Cultural distance and income divergence over time

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ABSTRACT

Instead of featuring a long-awaited convergence process, the second half of the twentieth century witnessed a dramatic income divergence across countries. We propose cultural distance between countries as a determinant of this economic divergence. Cultural similarity makes it easier for societies to interact, learn and adopt from one another. Consequently, cultural differences may lead to economic divergence over time as they slow down the adoption of technological and institutional innovations from the frontier countries. We show that the overall economic divergence observed in the world since the 1950s is driven by countries with high relative cultural distance to the technological frontier. In contrast, the income gap among countries with low relative cultural distance remained unchanged over time. Further analysis reveals that a one-unit rise in relative cultural distance to the frontier is associated with an increased income divergence of almost seven units.

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1. Introduction

Average person in the world is four times richer now than in 1950. Continued improvements in living standards in most of the world and the potentials of global convergence inspired optimism among economists that the incomes of developing and advanced economies would eventually converge (Rodrik, 2011). Yet, the gap between rich and poor countries has actually grown over time. Average income gap across countries in 1950 has more than doubled by the end of the century (Fig. 1). For example, in 1950, GDP per capita of the US was nine times that of Bolivia, while it became 15 times larger by 2000. There are exceptions, however, and the ratio of per capita incomes between, for example, the US and Australia or Canada remained fairly constant over the same period, at around 1.2.

The question then is why income differences between some countries continued to widen over time while for others the gap remained stable. Although economic development among nations is often described as a consequence of global integration of markets (Barro and Sala-i Martin, 1992), structural change (Bils and Klenow, 2000), industrial policies, trade, and protection of private property rights (Rodrik, 2011), the causes of economic divergence over time received significantly less attention. Against this background, this paper contributes to the discussion of divergence by
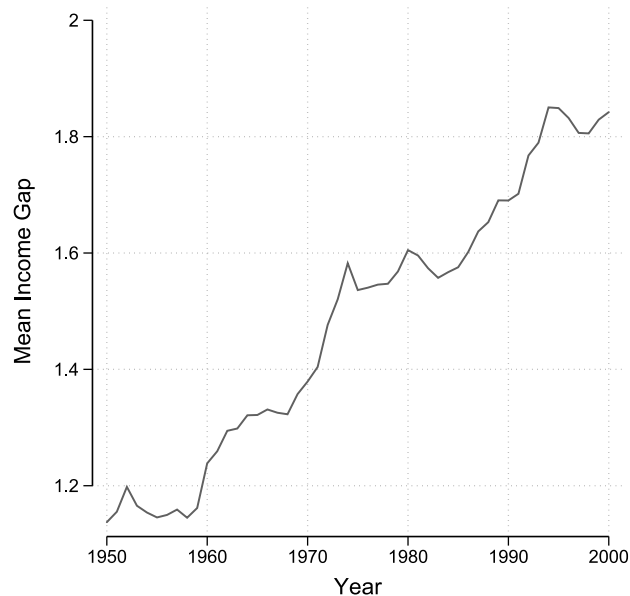
Fig. 1. Mean income gap over time. This figure plots the mean income gap across countries in a given year from 1950 to 2000. Mean income gap is the average of the absolute per capita income gap ($|Log\ Y_i - Log\ Y_j|$) across all countries.

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building on culture-based explanations of socio-economic outcomes (Alesina and Giuliano, 2015). In particular, we propose that cultural distances between countries are partly responsible for the persistent and growing economic divergence. We document that the overall economic divergence observed in the world since the 1950s is driven by countries with high relative cultural distance to the technological frontier. In contrast, income gap among countries with low relative cultural distance remained unchanged over time. Further analysis reveals that a one-unit rise in relative cultural distance to the frontier country is associated with an increased income divergence of almost seven units over 1950 to 2000.

The literature suggests that cultural differences between and within societies can act as a barrier to the diffusion of development through various channels (Alesina and Giuliano, 2015; Nunn, 2012; Spolaore and Wacziarg, 2009). Cultural differences delay and hamper the diffusion and adoption of technological and institutional innovations from the economically leading frontier nations (Spolaore and Wacziarg, 2009), the exchange of goods and services (Gokmen, 2017), capital investment and credit (Burchardi et al., 2018; Fisman et al., 2017) as well as political and economic institutions conducive to economic activity (Alesina and Giuliano, 2015; Greif and Tabellini, 2010; Nunn, 2012).

Moreover, cultural distance retards the income convergence potential of bilateral economic exchange (Bove and Gokmen, 2018; Gokmen, 2017) and integration (Ben-David, 1993).[1] Consequently, culturally closely related societies find it easier to interact and learn from each other, and in turn, adopt innovations developed by one or the other. Thus, highly developed and culturally proximate countries share the most recent technologies and developments, as technological and institutional innovations diffuse first among culturally closer societies. At the same time, more economic exchange and interaction potentially lead to a further reduction in cultural differences among these countries (Maystre et al., 2014). Then, in the past century, countries that were culturally closer to the technological frontier must have had greater economic interaction, reduced their income gap as a result, and also become culturally even closer. In comparison, culturally distant countries must have had less interaction with the technological frontier, lagged behind in terms of income, and become culturally even more distant. This ultimately results in a feedback loop where cultural distance accelerates economic divergence over time between culturally closer, richer countries and culturally distant, poorer countries.[2]

2. Data and estimation

Genetic distance has been established in the literature as a measure of longer-run cultural differences. It measures the distance to the most recent common ancestry and relatedness of two populations (Spolaore and Wacziarg, 2009; Cavalli-Sforza et al., 1994). By estimating when two populations shared common ancestors, genetic distance provides us with a summary of slowly-changing cultural traits that are transmitted intergenerationally within populations over the long run (including norms, habits, customs).[3] Therefore, we employ genetic distance to capture the long-term relative cultural distance of countries to the technological frontier, the US.[4] Income data are from the Penn World Tables. Control variables are from CEPII.[5,6]

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[1] Lest cultural distance should lead to conflict (Bove and Gokmen, 2016; Gokmen, 2019).
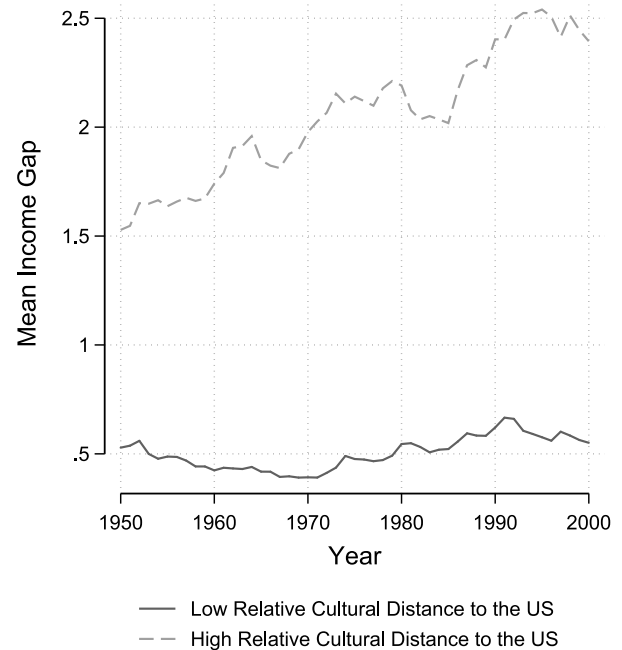
[2] See Appendix A for an illustration.

[3] See Spolaore and Wacziarg (2009) for details.

[4] Data on genetic distance is weighted by the share of population belonging to each distinct ancestral group in each country.

[5] http://econ.sciences-po.fr/node/131.

[6] Table B1 presents summary statistics.

Fig. 2. Mean income gap over time for countries with low and high relative cultural distance to the US. Mean income gap is the average of the absolute per capita income gap ($|Log\ Y_i - Log\ Y_j|$) across countries. Low relative cultural distance countries are within the first decile of relative cultural distance to the US. High relative cultural distance countries are within the tenth decile of relative cultural distance to the US.

Income divergence over 1950–2000 is the change in absolute income per capita gap between 1950 and 2000: $|Log\ Y_i - Log\ Y_j|_{2000} - |Log\ Y_i - Log\ Y_j|_{1950}$. Cultural distance relative to the technological frontier, the US, is the absolute difference in genetic distance of countries i and j from the US: $Relative\ Cultural\ Distance_{ij,US} = |Genetic\ Distance_{US,i} - Genetic\ Distance_{US,j}|$.

We regress income divergence between 1950–2000 on relative cultural distance to the technological frontier, the US, conditional on controls.

$$Income\ Divergence_{ij,2000-1950} = \gamma\, Relative\ Cultural\ Distance_{ij,US}$$
$$+ \alpha_k \tau_{kij} + \epsilon_{ij} \qquad (1)$$

where τ_{kij} represents the k bilateral controls; and ϵ_{ij} is the error term.

3. Results

Fig. 2 plots the evolution of mean income gap over time for countries with high and low relative cultural distance to the US. Low relative cultural distance group includes countries within the first decile of relative cultural distance to the US, while high relative cultural distance subsample comprises of countries within the tenth decile (the sample is restricted to the 1950 countries). We observe that, already in 1950, the average income gap was three times larger across countries with high relative cultural distance to the US than the ones with low relative cultural distance. Nevertheless, this difference in income gaps further widened in the second half of the twentieth century. While the average income gap among countries with low relative cultural distance to the US remained stable over time, that of countries with high relative cultural distance to the US more than doubled. Thus, the observed overall income divergence in Fig. 1 is primarily driven by countries with high relative cultural distance. Note that high

Table 1
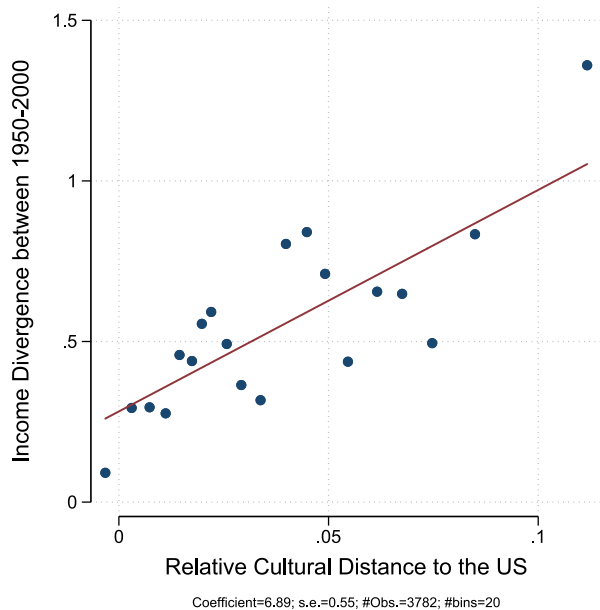Income divergence between 1950–2000 and cultural distance.

	(1)	(2)	(3)	(4)	(5)
Cultural Distance Relative to the US	6.604***	6.875***	6.896***	7.742***	6.933***
	(0.537)	(0.558)	(0.557)	(0.585)	(0.579)
Log distance		Yes	Yes	Yes	Yes
Contiguity			Yes	Yes	Yes
Absolute difference in latitude				Yes	Yes
Absolute difference in longitude					Yes
N	3782	3782	3782	3064	3064

Regressand: Income Divergence between 1950–2000 is the change in absolute income gap between 2000 and 1950: $|LogY_i - LogY_j|_{2000} - |LogY_i - LogY_j|_{1950}$.
Cultural Distance Relative to the US: $|GeneticDistance_{US,i} - GeneticDistance_{US,j}|$.
Robust standard errors in parentheses. $*p < 0.10$, $** \ p < 0.05$, $*** \ p < 0.01$.

Coefficient=6.89; s.e.=0.55; #Obs.=3782; #bins=20

Fig. 3. Income divergence and relative cultural distance to the US. This figure plots the binscatter and the fitted regression of income divergence between 1950–2000 on cultural distance relative to the US, conditional on distance and contiguity.

relative cultural distance pairs are comprised of two countries with low and high cultural distances to the US (e.g. Belgium-Ethiopia), where the former more easily adopts from and interacts with the US compared to the latter, and develops more rapidly as a result.

Fig. 3 and Table 1 provide more compelling evidence on the relationship between income divergence and cultural distance relative to the US over 1950–2000. Fig. 3 shows the fitted regression line with a slope of 6.89, suggesting that a one-unit change in relative cultural distance is associated with an expected increase in income divergence of almost seven units (where incomes are log-transformed). Alternatively, if relative cultural distance between countries increases by one standard deviation, income divergence increases by 0.2 standard deviation. Table 1 presents the remaining regressions of income divergence on relative cultural distance to the US with various controls of geographic isolation and physical barriers.

Note that the relation between relative cultural distance and income divergence grows over time – 1950 as benchmark – with an increase in the magnitude over time (Table B2). Thus, the effect of relative cultural distance as a barrier to development keeps increasing over time.

3.1. Robustness

As geography might capture the spread of innovation and development via travel and communication costs, we control for measures of geographic isolation, physical and environmental barriers (Table B3).

Results are robust to dyadic trade controls of institutional and historical links (Table B4).

To address endogeneity, we instrument current genetic distance with genetic distance in 1500 (Table B5) and also show the reduced-form relationship (see Table B6).

4. Conclusions

Findings suggest that cultural differences across countries contributed to income divergence over time.

Appendix A. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.econlet.2020.109348.

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