).
 - (3) Mixed method: Combines NAS and HHS consumption data in a Bayesian approach. Modeling consumption as log-normal, use the geometric mean of NAS (actually, predicted survey consumption conditional on NAS) and HHS mean consumption (basically)

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- Different ways to compute global poverty:
 - (1) Survey-based method: relies exclusively on HHS data rather than NAS data (Ravallion's earlier work)
 - (2) Rescaling method: uses NAS data for mean income, HHS for dispersion. NAS aggregates are arguably more reliable (i.e., should include government transfers, owner-occupied rents) but have other limitations. See Sala-i-Martin (2006).
 - (3) Mixed method: Combines NAS and HHS consumption data in a Bayesian approach. Modeling consumption as log-normal, use the geometric mean of NAS (actually, predicted survey consumption conditional on NAS) and HHS mean consumption (basically)

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- Different ways to compute global poverty:
 - (1) Survey-based method: relies exclusively on HHS data rather than NAS data (Ravallion's earlier work)
 - (2) Rescaling method: uses NAS data for mean income, HHS for dispersion. NAS aggregates are arguably more reliable (i.e., should include government transfers, owner-occupied rents) but have other limitations. See Sala-i-Martin (2006).
 - (3) Mixed method: Combines NAS and HHS consumption data in a Bayesian approach. Modeling consumption as log-normal, use the geometric mean of NAS (actually, predicted survey consumption conditional on NAS) and HHS mean consumption (basically)

(4) Global Patterns: a “bright” new approach

- Another way forward: use the density of lights (measured by satellites at night) as a proxy for economic activity
- Recent work has found a very strong correlation with GDP (Henderson, Storeygard and Weil 2012, *AER*)
- Advantages:
 - 1) Available globally, even for countries with poor or non-existent national accounts and survey data
 - 2) Allows for sub-national measures
 - 3) Measured at higher frequency than other sources

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- How to define poverty?
 - What poverty threshold level to use?
 - The US\$1 per day figure is popular in policy discussions for capturing “extreme poverty”, and corresponds closely to the current poverty line in India.
 - The US\$1.25 per day figure corresponds to the average poverty line in the world’s 15 poorest countries (almost all of these are in Sub-Saharan Africa).
 - US\$2 per day corresponds to the median poverty line among all low and middle income countries.
 - Poverty headcount (% below the line) vs. poverty gap ($1 - \text{Avg. consumption of the poor} / \text{the poverty line}$)

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- Issues and limitations:
- Different numbers of surveys in each country, but good coverage: 101 of 115 countries with multiple rounds
- For countries with no surveys in a certain year “window”, the “neighboring region” average (e.g., Sub-Saharan Africa, Latin America/Caribbean, etc.) is used
- Roughly two thirds are consumption surveys (arguably preferable, discussed later), and the rest measure household income (mainly in Latin America).

(4) Global Patterns: Chen and Ravallion (2010, *QJE*)

- Issues and limitations:
- Different numbers of surveys in each country, but good coverage: 101 of 115 countries with multiple rounds
- For countries with no surveys in a certain year “window”, the “neighboring region” average (e.g., Sub-Saharan Africa, Latin America/Caribbean, etc.) is used
- Roughly two thirds are consumption surveys (arguably preferable, discussed later), and the rest measure household income (mainly in Latin America).
- Weak household survey coverage for both Sub-Saharan Africa and Eastern Europe / Central Asia before 1990
- The quality of Chinese data in the 1980s is suspect
- Reliable poverty numbers only from 1990 to 2005?

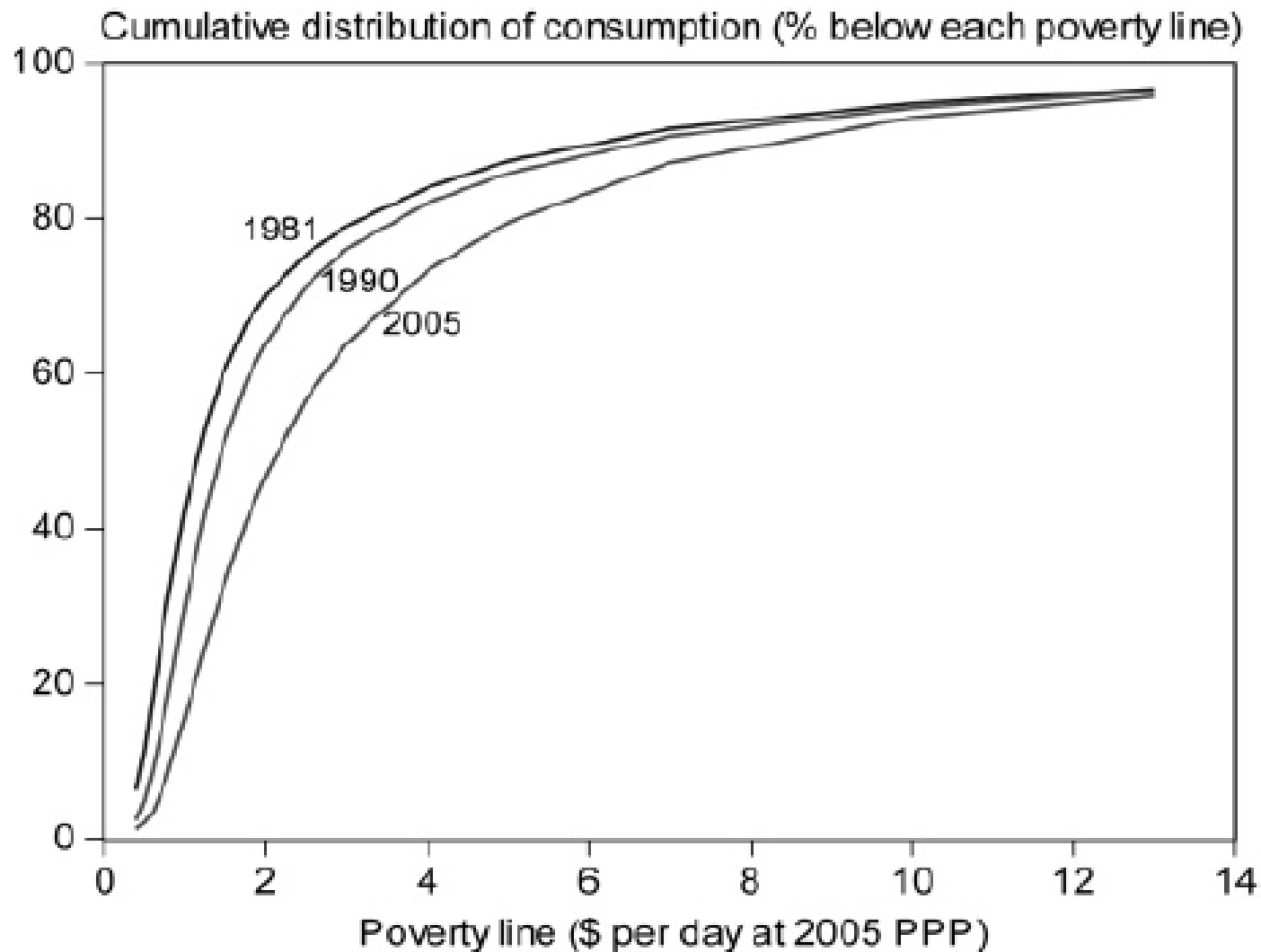


FIGURE III
Cumulative Distributions for the Developing World

TABLE I
HEADCOUNT INDICES OF POVERTY (% BELOW EACH LINE)

	1981	1984	1987	1990	1993	1996	1999	2002	2005
(a) Aggregate for developing world									
\$1.00	41.4	34.4	29.8	29.5	27.0	23.1	22.8	20.3	16.1
\$1.25	51.8	46.6	41.8	41.6	39.1	34.4	33.7	30.6	25.2
\$1.45	58.4	54.4	49.9	49.4	47.2	42.6	41.6	38.1	32.1
\$2.00	69.2	67.4	64.2	63.2	61.5	58.2	57.1	53.3	47.0
\$2.50	74.6	73.7	71.6	70.4	69.2	67.2	65.9	62.4	56.6
(b) Excluding China									
\$1.00	29.4	27.6	26.9	24.4	23.3	22.9	22.3	20.7	18.6
\$1.25	39.8	38.3	37.5	35.0	34.1	33.8	33.1	31.3	28.2
\$1.45	46.6	45.5	44.5	42.3	41.6	41.4	40.8	38.9	37.0
\$2.00	58.6	58.1	57.2	55.6	55.6	55.9	55.6	54.0	50.3
\$2.50	65.9	66.7	67.3	65.4	66.0	67.9	67.4	66.0	62.9

Note. The headcount index is the percentage of the relevant population living in households with consumption per person below the poverty line.

TABLE I
HEADCOUNT INDICES OF POVERTY (% BELOW EACH LINE)

	1981	1984	1987	1990	1993	1996	1999	2002	2005
(a) Aggregate for developing world									
\$1.00	41.4	34.4	29.8	29.5	27.0	23.1	22.8	20.3	16.1
\$1.25	51.8	46.6	41.8	41.6	39.1	34.4	33.7	30.6	25.2
\$1.45	58.4	54.4	49.9	49.4	47.2	42.6	41.6	38.1	32.1
\$2.00	69.2	67.4	64.2	63.2	61.5	58.2	57.1	53.3	47.0
\$2.50	74.6	73.7	71.6	70.4	69.2	67.2	65.9	62.4	56.6
(b) Excluding China									
\$1.00	29.4	27.6	26.9	24.4	23.3	22.9	22.3	20.7	18.6
\$1.25	39.8	38.3	37.5	35.0	34.1	33.8	33.1	31.3	28.2
\$1.45	46.6	45.5	44.5	42.3	41.6	41.4	40.8	38.9	37.0
\$2.00	58.6	58.1	57.2	55.6	55.6	55.9	55.6	54.0	50.3
\$2.50	65.9	66.7	67.3	65.4	66.0	67.9	67.4	66.0	62.9

Note. The headcount index is the percentage of the relevant population living in households with consumption per person below the poverty line.

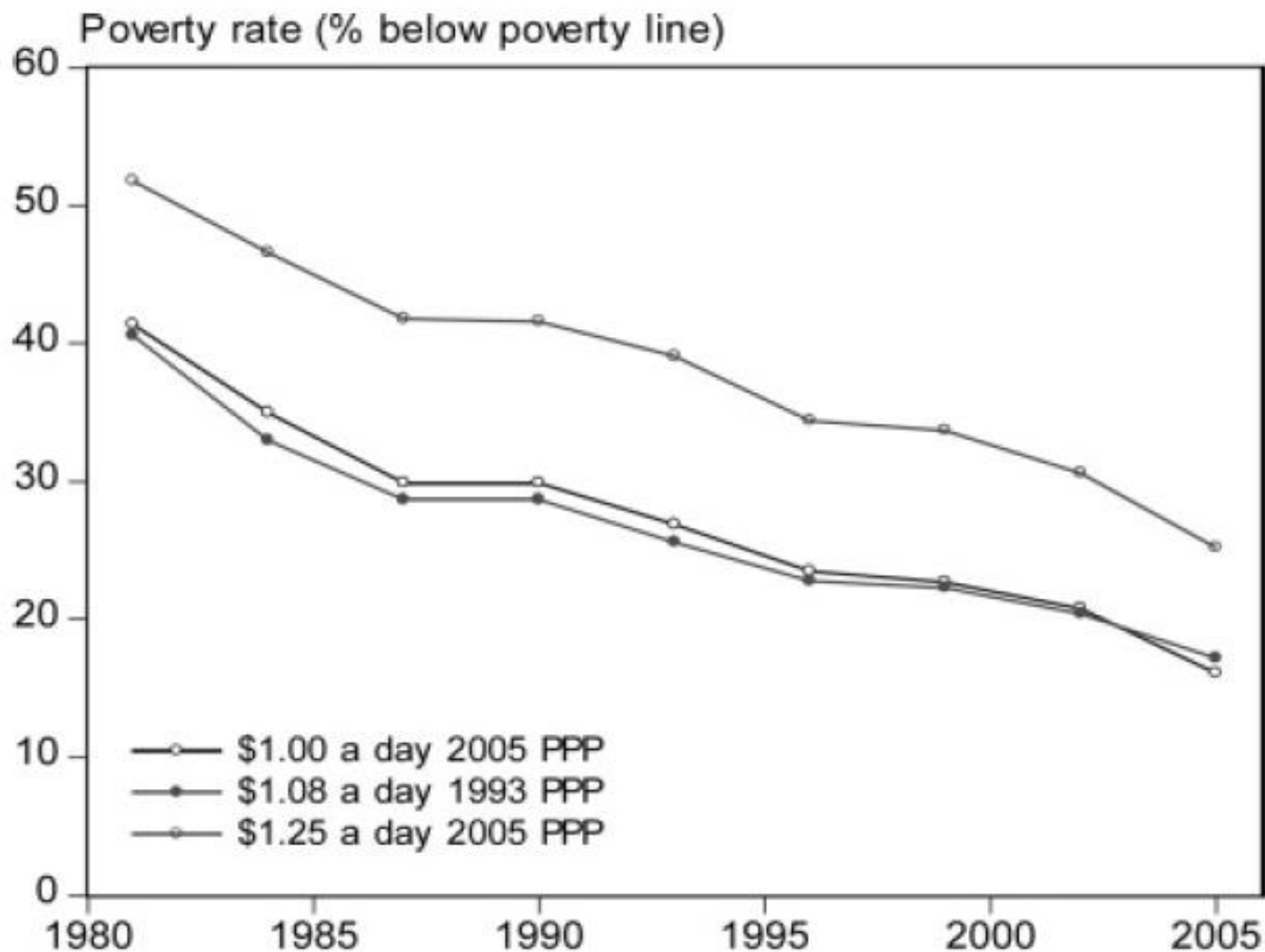


FIGURE IV
Poverty Rates Using Old and New Poverty Lines

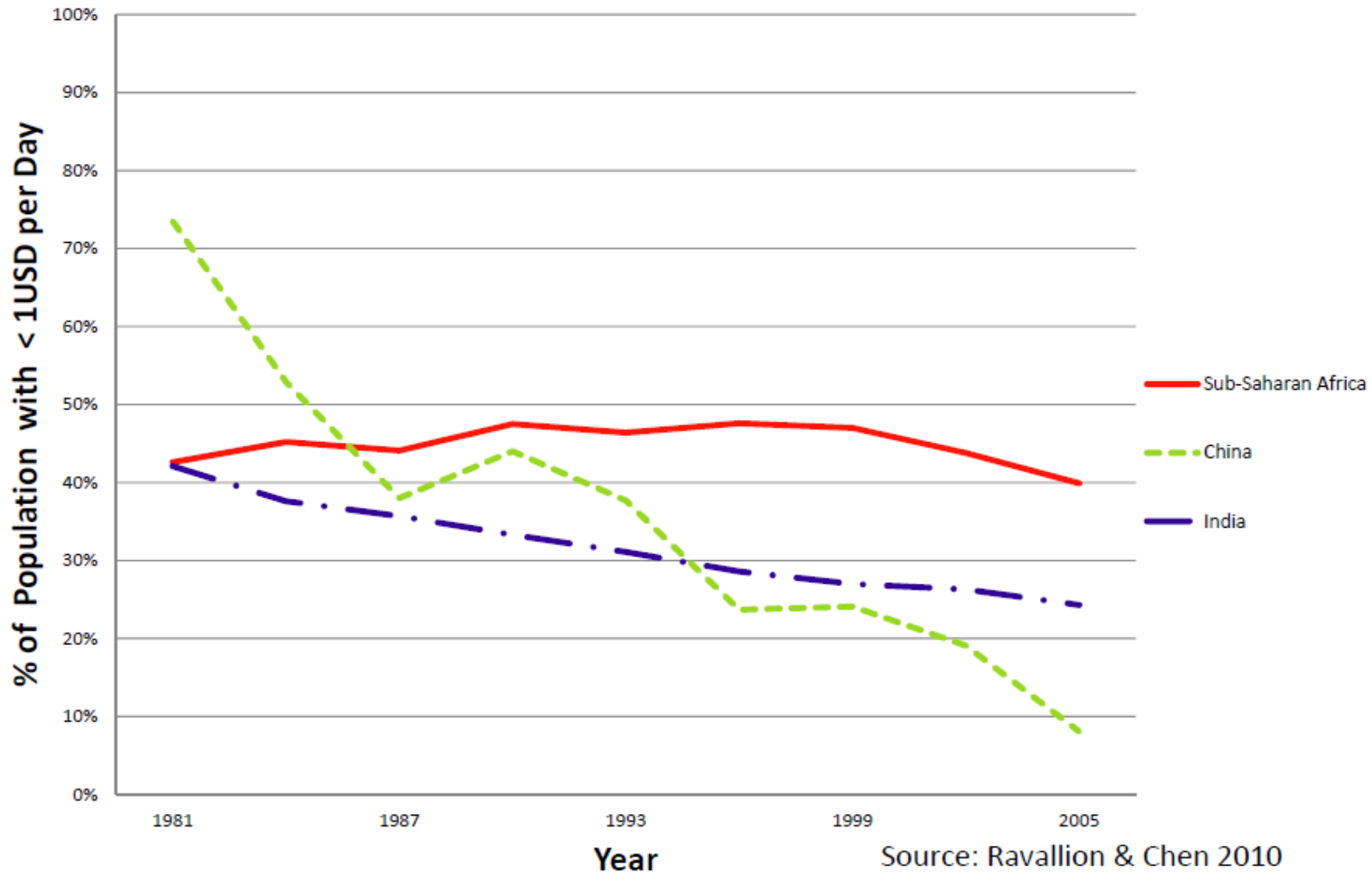
“Extreme” poverty in China: 73% → 8%, in Africa: 42% → 40%

TABLE III

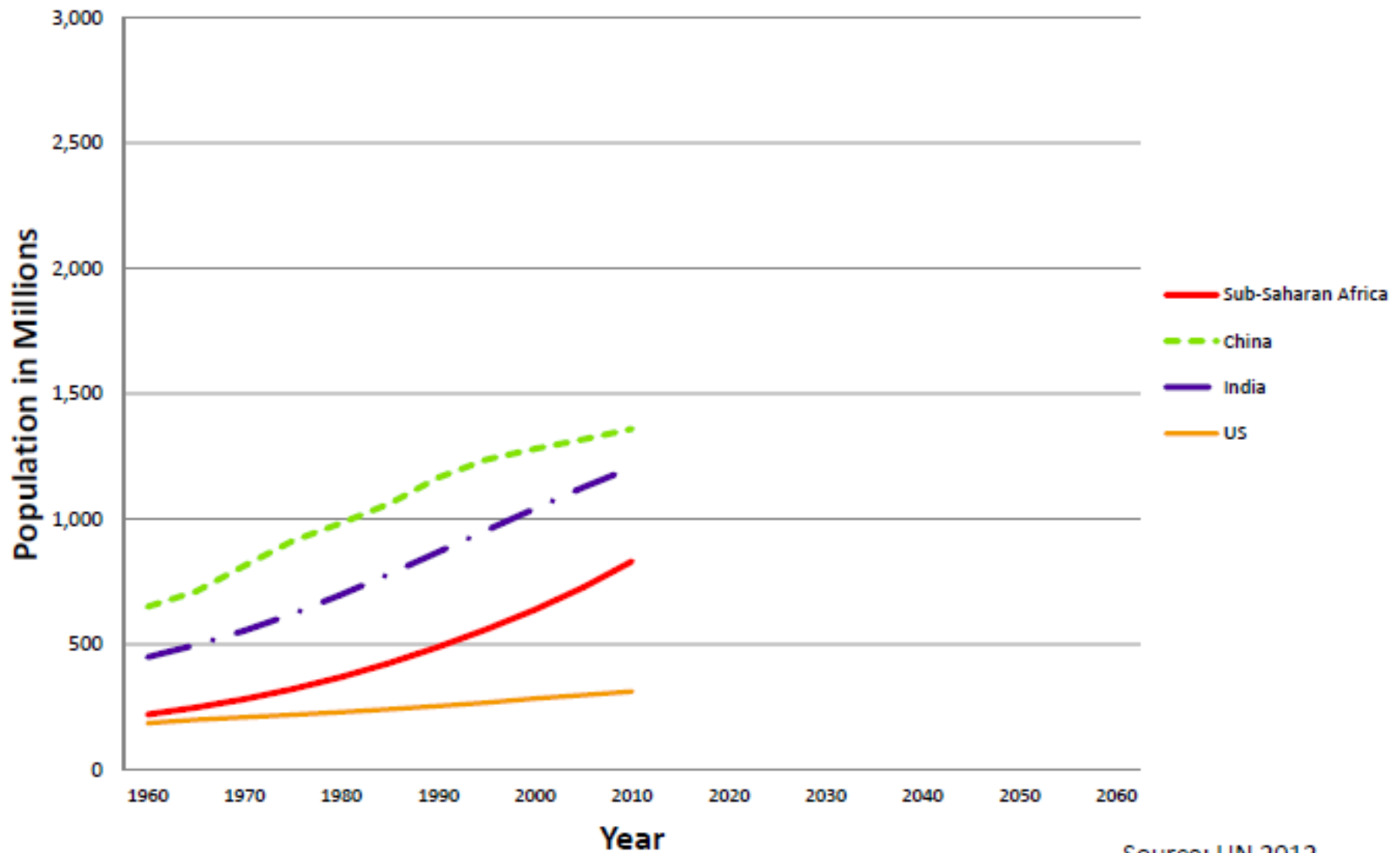
REGIONAL BREAKDOWN OF HEADCOUNT INDEX FOR INTERNATIONAL POVERTY LINES OF \$1.00–\$2.50 A DAY OVER 1981–2005

Region	1981	1984	1987	1990	1993	1996	1999	2002	2005
(a) % living below \$1.00 a day									
East Asia and Pacific	66.8	49.9	38.9	39.1	35.4	23.4	23.5	17.8	9.3
Of which China	73.5	52.9	38.0	44.0	37.7	23.7	24.1	19.1	8.1
Eastern Europe and Central Asia	0.7	0.6	0.5	0.9	2.1	2.5	3.1	2.7	2.2
Latin America and Caribbean	7.7	9.2	8.9	6.6	6.0	7.3	7.4	7.7	5.6
Middle East and North Africa	3.3	2.4	2.3	1.7	1.5	1.6	1.7	1.4	1.6
South Asia	41.9	38.0	36.6	34.0	29.3	29.1	26.9	26.5	23.7
Of which India	42.1	37.6	35.7	33.3	31.1	28.6	27.0	26.3	24.3
Sub-Saharan Africa	42.6	45.2	44.1	47.5	46.4	47.6	47.0	43.8	39.9
Total	41.4	34.4	29.8	29.5	27.0	23.1	22.8	20.3	16.1
(b) % living below \$1.25 a day									
East Asia and Pacific	77.7	65.5	54.2	54.7	50.8	36.0	35.5	27.6	16.8
Of which China	84.0	69.4	54.0	60.2	53.7	36.4	35.6	28.4	15.9
Eastern Europe and Central Asia	1.7	1.3	1.1	2.0	4.3	4.6	5.1	4.6	3.7
Latin America and Caribbean	11.5	13.4	12.6	9.8	9.1	10.8	10.8	11.0	8.2
Middle East and North Africa	7.9	6.1	5.7	4.3	4.1	4.1	4.2	3.6	3.6
South Asia	59.4	55.6	54.2	51.7	46.9	47.1	44.1	43.8	40.3
Of which India	59.8	55.5	53.6	51.3	49.4	46.6	44.8	43.9	41.6
Sub-Saharan Africa	53.7	56.2	54.8	57.9	57.1	58.7	58.2	55.1	50.9
Total	51.8	46.6	41.8	41.6	39.1	34.4	33.7	30.6	25.2

Percentage of Population living on < 1USD per day (1981-2005)

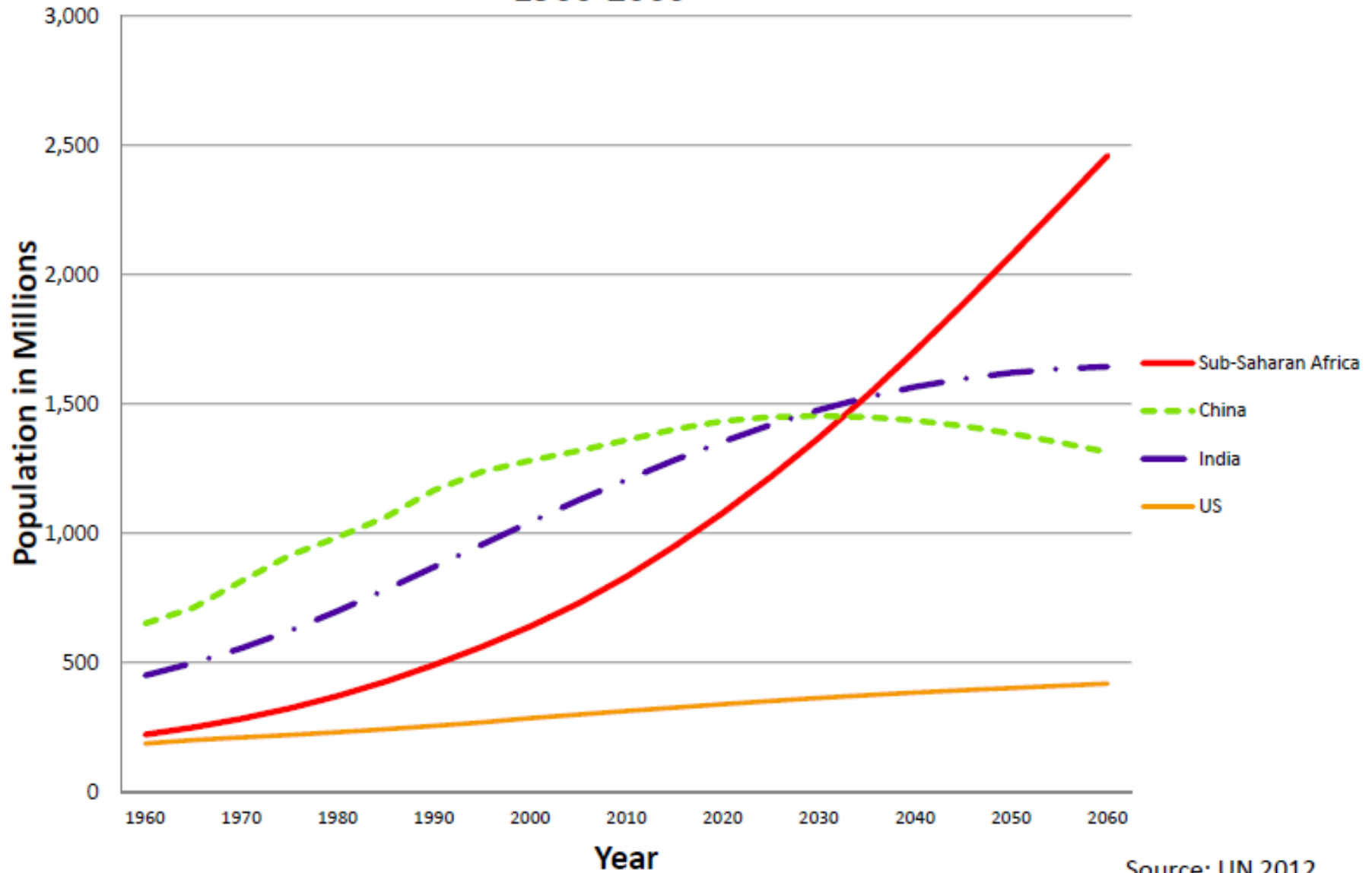


Population: Sub-Saharan Africa, China, India, & US, 1960-2010




Source: UN 2012

Population Trends (medium prediction), 1960-2060



Source: UN 2012

Ratio of the sum of population (ages 0–14 and 65+) / (ages 15–64)



HDI rank	Population						Median age		Total dependency ratio	
	Total ^a		Annual growth		Urban					
	(millions)		Annual growth		Urban		(years)		(per 100 people ages 15–64)	
	2012	2030	2000/2005	2010/2015 ^{a,c}	2000	2012	2000	2010	2000	2012
Regions										
Arab States	357.3	480.8	2.2	2.0	53.2	57.2	20.6	23.3	72.3	59.7
East Asia and the Pacific	1,991.4	2,135.3	0.8	0.6	36.7	49.7	28.1	32.3	50.8	40.9
Europe and Central Asia	481.6	491.3	0.0	0.2	63.2	64.8	32.9	34.9	49.5	43.4
Latin America and the Caribbean	597.7	696.0	1.3	1.1	75.3	79.3	24.4	27.5	60.3	52.1
South Asia	1,753.0	2,141.8	1.6	1.4	29.0	32.9	22.0	24.6	66.7	54.6
Sub-Saharan Africa	852.5	1,284.0	2.5	2.5	32.0	37.0	17.8	18.5	88.6	83.4

East Asia median age = 32 years
SSA median age = 19 years

TABLE III
(CONTINUED)

Region	1981	1984	1987	1990	1993	1996	1999	2002	2005
(c) % living below \$2.00 a day									
East Asia and Pacific	92.6	88.5	81.6	79.8	75.8	64.1	61.8	51.9	38.7
Of which China	97.8	92.9	83.7	84.6	78.6	65.1	61.4	51.2	36.3
Eastern Europe and Central Asia	8.3	6.5	5.6	6.9	10.3	11.9	14.3	12.0	8.9
Latin America and Caribbean	22.5	25.3	23.3	19.7	19.3	21.8	21.4	21.7	16.6
Middle East and North Africa	26.7	23.1	22.7	19.7	19.8	20.2	19.0	17.6	16.9
South Asia	86.5	84.8	83.9	82.7	79.7	79.9	77.2	77.1	73.9
Of which India	86.6	84.8	83.8	82.6	81.7	79.8	78.4	77.5	75.6
Sub-Saharan Africa	74.0	75.7	74.2	76.2	76.0	77.9	77.6	75.6	73.0
Total	69.2	67.4	64.2	63.2	61.5	58.2	57.1	53.3	47.0
(d) % living below \$2.50 a day									
East Asia and Pacific	95.4	93.5	89.7	87.3	83.7	74.9	71.7	62.6	50.7
Of which China	99.4	97.4	92.4	91.6	86.5	76.4	71.7	61.6	49.5
Eastern Europe and Central Asia	15.2	12.5	11.2	12.0	15.1	18.3	21.4	17.8	12.9
Latin America and Caribbean	29.2	32.4	29.6	26.0	25.9	28.8	28.0	28.4	22.1
Middle East and North Africa	39.0	34.8	34.6	31.2	31.4	32.5	30.8	29.5	28.4
South Asia	92.6	91.5	90.8	90.3	88.6	88.5	86.7	86.5	84.4
Of which India	92.5	91.5	90.8	90.2	89.9	88.7	87.6	86.9	85.7
Sub-Saharan Africa	81.0	82.3	81.0	82.5	82.5	84.2	83.8	82.5	80.5
Total	74.6	73.7	71.6	70.4	69.2	67.2	65.9	62.4	56.6


TABLE V
POVERTY GAP INDEX ($\times 100$) BY REGION OVER 1981–2005

Region	1981	1984	1987	1990	1993	1996	1999	2002	2005
(a) \$1.25									
East Asia and Pacific	35.5	24.2	18.8	18.2	16.4	10.5	10.7	8.0	4.0
Of which China	39.3	25.6	18.5	20.7	17.6	10.7	11.1	8.7	4.0
Eastern Europe and Central Asia	0.4	0.3	0.3	0.6	1.6	1.7	1.6	1.3	1.1
Latin America and Caribbean	4.0	4.7	4.7	3.6	3.3	3.9	4.2	4.2	3.2
Middle East and North Africa	1.6	1.3	1.2	0.9	0.8	0.8	0.8	0.7	0.8
South Asia	19.6	17.5	16.4	15.2	12.9	12.6	11.7	11.5	10.3
Of which India	19.6	17.2	15.8	14.6	13.6	12.4	11.7	11.4	10.5
Sub-Saharan Africa	22.9	24.6	24.3	26.6	25.6	25.9	25.7	23.5	21.1
Total	21.3	16.8	14.5	14.2	12.9	11.0	10.9	9.6	7.6
(b) \$2.00									
East Asia and Pacific	54.7	44.9	38.0	37.4	34.8	25.9	25.5	20.2	13.0
Of which China	59.3	47.3	38.2	40.9	36.6	26.3	25.6	20.6	12.2
Eastern Europe and Central Asia	1.9	1.5	1.3	2.0	3.7	4.1	4.5	3.8	3.0
Latin America and Caribbean	8.9	10.2	9.7	7.8	7.4	8.6	8.6	8.7	6.7
Middle East and North Africa	7.4	6.1	5.9	4.8	4.8	4.8	4.6	4.1	4.0
South Asia	40.7	38.4	37.2	35.7	32.8	32.7	31.0	30.8	28.7
Of which India	40.8	38.2	36.7	35.3	34.1	32.4	31.3	30.8	29.5
Sub-Saharan Africa	38.8	40.6	39.8	42.2	41.4	42.3	42.1	39.7	37.0
Total	36.5	32.5	29.5	29.1	27.5	24.7	24.3	22.1	18.6

Note. The poverty gap index is the mean distance below the poverty line as a proportion of the line where the mean is taken over the whole population, counting the nonpoor as having zero poverty gaps.

TABLE VIII
HEADCOUNT INDEX USING MIXED METHOD (%)

	1981	1984	1987	1990	1993	1996	1999	2002	2005
(a) \$1.25 a day									
East Asia and Pacific	67.1	57.4	49.4	48.5	40.6	28.4	26.5	20.3	12.1
Of which China	73.0	62.3	51.9	55.5	45.0	30.6	29.0	22.4	12.1
Europe and Central Asia	1.9	1.7	1.7	2.6	4.8	6.1	5.7	3.8	3.1
Latin America and Caribbean	13.9	16.3	16.7	18.0	15.0	15.8	14.0	15.3	9.8
Middle East and North Africa	7.6	6.5	6.4	5.0	5.0	5.4	5.4	4.4	4.4
South Asia	42.7	39.3	39.0	33.6	30.4	28.1	28.1	26.2	21.6
Of which India	42.3	38.7	38.0	32.2	30.4	26.4	26.4	25.1	20.3
Sub-Saharan Africa	51.9	54.0	53.7	55.6	55.9	56.5	56.9	55.3	51.0
Total	43.6	39.6	36.6	35.3	31.7	27.2	26.5	23.7	18.6
(b) \$2.00 a day									
East Asia and Pacific	89.8	86.0	81.4	78.6	73.0	59.6	56.2	46.6	34.0
Of which China	95.4	91.6	85.7	85.4	78.4	63.0	58.8	48.8	33.9
Europe and Central Asia	6.9	6.4	5.8	7.4	11.8	14.7	14.8	10.8	8.2
Latin America and Caribbean	26.5	30.3	29.2	31.8	28.2	29.3	26.4	28.7	19.6
Middle East and North Africa	26.7	24.4	24.0	20.7	20.5	20.7	19.8	17.5	15.8
South Asia	77.4	75.0	74.7	70.1	67.9	65.4	64.5	62.6	56.8
Of which India	77.0	74.6	74.2	69.3	68.4	64.2	63.9	62.4	57.0
Sub-Saharan Africa	73.1	74.8	74.2	75.2	75.2	76.6	76.9	76.0	73.4
Total	66.0	64.4	62.5	60.7	58.4	53.7	52.2	48.2	41.0



	Human Development Index (HDI)	Life expectancy at birth	Mean years of schooling	Expected years of schooling	Gross national income (GNI) per capita
	Value	(years)	(years)	(years)	(2005 PPP \$)
HDI rank	2012	2012	2010 ^a	2011 ^b	2012
Regions					
Arab States	0.652	71.0	6.0	10.6	8,317
East Asia and the Pacific	0.683	72.7	7.2	11.8	6,874
Europe and Central Asia	0.771	71.5	10.4	13.7	12,243
Latin America and the Caribbean	0.741	74.7	7.8	13.7	10,300
South Asia	0.558	66.2	4.7	10.2	3,343
Sub-Saharan Africa	0.475	54.9	4.7	9.3	2,010

Sub-Saharan Africa per capita income (2012), US\$2,010 (PPP)

HDI rank	GDP		GDP per capita		Annual growth rate	
	US\$ billions	PPP US\$ billions	US\$	PPP US\$	(%)	
	2003	2003	2003	2003	1975–2003	1990–2003
Developing countries	6,981.9 T	21,525.4 T	1,414	4,359	2.3	2.9
Least developed countries	221.4 T	895.1 T	329	1,328	0.7	2.0
Arab States	773.4 T	1,683.6 T	2,611	5,685	0.2	1.0
East Asia and the Pacific	2,893.6 T	9,762.2 T	1,512	5,100	6.0	5.6
Latin America and the Caribbean	1,745.9 T	3,947.0 T	3,275	7,404	0.6	1.1
South Asia	902.2 T	4,235.9 T	617	2,897	2.6	3.5
Sub-Saharan Africa	418.5 T	1,227.4 T	633	1,856	-0.7	0.1
Central and Eastern Europe and the CIS	1,189.9 T	3,203.5 T	2,949	7,939	..	0.3
OECD	29,650.5 T	29,840.6 T	25,750	25,915	2.0	1.8
High-income OECD	28,369.5 T	27,601.9 T	31,020	30,181	2.2	1.9

East Asia: 6% compounded over 28 years = Total growth of 511%

SSA: -0.7% compounded = Total growth of -18%

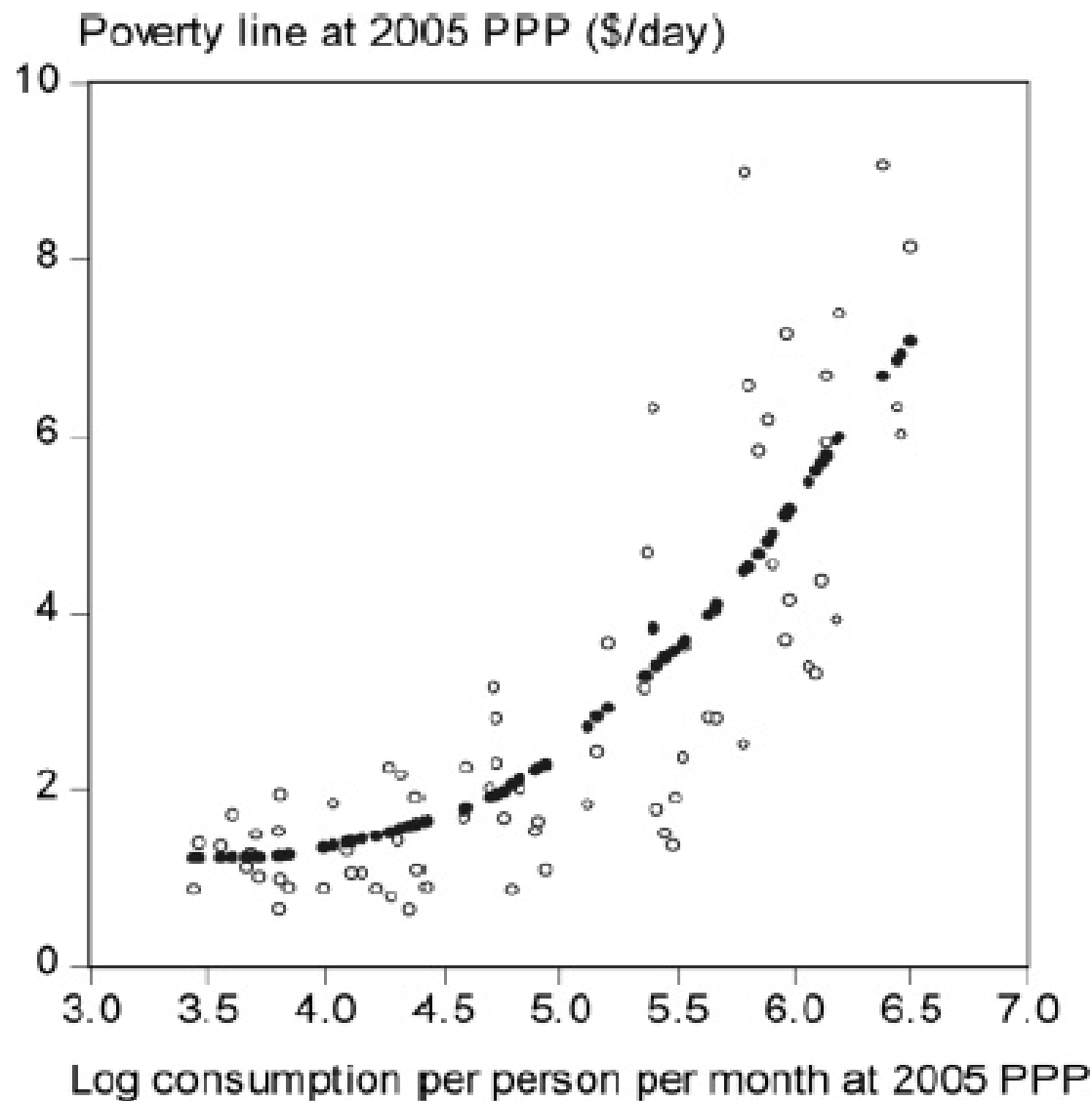


FIGURE I

National Poverty Lines Plotted against Mean Consumption at 2005 PPP
Bold symbols are fitted values from a nonparametric regression.

TABLE 3.—POPULATION-WEIGHTED GROWTH RATES, 1990–2000: REAL CONSUMPTION OR REAL INCOME, VARIOUS MEASURES, NON-OECD COUNTRIES

	Growth Rate (%/yr)			
	Surveys with Consumption Preference	Surveys with Income Preference	PWT6.1, Matching Surveys by Year and Country	PWT6.1, all Survey Countries
Regression of log on time	1.9	4.0	3.8	2.8
Average rate of growth	2.3	5.0	4.5	2.8

Notes: Columns 1 and 2 show the growth rates of population-weighted survey means. In column 1, whenever there is both an income and a consumption mean for a country year pair, consumption is used. In column 2, whenever there are two surveys, preference is given to income. In both cases, survey means are converted to a constant-price PPP basis by dividing by the product of the U.S. CPI and the consumption PPP exchange rate from the Penn World Tables, Version 6.1 (PWT6.1). For each year from 1990 to 2000, a population-weighted average of the survey means is calculated: note that these averages involve different countries in different years (see table 1). The growth rates are then calculated in two ways, by regression of the logarithm on a time trend (first row) and by calculating the average change in the logarithm over the period. These can be quite different when the series is noisy, as is the case here, because countries come in and out of the average. Columns 3 and 4 show comparable population-weighted growth rates for real PPP (chain-weighted) consumption from PWT6.1. In column 3, consumption from PWT6.1 is used only for country year pairs for which a survey mean exists; this column therefore shares the variability in columns 2 and 3 that comes from the varying selection of countries. Column 4 shows the population-weighted growth rates for consumption from PWT6.1 using all countries for which there ever exists a survey.

FIGURE 3.—LOGARITHMS OF POPULATION-WEIGHTED AVERAGES OF CONSUMPTION OR INCOME

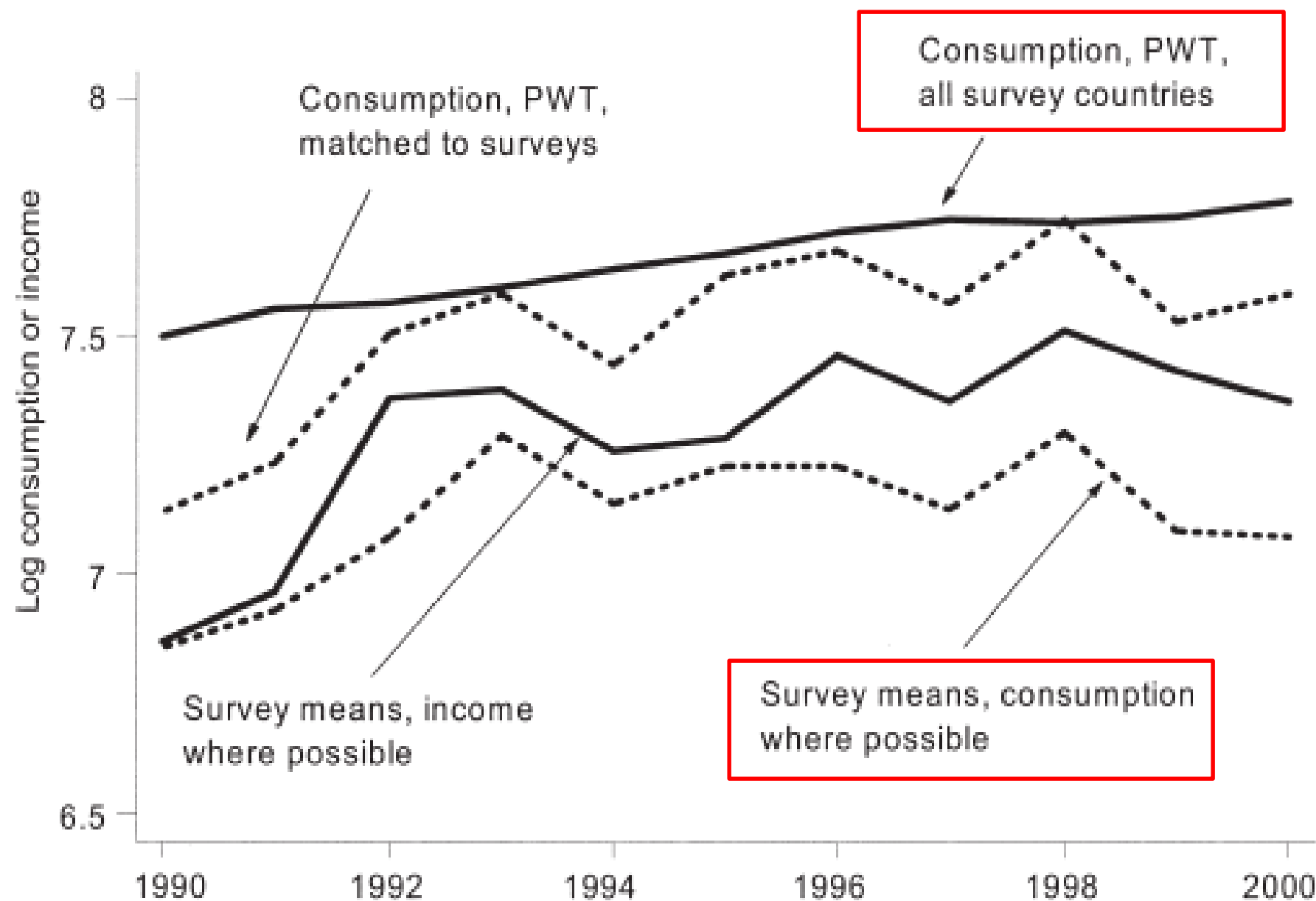
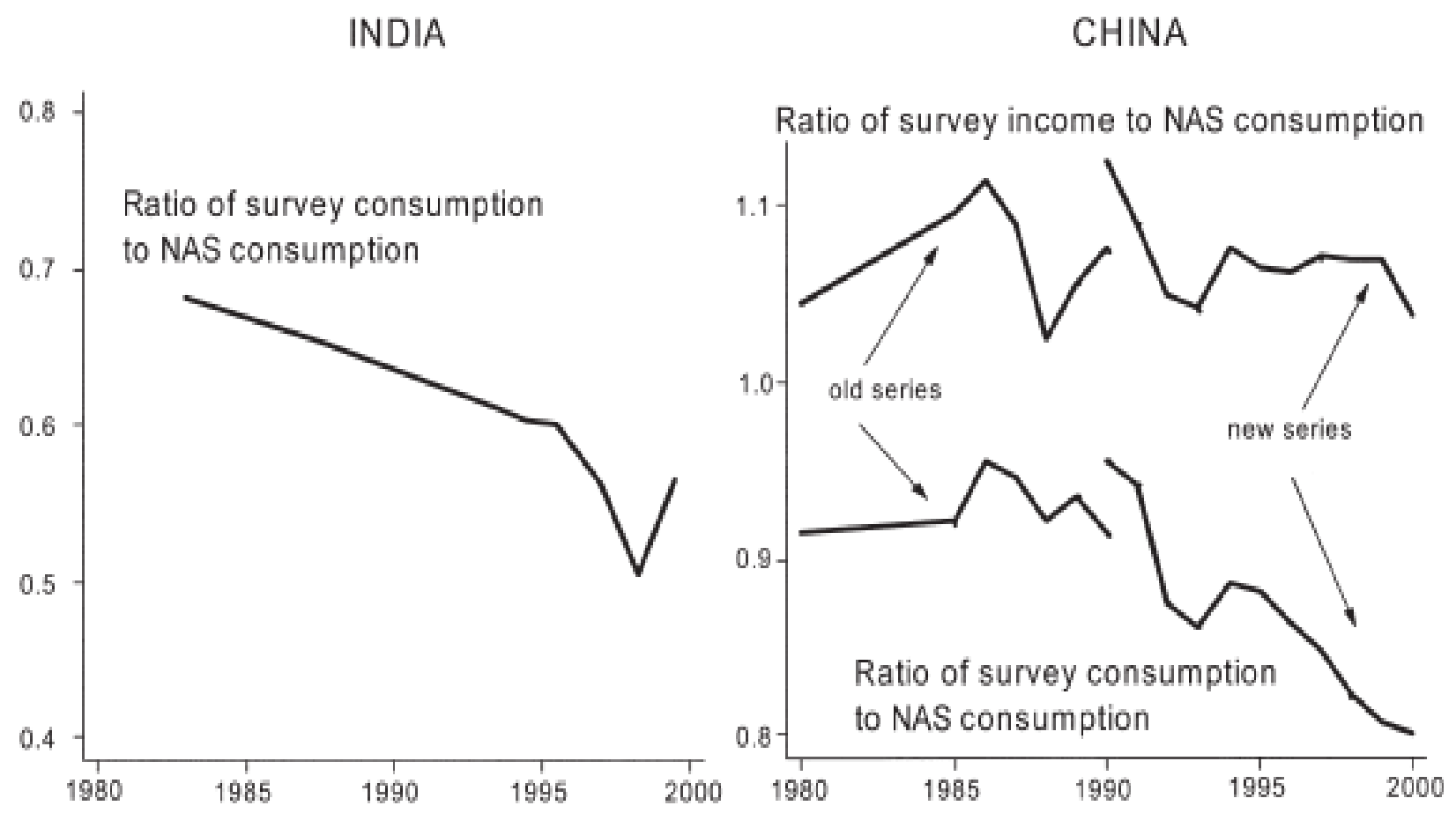


FIGURE 4.—RATIOS OF SURVEY MEANS TO NATIONAL ACCOUNTS MEANS OF CONSUMPTION AND/OR INCOME PER HEAD, INDIA AND CHINA



Whiteboard



Next week

- For next week's lecture, please focus on the Haushofer and Shapiro (2013) and Mani et al (2013) articles, but also read the short piece by Haushofer and Fehr (2014).
- Building on this week's lecture, please read the articles for Lecture 1B during the President's Day holiday week. These dive more deeply into the question of historical shocks and persistence, focusing on the specific case of African development.
- The first problem set is due in two weeks (February 9th), on the Frank Schilbach article. (He is giving a job talk at Berkeley on Friday.)