

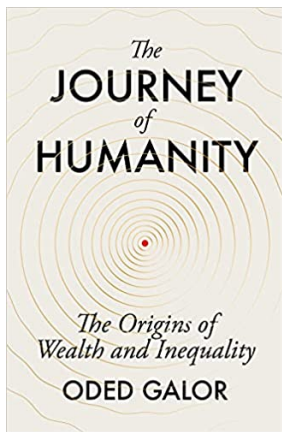
The Journey of Humanity

Roots of Wealth and Inequality

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The World Bank

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Mysteries of the Journey of Humanity

- The Mystery of Growth
 - What are the roots of the dramatic transformation in living standards in the past centuries, after hundreds of thousands of years of stagnation?
- The Mystery of Inequality
 - What is the origin of the vast inequality in the wealth of nations?

The Journey of Humanity

Over most of human existence

- Human life was "*Nasty, Brutish & Short*" (Hobbes, 1651)
 - Remarkably similar to that of other species:
 - Humans were preoccupied by survival & reproduction
 - Living standards were near subsistence
 - Minor differences in living conditions across time & space

Living Standards Few Centuries Ago

- 1/4 of new born died before reaching their first birthday
- Numerous women perished during childbirth
- Life expectancy rarely exceeded 40
- 'Economic Crisis' \Rightarrow 'Belt-tightening'
 - \Rightarrow Mass starvation & Extinction

Metamorphosis

- Over the past two centuries
 - Dramatic transformation in living standard within & across societies
 - World's income per capita has increased 14-fold
 - Life expectancy has more than doubled
 - Great divergence in income per capita across countries

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

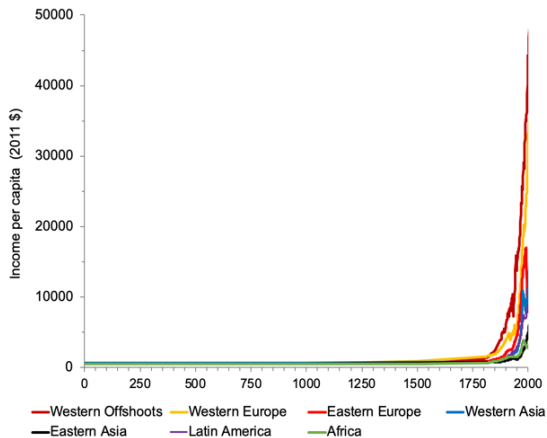
- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable
 - Technological improvements would be merely incremental
 - Occupations would require similar skills
 - Life expectancy would remain largely unchanged
- From Jerusalem in the 19th century to Jerusalem today
 - Shocking experience
 - Past knowledge would be largely obsolete
 - Modern technologies would appear as a witchcraft
 - Occupations would require incomprehensible skills
 - Life expectancy would double & require future-oriented mindset

Evolution of Living Standards across the Globe

In contrast to conventional wisdom

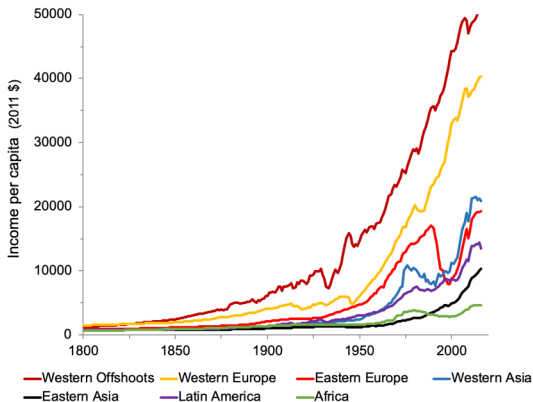
- Living standards had *not* increased *gradually* in the course of history
 - Technological progress accelerated *gradually* over time ...But
 - Had a negligible impact on living standards over most of history
 - The recent rise in living standards reflects a *phase transition*
 - Abrupt transformation, once a tipping point was reached

Metamorphosis: Income per Capita: 1–2020



Data Source: Maddison Project (2020)

Great Divergence: 1800–2018



Data Source: Maddison Project (2020)

Resolution of these Mysteries

- Requires the identification of:
 - Forces that permitted the transition from stagnation to growth
 - The origins of the differential timing of the transition across the globe
 - The role of historical pre-historical factors in this process
- Provides important insights about:
 - Design of strategies to mitigate inequality across the globe

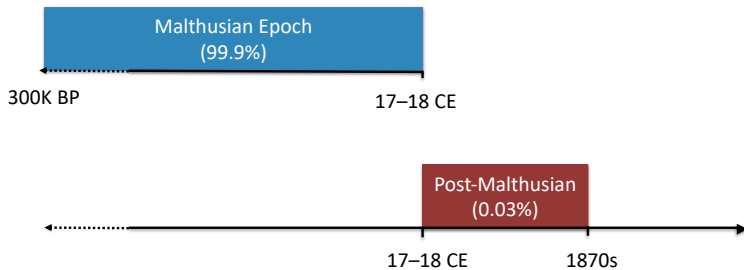
Phases of Development

- The Malthusian Epoch
- The Post-Malthusian Regime
- The Modern Growth Regime

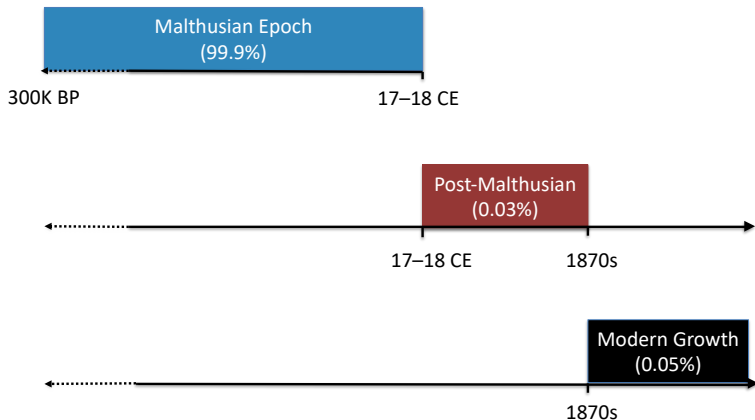
Phases of Development: Timeline in the Most Developed Economies



Phases of Development: Timeline of the Most Developed Economies



Phases of Development: Timeline of the Most Developed Economies



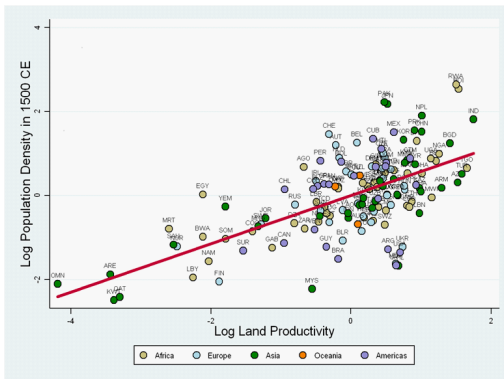
The Malthusian Epoch

- Dualism: Stagnation & Dynamism:
 - Stagnation in living standards:
 - Income per capita: fluctuated near the subsistence level
 - Life expectancy: fluctuated in the range of 25-40 years
 - Dynamism (Slow at any point in time, but sizable over 300,000-year period):
 - Technological progress
 - Population growth
 - Adaptation
 - Malthusian dynamism
 - Ultimately triggered the transition from stagnation to growth

Malthusian Dynamism – Impact of Technological Progress on Population

- Technological progress
 - \Rightarrow Increased income per capita in the short-run
 - \Rightarrow Population grew: Mortality declined & fertility increased, as long as income above subsistence
 - \Rightarrow Income per capita inevitably reverted back to its long-run level
- Technologically advanced & land-rich economies had:
 - Higher population density
 - But similar levels of income per-capita in the long-run

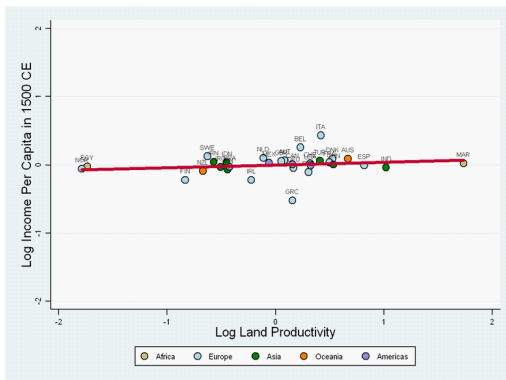
Land Productivity and Population Density in 1500



Conditional on transition timing, geographical factors, and continental fixed effects

Source: Ashraf-Galor (AER 2011)

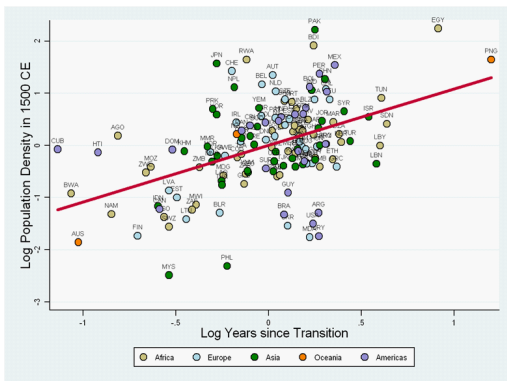
Land Productivity and Income per Capita in 1500 CE



Conditional on transition timing, geographical factors, and continental fixed effects.

Source: Ashraf-Galor (AER 2011)

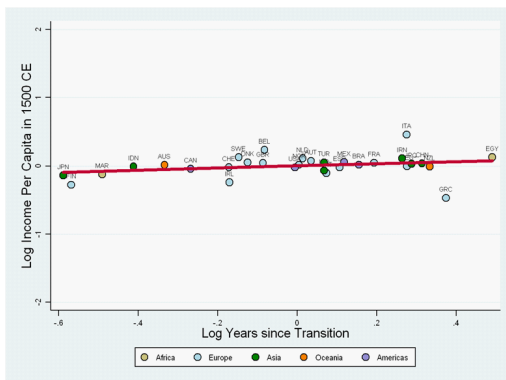
Technology and Population Density in 1500



Years elapsed since the Neolithic Transition is a proxy for technological levels in 1500.
 Conditional on land productivity, geographical factors, and continental fixed effects.

Source: Ashraf-Galor (AER 2011)

Technology and Income per Capita in 1500



Years elapsed since the Neolithic Transition is a proxy for technological levels in 1500.
 Conditional on land productivity, geographical factors, and continental fixed effects.

Source: Ashraf-Galor (AER 2011)

Malthusian Dynamism – Impact of Technological Progress on Adaptation

- The Malthusian pressure affected
 - The size of the population
 - The composition of the population
- Traits that were complementary to the growth process
 - Generated higher income
 - \Rightarrow Higher reproductive success
 - \Rightarrow Became more prevalent in the population
- Adaptation
 - Raised the prevalence of complementary traits to the growth process
 - Reinforced the process of development & the ultimate take-off

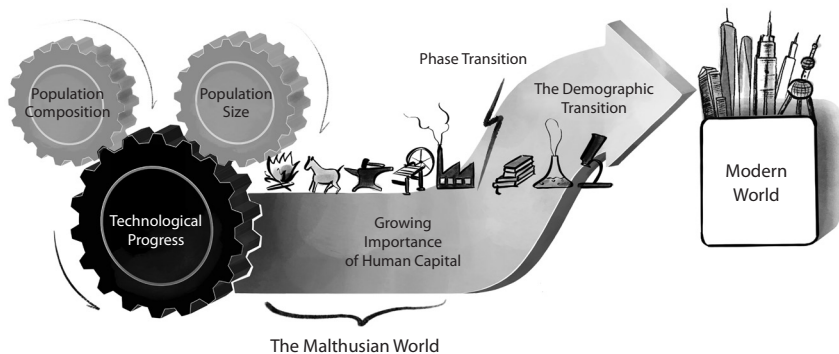
Malthusian Dynamism – Origins of Technological Progress

- The size & composition of the population fostered technological progress via:
 - Supply of innovations
 - Demand for innovations
 - Diffusion of knowledge
 - Division of labor
 - Extent of trade

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow Population size & composition
- Technological progress accelerated & ultimately reached a critical threshold
 - Human capital became essential to cope with the changing environment
- Human capital formation triggered a reduction in fertility
 - The Malthusian equilibrium vanished
 - Growth was freed from the counterbalancing effect of population
- Tech progress & human capital formation & decline in population growth
 - \Rightarrow Sustained economic growth

The Wheels of Change



The Cogs of Change

Phase Transition



The March of Humanity

The March of Humanity has been thus far unstoppable

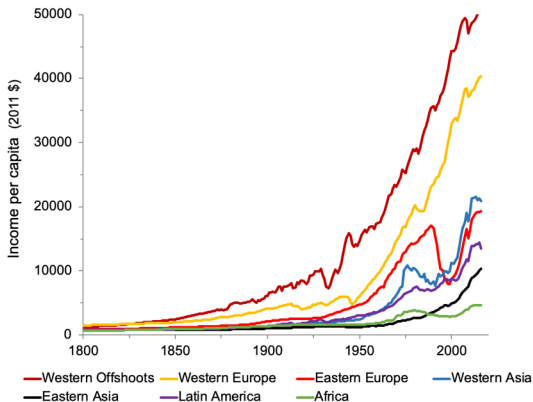
- Shattering & dreadful events (World Wars I & II, The Great Depression, The Spanish Flu & Covid-19)
 - Devastated humanity in the short-run
 - But had a limited impact on the grand arc of human development
 - Living standards swiftly recovered from these catastrophes
- The humanitarian crisis in Ukraine is devastating
 - But history suggests that it very unlikely to derail humanity from its path

Will Climate Change Derail Humanity from its Relentless March?

The Journey of Humanity provides a hopeful outlook:

- Technological acceleration:
 - → Industrialization & Climate change
- Technological acceleration also:
 - → Human capital formation & the power of innovation
 - As the world experienced in the context of Covid-19
 - → Persistent decline in fertility rates
 - Mitigating the pace of climate change
 - Providing time for advancements of revolutionary technologies
 - May turn this climate crisis into a fading memory

Roots of Global Inequality



Data Source: Maddison Project (2018)

Proximate Causes of Uneven Development

- Cross-country differences in:
 - Human capital accumulation
 - Physical capital accumulation
 - Technological Levels
- But why some societies fail to:
 - Efficiently invest in physical and human capital
 - Adopt advance technologies?

Historical and Pre-Historical Barriers for Development

- Deeper Roots:
 - Institutional & Cultural characteristics
- Ultimate Roots:
 - Geographical & Societal characteristics

The Fingerprints of Institutions

- Emergence of differential institutions: (North; Engerman-Sokoloff, Acemoglu-Robinson)
 - Growth-enhancing inclusive institution
 - Growth-retarding extractive institution
- Yet institutions are rarely 'manna from heaven'
 - Institutions had (sometime) emerged at random 'critical junctures'
 - The Black Death's impact on the decline of Feudalism in UK
 - The Glorious Revolution & Constitutional Monarchy (England 1688-9)
 - Division of Korea (along the 38th parallel)
- Institutions have mostly evolved gradually
 - The Neolithic Revolution → population density → institutions
 - Soil suitability for large plantation → extraction & slavery
 - Disease environment → delayed adoption of centralized institutions

The Cultural Factor

- Emergence of differential cultural traits across regions:
 - Growth-enhancing traits - social capital (Putnam, 1993)
 - Growth-retarding traits – family ties (Banfield, 1958)
- But cultural traits are also not manna from heaven
 - Instances of random growth-enhancing cultural mutations are rare
 - Judaism: Mandatory literacy in the 1st century CE
 - Protestantism: Emphasis on thrift & entrepreneurship (Weber, 1905)
 - Culture largely evolved and adapted to the environment
 - Return to HC → Predisposition to child quality (Galor-Moav QJE 2002)
 - High Crop Yield → Future-oriented mindset (Galor-Ozak, AER 2016)
 - Climatic volatility → Loss aversion (Galor-Savitskiy, 2020)
 - Plow suitability → Gender bias (Boserup, 1970; Alesina et al., QJE 2013)

The Shadow of Geography

- Geographical characteristics: (Soil quality, Climate, Disease environment, Isolation)
 - Indirect (long shadow) impact on
 - The evolution of cultural & institutional characteristics
 - Direct impact (mitigated by technological diffusion (medical, transportation & IT) Sachs et al. 1999)
 - Labor productivity
 - Human capital formation
 - Trade & Technological progress

The Legacy of the Agricultural (Neolithic) Revolution (10,000 BCE)

- The transition from hunter-gatherer tribes to agricultural communities
 - Emergence of non-food-producing class:
 - \implies Knowledge creation (science, technology & written languages)
 - \implies Technological head start
- Variations in the timing of the NR are the origins of global inequality: (Diamond, 1997)
 - Evidence:
 - Past: Significant impact
 - Present-day: No impact

The 'Out of Africa' Hypothesis of Comparative Development

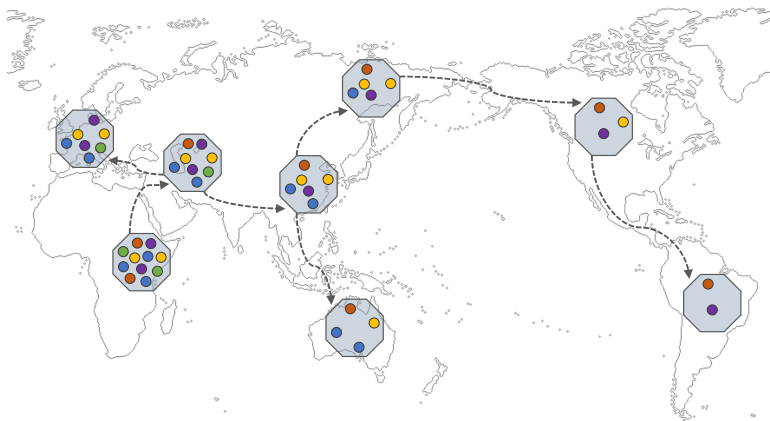
- The migration of Homo sapiens out of Africa 60,000-90,000 BP:
 - Affected the distribution of population diversity across regions:
 - comparative development (Ashraf and Galor, AER 2013)

Declining Diversity

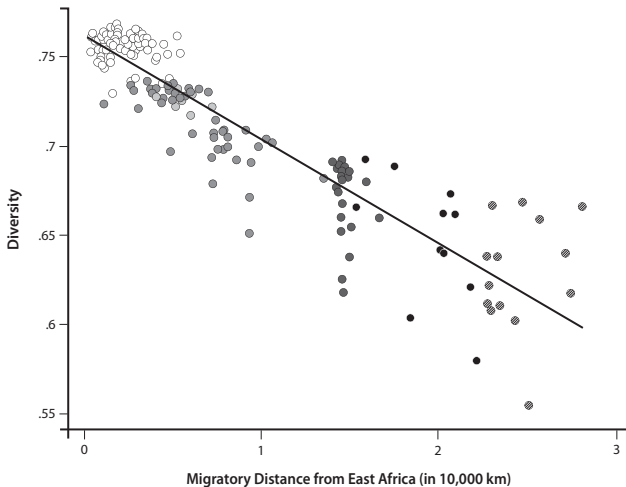
During the exodus of modern humans from Africa

- Departing populations:
 - Carried a subset of diversity of their parental colonies
 - cultural, phenotypic, behavioral & linguistic
 - Migration was sequential
 - Lower diversity among ancestral populations at greater migratory distances from East Africa

An Illustration of the Serial Founder Effect



Migratory Distance from Africa and Population Diversity



○ Africa ● Europe ● Asia ● Oceania ● N. America ● S. America

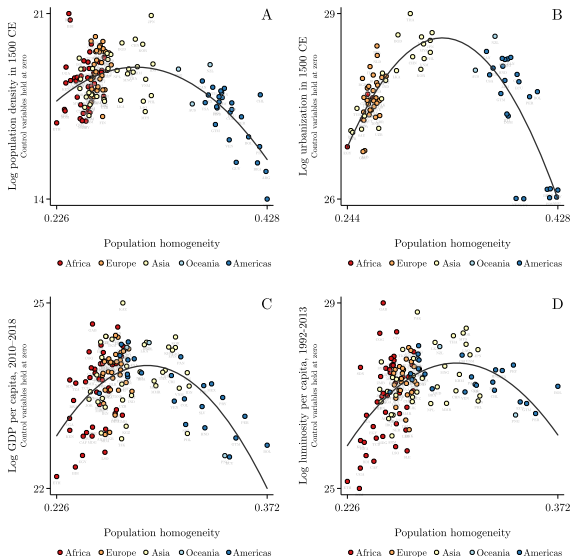
Conflicting Effects of Diversity

- Beneficial effects on creativity and innovations
 - Cross-fertilization & complementaries in the production process
- Adverse effects on social cohesiveness
 - Mistrust
 - Disagreement about the desirable public goods
 - \implies conflicts

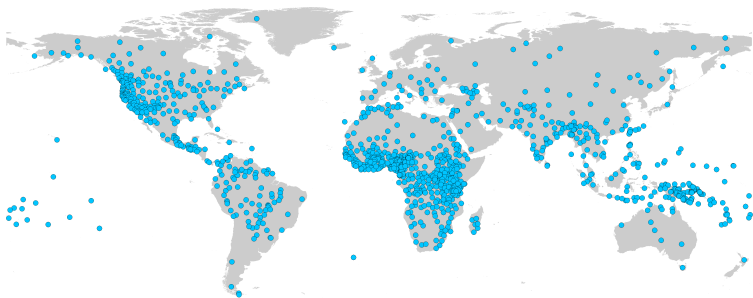
Growth Enhancing Diversity

- Positive & diminishing effects of:
 - Diversity on innovations
 - Homogeneity on social cohesiveness
 - \implies A hump-shaped relationship between diversity & development

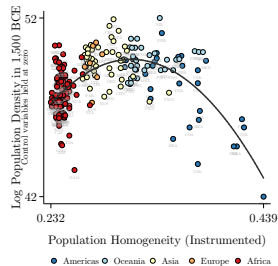
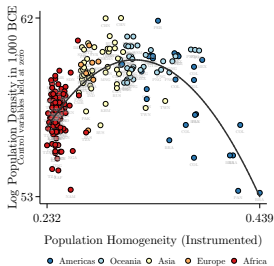
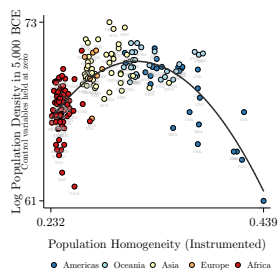
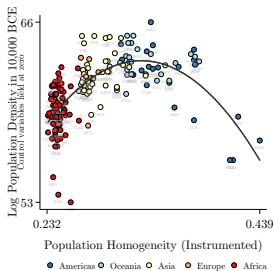
Diversity and Comparative Development



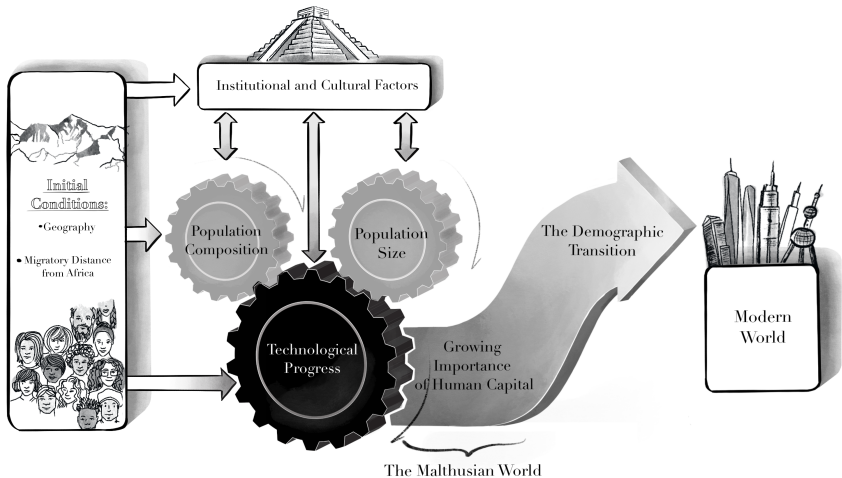
Diversity - 1265 Ethnic Groups



Diversity and Population Density 10,000 BCE - 1500 CE



Determinants of the Pace of the Wheels of Change



Roots of Comparative Development

- Deep rooted factors accounts for most of the cross-country variation in income per capita – 86%
 - The dispersal of humans out of Africa – 17% - 26%
 - Time since human settlement & the Neolithic Revolution – 3%
 - Geo-climatic factors – 27% - 38%
 - Disease ecology – 9% - 14%
 - Cultural factors – 20% - 22%
 - Political Institutional (executive constraints & Polity IV) – 3% - 9%

Is History a Fate?

- The Journey of Humanity
 - *"History is not a fate"*
 - *"Considering our history will permit us to design of our future"*
- Growth-enhancing policies:
 - Country-specific
 - History-specific
 - Geography-specific
 - One policy does not fit all nations

History-Dependent Growth Enhancing Education Policies

- Diversity
 - Social cohesiveness & tolerance – in diverse societies
 - Challenging the status-quo & Pluralism – in homogeneous societies
- Fostering growth-enhancing cultural traits
 - Future-oriented mindset
 - If native crops were not conducive for agricultural investment
- Progressive policies hold the key for universal prosperity
 - Gender equality, tolerance & diversity

The Journey of Humanity – Published Simultaneously in 30 Languages

