Why Development Needs History

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It is true that history is useful for understanding economic development.

- Provides more data to analyze.
- Historical experiences of rich countries is informative for developing countries.
- Provides the ability to look at medium- and long-run impacts.
- Provides natural experiments (especially useful for things we can’t randomize).

But, I want to argue more: that history is necessary for understanding economic development. Without it, our understanding of economic development is incomplete (at best).
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The Evolution of Regional Incomes

Levels of Per Capita GDP, 1000-1998

Year

1990 International Dollars

West. Offshoots

Western Europe

Latin America

Asia

Africa

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Europe, and is quite different in nature from the European growth that took place before 1500. Not all societies with access to the Atlantic show the same pattern of growth, however. The data suggest an important interaction between medieval political institutions and access to the Atlantic: the more rapid economic growth took place in societies with relatively nonabsolutist initial institutions, most notably in Britain and the Netherlands. In contrast, countries where the monarchy was highly absolutist, such as Spain and Portugal, experienced only limited growth in the subsequent centuries, while areas lacking easy access to the Atlantic, even such nonabsolutist states as Venice and Genoa, did not experience any direct or indirect benefits from Atlantic trade.

Figures 1 and 2 illustrate the central thesis of this paper. Figure 1, panel A, shows that urbanization in Western Europe grew significantly faster than in Eastern Europe after 1500. Figure 1, panel B, shows that these differences persisted over time.
Africa’s Slave Trade (Nunn, 2008)

Slave exports normalized by land area

Average income per person in 2000

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Partial correlation plot: slavery in 1750 and income in 2000

\[ \text{coef} = -2.63, \text{se} = .42, t = -6.23 \]
The Shift from Sail to Steam (Pascali, forthcoming)

Figure 4: Shipping Routes by sailing ships
The figure depicts 15 journeys made by British ships between 1800 and 1860. These journeys were randomly selected from the CLIWOC dataset among all voyages between England and Java comprised in the dataset.

Figure 5: Total tonnage of British vessels entered in British ports from and to foreign countries and British possessions
Source: Statistical Abstract for the United Kingdom (various years from 1851 to 1901)

(a) Tonnage of vessels entering British ports

(b) Prevailing January winds
Traditional Views on Economic Development

1. Short-run factors like: capital, health, education, and policies.
2. More fundamental slow-moving factors like: domestic institutions, social norms, or cultural traits.
3. Geography.
4. Policies, foreign aid, and RCTs.
Dispersion of Income and Investment (Grier and Grier, 2007)

2.2. Sub-sample results: the rich vs. the developing countries

In this section, we split the sample into two groups; the 22 richest and the 68 developing countries and re-do our analysis of the dispersion of output and of the determinants of the steady state separately for each group. When it comes to output dispersion, the difference between the two groups is striking. As Panels B and C of Fig. 1 show, the rich country income dispersion falls rapidly until 1980 and then remains generally flat after that point with a net decline of about 33%. In contrast, the developing country dispersion rises steadily throughout the sample for a net increase of around 28%.9,10 Obviously, the rich countries' dispersion data exhibit a significant negative trend, while the developing countries' dispersion data exhibit a very strong positive trend.11

We now turn to a comparison of the evolution of investment rates in physical and human capital, the key determinants of the steady state in the neoclassical model. These results are shown in Panels B and C of Fig. 2 and in Fig. 6. In both country groupings, the investment and education variables are converging (in the sense that they have a significantly negative time trend), or at least not diverging over time. We do not see the same big difference in the evolution of dispersion of inputs that we saw in the dispersion of output between these two groups.

Fig. 2. The dispersion of investment rates in the full sample and across income groups.

9 As per footnote 2, income per worker may be a more appropriate variable for the NGM. We repeat this sub-sample analysis for income per worker and find the same results as those reported in the text for per-capita income. The results are displayed in Appendix B.

10 As per endnote 3, we redo this experiment using the coefficient of variation (CV) and find the same results. The CV of income is significantly falling in the rich country sample and significantly rising in the developing country sample. These results are presented in Appendix C.

11 We have followed common practice here and identified the rich countries as the currently rich countries. This creates selection bias in favor of finding convergence, as DeLong (1988) argued. If we choose instead the 22 richest countries in 1960 as our rich group, then both the rich and developing sub-samples significantly diverge over the sample. These results are presented in Appendix D. We thank an anonymous referee for reminding us of this point. Thus, the convergence in inputs and policies along with output in our ex post rich country sub-sample is not unambiguous evidence in favor of the NGM or of any notion of club convergence. We use this split as it is one that many researchers are familiar with and the clashing pattern of convergence between the two groups facilitates searching for relevant explanatory variables in later sections of the paper.
Panel B and C of Figs. 4 and 5 examine the behavior of government spending and openness across the two country groupings. Again, both sub-samples show significant convergence behavior. When we again consider inflation and the black market premium, we find no evidence of divergence over time for either series in either country grouping. The 22 rich countries evolve in a manner consistent with the neoclassical model, but the 68 developing countries present striking evidence against the model.

2.3. What about papers finding conditional convergence?

We have shown that investment rates and economic policies are converging around the world at the same time that output is diverging. Thus, we find no evidence of conditional convergence (assuming a common growth rate of technology) in either our full sample of countries or the 68 developing country sub-sample. Yet, there is a literature claiming evidence in favor of conditional convergence.

While our results are novel, we are not the only ones questioning the utility of the neoclassical model. Hausmann et al. (2005) argue that the standard growth variables used in the literature are not very helpful in explaining growth accelerations, while Pritchett (2003) argues for a portfolio of models that apply to different stages of the development process.
Dispersion of Policies

Well known papers include Mankiw et al. (1992), Sala-i-Martin (1996), Islam (1995), and Caselli et al. (hereafter CEL, 1996).

While a full blown discussion of the relative merits of our approach compared to the traditional approach is beyond the scope of this present paper, we can note that (1) a lot of the pro-conditional convergence regression evidence is cross-sectional and the cross-sectional growth regression approach has been cogently criticized by Friedman (1992), Quah (1996) and Durlauf (2003), among others; (2) In a panel context, Islam rejects the augmented NGM (by finding a negative and significant coefficient for education), as do CEL. However, they go on to interpret the coefficients of the model with respect to the NGM. In our view, once the underlying theoretical model is rejected, it is difficult to interpret estimated coefficients strictly as the rejected model would prescribe. That is to say, variables they interpret as having level effects may in fact be having growth effects; (3) The regression models all impose parameter homogeneity on the data.

Fig. 4. The dispersion of government spending in the full sample and across income groups.

13 Durlauf (2003, p. 10–11) makes this point very well: “Can the presence of such factors as being interpreted as consistent with convergence? Users of cross-country growth regressions who wish to interpret them as describing neoclassical growth dynamics typically argue that (they) capture level differences in production functions across economies. However, this is merely an assertion; the presence of such factors can just as easily be interpreted as occurring due to differences in long run growth rates. Similarly, it is an assertion to suggest that these variables are simply proxies that facilitate the correct measurement of technology and preferences, unless one stretches the meaning of technology and preferences beyond what economists generally mean by them.

In other words, if we lose the theoretical anchor of the Solow model, the interpretation of policy variables in the growth equation becomes problematic.


(a) Government spending

Grier and Tullock (1989) test for and reject such homogeneity in the Penn World Tables data; and (4) Lee, Pesaran, and Smith (1997) argue that the data support the idea of idiosyncratic long run growth rates.

3. Thinking outside the (neoclassical) box

To summarize our results to this point, we can say that for our 90 country sample in general and the 68 developing country sub-sample in particular, we see no evidence of either absolute or conditional convergence. In both these samples, output is diverging while the neoclassical determinants of the steady state (and some important policy variables) are converging. In this section, we attempt to turn the analysis from the negative toward the positive by investigating other models or variables that may be consistent with the finding that the rich countries are converging while the others are diverging.

3.1. R&D and technology diffusion

The first case under consideration is that of technological diffusion, where at least part of the diffusion depends on a country’s own research and development efforts. Specific relevant papers include Parente and Prescott (1994), Eaton and Kortum (1996), Howitt (2000) and Klenow and Rodríguez-Clare (2005). In these models, with other relevant factors held constant, incomes

Fig. 5. The dispersion of openness in the full sample and across income groups.


(b) Openness to trade: (X+M)/Y

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Traditional Views on Economic Development

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Thus, our cross-cultural results are consistent with existing findings on demographic variables. However, there is intriguing evidence that younger children behave more selfishly, but gradually behave more fair-mindedly as they grow older, up to age 22 or so (Harbaugh & Krause 2000; Harbaugh et al. 2002; Murnighan & Saxon 1998). An important exception is that about one-third of autistic children and adults offer nothing in the UG (Hill & Sally 2004); presumably their inability to imagine the reactions of responders leads them to behave, ironically, in accordance with the canonical model.

Behavioral economists have been remarkably successful in explaining the experimental behavior of students by adding social preferences (especially those related to equity, reciprocity, and fairness) to game theoretical models (Camerer 2003; Fehr & Schmidt 1999). Our endeavor aims at the foundation of these proximate models by exploring the nature of non-selfish preferences.

3. The cross-cultural behavioral experiments project

Early cross-cultural economic experiments (Cameron 1999; Roth et al. 1991) showed little variation among university students. However, in 1996 a surprising finding broke the consensus: the Machiguenga, slash-and-burn horticulturalists living in the southeastern Peruvian Amazon, behaved much less prosocially than student populations around the world (Henrich 2000). The UG “Machiguenga outlier” sparked curiosity among a group of behavioral scientists: Was this simply an odd result, perhaps due to the unusual circumstances of the experiment, or had Henrich tapped real behavioral differences, perhaps reflecting the distinct economic circumstances or cultural environment of this Amazonian society? In November 1997, the MacArthur Foundation Research Network on the Nature and Origin of Preferences brought 12 experienced field workers and several behavioral economists together in a three-day workshop at UCLA. During this meeting we redesigned the experiments – typically conducted in computer labs at universities – for field implementation in remote areas among nonliterate subjects. Two years later, when all of our team had returned from the field, we reconvened to present, compare, and discuss our findings. Here we summarize the findings to this point (a second phase is currently underway).

3.1. The experiments

Overall, we performed 15 ultimatum, 6 public goods, and 3 dictator games, as well as 2 control experiments in the United States at UCLA and at the University of Michigan. All of our games were played anonymously, in one-shot interactions, and for substantial real stakes (the local equivalent of one or more days’ wages). Because the UG was administered everywhere, we will concentrate on these findings and their implications, and make only some references to our other games (see Henrich et al. 2004).

3.2. Ethnographic description

Figure 1 shows the location of each field site, and Table 1 provides some comparative information about the societies discussed here. In selecting these, we included societies both sufficiently similar to the Machiguenga to offer the possibility of replicating the original Machiguenga results, and sufficiently different to test the limits of the canonical model.
The Ultimatum Game

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Variation in UG Offers (Henrich et al., 2005)

The diagram illustrates the distribution of ultimatum game (UG) offers across different societies. It shows a range of offers from 0 to 1, with each society represented by a cluster of data points. The societies are listed along the vertical axis, from top to bottom: Lamalera, Aché, Pittsburgh, Shona, Orma, Au, Achuar, Sangu, Gnau, Tsimane, Kazakh, Torguud, Mapuche, Hadza, Machiguenga, and Quichua. The horizontal axis represents the ultimatum game offer, ranging from 0 to 1. The data points indicate the proportion of offers made by proposers in each society, with the size of the bubbles indicating the frequency of offers within a certain range. The variability in offers across different societies is evident, with some societies showing a wider distribution of offers than others. This graph helps to visualize the cross-cultural variability in economic behavior as measured by the ultimatum game, a tool often used to study fairness and cooperation in experimental settings.
The Lamalera

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The Lamalera

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Historic account suggest that early in the slave trade, those sold into slavery were almost exclusively prisoners of war. Because raids often involved villages raiding other villages, this form of slave procurement often caused relations between villages to turn hostile, even if these villages had previously formed federations or other ties (see for example Inikori, 2000). There are numerous historical accounts, documenting this detrimental effect of the slave trade (see Hubbell, 2001, Azevedo, 1982, Klein, 2001). Heightened conflict between communities over a period of three to four hundred years may have resulted in increased mistrust of those outside of one’s ethnic group.

Table 1. The Method of Enslavement of Koelle’s Informants

<table>
<thead>
<tr>
<th>Manner of Enslavement</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taken in a war</td>
<td>24.3%</td>
</tr>
<tr>
<td>Kidnapped or seized</td>
<td>40.3%</td>
</tr>
<tr>
<td>Sold/tricked by a relative, friend, etc.</td>
<td>19.4%</td>
</tr>
<tr>
<td>Through a judicial process</td>
<td>16.0%</td>
</tr>
</tbody>
</table>

Notes: The data are from Sigismund Koelle’s Linguistic Inventory. The sample consists of 144 informants interviewed by Koelle for which their means of enslavement is known.
Over the past quarter century, women have joined the labor market in increasing numbers, partially closing the gender participation gap (see chapter 1). Between 1980 and 2009, the global rate of female labor force participation rose from 50.2 percent to 51.8 percent, while the male rate fell from 82.0 percent to 77.7 percent. Consequently, gender differences in labor force participation rates declined from 32 percentage points in 1980 to 26 percentage points in 2009.a

Female labor force participation is lowest in the Middle East and North Africa (26 percent) and South Asia (35 percent) and highest in East Asia and Pacific (64 percent) and Sub-Saharan Africa (61 percent) (box map 5.1.1). Despite large cross-regional differences, participation rates have converged over time as countries and regions that started with very low rates (primarily Latin America and the Middle East and North Africa) experienced large increases and those with higher rates (primarily Europe and Central Asia and East Asia and Pacific) experienced small declines (box figure 5.1.1).

The combined effect of economic development, rising education among women, and declining fertility goes a long way in explaining changes in female participation rates over the past 25 years. Globally, economic development has been accompanied by growing economic opportunities for women (particularly in manufacturing and services). And greater trade openness and economic integration have, in many countries, led to significant growth of export-oriented sectors, with some, such as garments and light manufacturing, employing large numbers of women in recent decades (see chapter 6). Both developments have translated into stronger market incentives for women's labor force participation in the form of rising demand for female labor and, in some cases, higher absolute and relative wages.

In addition, economic development has been accompanied by improvements in infrastructure, including electricity, water, roads, and transport, which can alleviate time constraints and reduce the

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**Box Map 5.1.1**

Female labor force participation—Some high rates and some low

<table>
<thead>
<tr>
<th>Countries with the highest FLFPR</th>
<th>Countries with the lowest FLFPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>Yemen, Republic of</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Saudi Arabia</td>
</tr>
<tr>
<td>Rwanda</td>
<td>Syrian Arab Republic</td>
</tr>
<tr>
<td>Madagascar</td>
<td>Pakistan</td>
</tr>
<tr>
<td>Mozambique</td>
<td>Bangladesh</td>
</tr>
</tbody>
</table>

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In addition, economic development has been accompanied by improvements in infrastructure, including electricity, water, roads, and transport, which can alleviate time constraints and reduce other barriers to female labor force participation.

### Female Labor Force Participation Rate

<table>
<thead>
<tr>
<th>Countries with the highest FLFPR</th>
<th>Female Labor Force Participation Rate, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>92%</td>
</tr>
<tr>
<td>Tanzania</td>
<td>89%</td>
</tr>
<tr>
<td>Rwanda</td>
<td>88%</td>
</tr>
<tr>
<td>Madagascar</td>
<td>86%</td>
</tr>
<tr>
<td>Mozambique</td>
<td>86%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Countries with the lowest FLFPR</th>
<th>Female Labor Force Participation Rate, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pakistan</td>
<td>22%</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>22%</td>
</tr>
<tr>
<td>Syrian Arab Republic</td>
<td>22%</td>
</tr>
<tr>
<td>Yemen, Republic of</td>
<td>21%</td>
</tr>
<tr>
<td>Iraq</td>
<td>15%</td>
</tr>
</tbody>
</table>

**Source:** International Labor Organization (2010a).
Origins of Gender Norms (Alesina, Giuliano and Nunn, 2013)
Origins of Gender Norms (Alesina, Giuliano and Nunn, 2013)

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Traditional Plough Use and FLFP

-40 0 40

\( e(\text{Traditional plough use} \mid X) \)

(coef = -12.401, t−stat = -4.18)

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1. Short-run factors like: capital, health, education, and policies.
2. More fundamental slow-moving factors like: domestic institutions, social norms, or cultural traits.
3. **Geography.**
4. Policies, foreign aid, and RCTs.
There are at least two broad categories of mechanisms through which malaria can impose economic costs well beyond direct medical costs associated with the disease, as well as some measure of the income that is foregone as a result of malaria. In effect, traditional studies have used accounting techniques which assume that the economic costs of malaria can be determined by the average cost of an individual episode of illness, multiplied by the total number of cases encountered, and adding any fixed costs expended in vector control, health facilities, education and research. Foregone expenditures on both prevention and treatment of the disease.

The second are macroeconomic costs that arise specifically in situations of high transmission. These include the impact of disease, which can result in broad social costs. These include such factors as expenditures by the government on such factors as schooling, demography, migration and saving. Foregone earnings that would have been earned by those who died prematurely as a result of the disease, based on projected incomes estimated by calculating the capitalized value of future lifetime workdays as a result of malaria and malaria-related illness, based on estimated wages. In the case of mortality, foregone income is estimated by calculating the value of lost income distribution is highly uneven, with average income levels significantly lower in tropical regions.

Figure 2

Geography and Income

GDP per capita 1995
- US$450-1,999
- US$2,000-4,999
- US$5,000-9,999
- US$10,000-15,999
- US$16,000-31,100
- No data

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Historical Impacts of the Tsetse Fly in Africa (Alsan, 2014)

Tsetse flies live today in moist savanna and woodlands, regions with > 500 mm of rain a year.

Tsetse flies carry a parasite which can infect livestock and people with trypanosomiasis (sleeping sickness).
Motivated by the discussion above, the empirical analysis focuses on how the TseTse affected agricultural practices, urbanization, institutions, and subsistence strategies. Panels A and B of Figure 4 provide a visual representation of the reduced-form relationship between many of these outcomes and the TSI by plotting their weighted average by TSI quartile. The main estimating equation is presented below and further explores this within-Africa heterogeneity:

\[
\text{Outcome}_j = \alpha + \delta \text{TSI}_j + X_j' \Omega + \varepsilon_j,
\]

Panel A. TseTse suitability index (1871)
Panel B. Suitability for rainfed agriculture (FAO 2002).

Figure 3. TseTse Suitability Index and the Suitability for Rainfed Agriculture

Figure 4. Weighted Average Precolonial Outcomes by Quartile of TSI

Notes: Panel A shows the historical TseTse suitability index created using climate data from NOAA's 20th Century Reanalysis for the year 1871. Panel B shows the suitability for rainfed agriculture (FAO 2002).
Historical Impacts of Ruggedness (Nunn and Puga, 2011)

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Why History Matters for Policies: An Example

Technical innovations: taylorisation, standardisation, specialization
Blood sampling
Lumbar puncture
Sources: Infocam, Yaoundé, Cameroun
Colonial Medicine Campaigns in Cameroon

A sleeping sickness team at work near Yaoundé, Cameroon (c1954)

Source: Infocam, Yaoundé, Cameroun
Research in progress by PhD students Sara Lowes and Eduardo Montero.

Colonial medical campaigns in Cameroon, primarily targeted trypanosomiasis.

Villagers were required, often at gun point, to submit to physical exams.

Early treatment was atoxyl (sometimes administered to everyone).
  - Caused (at least partial) blindness in 20% of those that were treated.

More past exposure to the colonial medical campaigns (1921-1950) ⇒ higher refusal rates for free DHS-provided blood tests today.
Notes: The data are from the CDC compressed mortality files and represent the black-white difference in age-specific mortality rates. Each mortality rate is calculated by dividing the number of deaths in the relevant population by the at-risk population. The solid (blue) line represents the difference for males, and the dotted (red) line represents the difference for females. The vertical line represents the year "The Tuskegee Study of Untreated Syphilis in the Negro Male" was disclosed. For additional figures, including plots of all other age-specific mortality rates and South only, see the Appendix.
Figure 2 plots proximity measures. Panel A represents distance from Macon County for each SEA calculated using ArcGIS proximity tools. Panel B represents the fraction of black migrants from Alabama by SEA calculated using the 1940 census. Darker tones reflect closer to Tuskegee or a higher fraction of Alabama migrants using 20 natural breaks. The white circle in Panel A demarcates approximately 1000 kilometer radius from Macon County.
A Final Example: Marriage Customs and Education Policies (Ashraf, Bau, Nunn, and Voena, 2016)

(a) Bride price in Indonesia

(b) Bride price in Zambia
Conclusions

While it is true that history is useful for economic development,
I would argue that history is necessary for a complete understanding of economic development.