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Globalization, cultural distance, and cultural convergence: some new evidence

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Abstract

A small but growing literature has explored the impact of global socio-economic integration on cross-country cultural differences. This paper presents new empirical estimates of the effect of economic and social globalization on cultural distances across countries and time. In a sample of up to 49 countries and 1,163 unique country-pairs, we find that economic globalization, capturing trade and capital flows, is significantly associated with increases in cultural distance across countries, while social globalization is associated with decreases. Interestingly, globalization has little impact on cultural distances on net. The findings are robust to a large number of historical, institutional, and geographic controls.

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1. Introduction

Globalization, typically described as the process of liberalization of international trade and factor flows, has dominated much of the contemporary public discourse as witnessed by the recent "Brexit" referendum and the 2016 U.S. Presidential election. Much of this discourse has centered on cultural concerns, according to which globalization may lead to institutional erosion and the loss of national identity.[1] To provide a (purely positive) analysis of the issue, this paper exploits novel data on generationally disaggregated measures of national culture to estimate the effects of economic and social dimensions of globalization on cultural distances across countries and time.

In a pooled gravity model, we first relate a measure of bilateral cultural distance for 1,163 unique country-pairs across 49 countries to their joint economic and social globalization scores. We then turn to the temporal dynamics of culture and investigate whether countries' cultural distance changed across two non-overlapping generational cohorts (i.e., over time). The main finding is that cultural distance expands in economic globalization but decreases in social globalization, and that younger generations are culturally more alike than their elder counterparts in country-pairs exhibiting greater joint levels of social and lower levels of economic globalization.

In lieu of more granular measures of globalization such as bilateral trade, we conceptualize globalization more broadly as bilateral *exposure*, whereby country-pairs more integrated with the world along economic and social dimensions are also better able to develop economic and social ties with each other, either bilaterally (directly), or through a common partner(s) (multilaterally), as well as through improved capacity for cross-cultural interaction and learning. To measure globalization processes, we rely on the widely used KOF indices (Dreher 2006; Gygli *et al*. 2019), which consider the multifaceted nature of cross-national integration, cooperation, and communication along economic, social, and political dimensions.[2]

Despite growing theoretical treatments on cross-national trade and cultural diversity,[3] the empirical evidence in this area has been scarce. To our knowledge, one recent exception is Maystre *et al*. (2014), who relate bilateral trade volumes to a measure of cultural distance derived from national survey responses to 30 questions drawn from the World Values Survey (WVS). The authors compute dyadic cultural distance by averaging across all 30 questions the probability that two randomly chosen individuals in each country-pair do not share the same cultural value. They find a statistically significant negative correlation between bilateral trade (in both homogenous and differentiated goods) and cultural distance in up to 31 countries and 416 country-pairs between 1989 and 2004.

While Maystre *et al*. (2014) remain agnostic about the choice of specific cultural values by selecting only those questions with best statistical coverage in the WVS, we augment the concept of culture by considering several mutually independent cultural dimensions originally developed by Hofstede (1980, 2001): individualism, power distance, uncertainty avoidance, and indulgence/restraint. Of the above dimensions, individualism, power distance, and uncertainty avoidance have been identified in a burgeoning literature as robust correlates of economic and institutional development across countries (e.g., Gorodnichenko and Roland 2017, Alesina and

[1] An oft-cited example is that of a 1999 French poll in which 60 percent of respondents agreed that globalization represents the greatest threat to the way of life (as cited in Olivier *et al*. 2008).

[2] Note that we do not consider the political KOF dimension in this paper, since the constituent components of this sub-index (e.g., number of embassies and international treaties) fall beyond the scope of theoretical treatments on the subject, or can be viewed as rough proxies for economic and social globalization.

[3] See Bisin and Verdier (2014) for a review.

Giuliano 2015). In that respect, we additionally consider a possible culture channel through which globalization affects economic and institutional development across countries.[4]

2. Data

Hofstede's (1980, 2001) pathbreaking work in cultural profiling of countries is "by far the most used and cited cultural framework in international business, management, and applied psychology" (Alesina and Giuliano 2015, p. 907). Through initial surveys of IBM employees across countries beginning in 1960s, Hofstede and collaborators derived cross-sectional culture scores, measured on a 0-100 scale, that capture "collective programming of the mind" of nations along six orthogonal dimensions: (i) individualism/collectivism, (ii) power distance, (iii) uncertainty avoidance, (iv) masculinity/femininity, (v) long/short-term orientation, and (vi) indulgence/restraint.

Individualism (IND) refers to the sense of responsibility primarily to self and close kin, personal achievement, and individual freedom while its antithesis, *collectivism*, emphasizes conformity and adherence to the community. *Power distance* (PDA) corresponds to a sense of egalitarianism in society; at higher power distance levels, less powerful members of society expect and even accept unequal hierarchies at work, family, and state. *Uncertainty avoidance* (UA) denotes the societies' level of comfort and anxiety towards change and the unknown. The *indulgence-restraint* (IR) dimension measures the degree to which society allows itself gratification and pursuit of pleasure. *Masculinity/femininity* (MAS) captures cultural emphasis on assertiveness as opposed to modesty. *Long-term orientation* (LTO) correlates with patience, thrift, and focus on future reward, while short-term orientation fosters traits focused on past and present, such as preservation of tradition and fulfillment of social obligations.

To obtain time variation in the above cultural dimensions we rely on the replicated Hofstede scores (Beugelsdijk *et al*. 2015). The replicated dimensions are computed using WVS individual-level data by country, collected in 1981-2008, and assigned to two non-overlapping age cohorts born on average 30 years apart for each country: the older cohort, born in 1902-1958 and in 1941 on average, and the younger cohort, born after 1958 and in 1971 on average.

We compute bilateral cultural distance by drawing from four of the five replicated Hofstede dimensions: IND, PDA, UA, and IR.[5] We exclude the LTO dimension, which covers significantly fewer countries. To calculate cross-country cultural distance, we first take the within-country average of dimension scores across both age cohorts. Next, we use Mahalanobis distance to derive a composite measure of cultural relatedness between country-pairs (i, j) along the above dimensions. The Mahalanobis metric improves upon standard Euclidean notion of distance by taking into account the covariances between cultural dimensions.[6] Ignoring these covariances can lead to overestimating distances between culturally similar and distant countries, and underestimating them for countries with moderate cultural differences (Kandogan 2012).

Mahalanobis cultural distance is a scalar given by:

[4] For empirical evidence on the impact of globalization on socio-economic outcomes, see Potrafke (2015).

[5] Replicated culture data borrowed from the 2013 working paper version. The authors do not replicate the MAS dimension. Of the maximal 56 countries for which cultural distances across the four dimensions can be calculated, we are left with 49 countries in our econometric models. Data accessed Nov. 2014.

[6] For example, power distance exhibits significant negative correlation with individualism (r = -0.76) in the data set.

$$Mdist_{ij} = \sqrt{\left(\begin{bmatrix} IND_i - IND_j \\ PDA_i - PDA_j \\ UA_i - UA_j \\ IR_i - IR_j \end{bmatrix}^T S^{-1} \begin{bmatrix} IND_i - IND_j \\ PDA_i - PDA_j \\ UA_i - UA_j \\ IR_i - IR_j \end{bmatrix} \right)}, \quad (1)$$

where $S \neq \sigma^2 I$ is the covariance matrix for the four cultural dimensions.

The independent variables of interest, KOF globalization indices, are given in both *de facto* and *de jure* form, where the former *represents* flows and activities, and the latter *enables* them. We consider two of these indices—capturing economic and social dimensions of globalization—in their full (*de facto* and *de jure*) form to account more broadly for the extent of countries' actual and institutional connectedness with the world. In the KOF data set, countries are observed annually since 1970, receiving a 0-100 score that increases in the levels of globalization along said dimensions. Due to the cross-sectional nature of the dependent variable, we collapse the longitudinally observed KOF indices by taking the simple average over 1970-2010 for each country in the data set.

The KOF *economic* globalization index gauges countries' openness to product and capital flows; it increases in the intensity of trade in goods and services with the world, trade partner diversification, foreign direct and portfolio investments, and international income flows. Its *de jure* component captures the corresponding regulatory burden on goods and capital flows stemming from regulations, taxes, tariffs, investment restrictions, and capital account openness. Alternatively, the KOF *social* globalization index broadly captures the ease with which people, ideas, and information travel across borders. This variable takes into account the flow of international tourism, migration, and foreign students, international voice traffic, and trade in cultural goods. On the *de jure* side, it captures access to information via telephone or internet penetration, press freedom, travel and civil freedoms. Table 1 lists the variables included in the computation of social and economic dimensions of globalization, while Table 2 lists the countries examined in the empirical analysis.

Table 1. Variables in KOF social and economic globalization indices.

KOF economic globalization index	**KOF social globalization index**
De facto	*De facto*
Trade in goods	International voice traffic
Trade in services	Transfers
Trade partner diversification	International tourism
	Migration
Foreign direct investment	Patent applications
Portfolio investment	International students
International debt	High technology exports
International reserves	
International income payments	Trade in cultural goods
	Trademark applications
	Trade in personal services
	McDonald's restaurants
	IKEA stores
De jure	*De jure*
Trade regulations	Telephone subscriptions
Trade taxes	Freedom to visit
Tariffs	International airports
Investment restrictions	Television
Capital account openness	Internet users
	Press freedom
	Internet bandwidth
	Gender parity
	Expenditure on education
	Civil freedom

Source: KOF Institute. https://www.ethz.ch/content/dam/ethz/special-interest/dual/kof-dam/documents/Globalization/2018/Variables_2018.pdf

Table 2. Countries used in the study.

Europe	Asia	Africa	Americas	Oceania
Albania	Armenia	Nigeria	Argentina	Australia
Bulgaria	Azerbaijan	South Africa	Brazil	New Zealand
Belarus	Bangladesh		Canada	
Switzerland	China		Chile	
Czechia	Georgia		Dominican Rep.	
Germany	Indonesia		Mexico	
Spain	India		Uruguay	
Estonia	Iran		United States	
Finland	Jordan		Venezuela	
Croatia	Japan			
Hungary	South Korea			
Lithuania	Pakistan			
Latvia	Philippines			
Moldova	Turkey			
Macedonia				
Norway				
Poland				
Romania				
Russia				
Slovenia				
Sweden				
Ukraine				

***Note*:** $N = 49$.

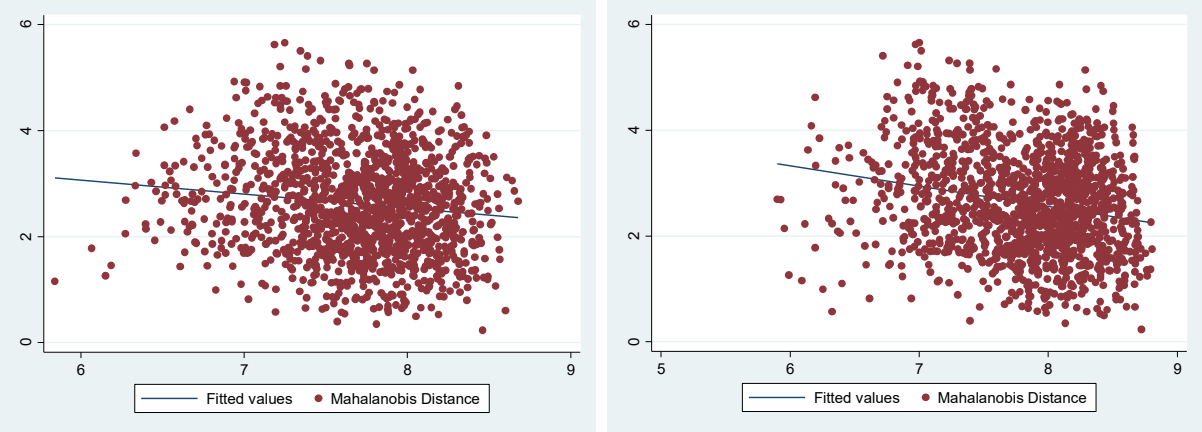
To construct a gauge of joint variation in globalization levels for each country-pair, the country-specific KOF indices enter the bilateral regression equations multiplicatively:

$$Bilateral\ Exposure_{ij} = KOF_i \times KOF_j . \quad (2)$$

This functional form, measuring the extent of bilateral *exposure*, conditions the impact on cultural distance of globalization levels in one country in the dyad on the globalization levels of the other. The idea is that if one country is highly globalized, whereas the other is not, then both countries are less likely to exchange products, people, and ideas. Since KOF scores capture country-specific levels of broad socio-economic openness, the dyadic KOF product captures two different channels through which bilateral cultural connectedness is affected. First, joint KOF indices are, by construction, directly proportional to bilateral socio-economic connectedness; more globalized countries are more likely to directly exchange products, capital, ideas, and people with each other. Second, socio-economic exposure can affect cultural distance between

two countries indirectly, through interaction with a common third partner, and through greater capacity for intercultural encounters, learning, and communication.[7]

Figure 1 depicts univariate relationships between log products of KOF globalization indices (horizontal axis) for all observed country-pairs and their associated Mahalanobis cultural distances (vertical axis). Panel (A) depicts the line of best (linear) fit for the relationship between Mahalanobis distance and the log product of economic globalization. In Panel (B), the relationship is shown for social globalization. Both panels indicate that the unconditional effect of globalization for either dimension is negative, suggesting that increases in the extent of economic and social ties of countries with the world correlate with greater cultural proximity in the examined sample.



Note: Panel (A) depicts the univariate relationship between Mahalanobis cultural distance (vertical axis) and log product of economic globalization index. Panel (B) depicts the univariate relationship between Mahalanobis cultural distance (vertical axis) and log product of social globalization index.

Figure 1. Cultural distance and country-pair globalization, 1970-2010.

3. Empirical Approach

We relate bilateral Mahalanobis cultural distances to dyadic KOF products in the following econometric specification:

$$Mdist_{ij} = \beta \log\left(KOF_i^{econ} \times KOF_j^{econ}\right) + \gamma \log\left(KOF_i^{soc} \times KOF_j^{soc}\right) + \\ + \delta \log\left(\frac{KOF_i^{econ}}{KOF_j^{econ}}\right) + \varphi \log\left(\frac{KOF_i^{soc}}{KOF_j^{soc}}\right) + \omega\left(\frac{GDP_i + GDP_j}{GDP_{world}}\right) + \mathbf{X}'\boldsymbol{\theta} + \alpha + \varepsilon_{ij}, \quad (3)$$

[7] A similar argument is raised in Maystre *et al*. (2014), who use the sum of total (minus bilateral) trade flows of country-pairs divided by the sum of their GDPs to control for the confounding influence of multilateral openness on cultural distance. Rather than a control, we take the multilateral channel, subsumed in KOF indices, as a main mechanism through which cultural distance is determined. However, since KOF indices do not specify the countries with whom countries integrate, increases in joint bilateral exposure can likewise correspond to countries in the dyads integrating with entirely different third countries having either similar or dissimilar cultural types the other country in the dyad. We therefore have no priors on the impact of globalization and let data speak for themselves.

where *Mdist* is the country-pair Mahalanobis cultural distance, **X** is the vector of geographic, institutional, economic, and demographic controls, α is the intercept, and ε is the error term. The semi-elasticities of interest, β and γ, capture the impact of a percentage point increase in the product of country-specific economic and social globalization indices averaged over all years between 1970 and 2010.

We include the control variables $\left(KOF_i^{econ} \middle/ KOF_j^{econ}\right)$ and $\left(KOF_i^{soc} \middle/ KOF_j^{soc}\right)$ for an easier interpretation of the coefficients of interest: holding constant for relative globalization levels, an increase in countries' KOF product implies that *both* countries' KOF scores must increase. Otherwise, an increase in the joint product can come about from an increase in globalization in one country followed by a globalization *reversal* in the other. We likewise isolate the moderating influence of relative "weight" of countries in the global arena by controlling for the joint share of dyadic-to-world real GDP.[8]

To better assess the extent to which globalization is in fact *responsible* for cross-country cultural differences, we exploit the variation in cultural values across the countries' two non-overlapping age cohorts. We take the ratio of cultural distances between each country-pairs' age group, $\left(Mdist_{ij}^{young} \middle/ Mdist_{ij}^{old}\right)$, to capture deviations in bilateral cultural distance across generations (i.e., over time). In that respect, cultural *convergence* between countries over time can be observed as the decrease in this ratio, while *divergence* can be observed as the increase.

We estimate:

$$\frac{Mdist_{ij}^{young}}{Mdist_{ij}^{old}} = \beta \log\left(KOF_i^{econ} \times KOF_j^{econ}\right) + \gamma \log\left(KOF_i^{soc} \times KOF_j^{soc}\right) + \\ + \delta \log\left(\frac{KOF_i^{econ}}{KOF_j^{econ}}\right) + \varphi \log\left(\frac{KOF_i^{soc}}{KOF_j^{soc}}\right) + \omega\left(\frac{GDP_i + GDP_j}{GDP_{world}}\right) + \mathbf{X}'\boldsymbol{\theta} + \alpha + \varepsilon_{ij}, \tag{4}$$

In Equation (4), the dyadic KOF scores are averaged over the 1970-1990 period. The idea here is to constrain globalization to the period in which it comes as plausibly exogenous to the younger generations. This approach works to address concerns over reverse causality as the average member of the 1971-born cohort was unlikely to influence the processes of globalization during periods of youth and adolescence. Moreover, since cultural attitudes are largely formed at an early age, globalization during this period is more likely to be the driver of cultural differences between younger and older cohorts, who are more entrenched in their cultural worldviews.

Since Equations (3) and (4) are cross-sections (which precludes the use of country-pair fixed effects), the remaining variables in **X** control for a broad range of time-invariant factors accounting for geographical, institutional, and demographic differences between countries. Time-varying controls, such as GDP per capita and population levels, are averaged over the relevant observed period. Summary statistics for all variables are presented in Table 3.

[8] The world GDP is calculated as a multi-year average of real GDPs (expenditure side) for all countries available in Penn World Tables 9.1.

Table 3. Descriptive statistics, regression subsamples.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Genetic Distance	1163	0.022	0.016	0.000	0.070
Geological Distance	1163	4.427	1.367	1.064	8.699
Contiguity Dummy	1163	0.050	0.218	0.000	1.000
Both Landlocked Dummy	1163	0.012	0.109	0.000	1.000
Both Island Dummy	1163	0.010	0.101	0.000	1.000
Log Difference Area	1163	-0.311	2.550	-6.498	6.737
Colony Dummy	1163	0.023	0.151	0.000	1.000
Linguistic Proximity Index	1163	0.936	0.908	0.000	6.621
Abs. Difference in Latitude	1163	30.309	28.500	0.000	104.417
Population-Weighted Distance	1163	7138.7	4919.4	168.2	19564.0
Common Colonizer Dummy	1163	0.029	0.169	0.000	1.000
Same Country Dummy	1163	0.013	0.113	0.000	1.000
Religious Proximity Index	1163	0.129	0.221	0.000	0.971
Common Legal Origins Dummy	1163	0.320	0.467	0.000	1.000
Log Abs. Diff. GDP, avg. 1970-2010	1163	8.828	1.194	0.679	10.512
Log Abs. Diff. Pop., avg. 1970-2010	1163	17.157	1.819	8.871	20.836
Joint GDP Weight, 1970-2010 (%)	1163	3.095	4.935	0.058	31.867
Joint GDP Weight, 1970-1990 (%)	589	4.022	6.074	0.073	33.268
Mahalanobis Distance Culture	1163	2.654	0.987	0.235	5.651
Mahalanobis Distance Culture Ratio	589	1.029	0.222	0.482	2.691
Econ. KOF (level), 1970-1990	40	40.672	13.832	13.495	69.047
Soc. KOF (level), 1970-1990	40	45.066	18.319	11.953	79.130
Econ. KOF (level), 1970-2010	49	49.236	14.587	17.479	80.235
Soc. KOF (level), 1970-2010	49	53.583	17.426	17.220	82.978
Econ. KOF interaction (level), 1970-2010	1163	2427.847	1004.651	344.585	5871.315
Soc. KOF interaction (level), 1970-2010	1163	2863.506	1334.154	365.630	6677.663
Econ. KOF interaction (level), 1970-2010	589	1657.13	797.8409	193.07	4727.61
Soc. KOF interaction (level), 1970-2010	589	2025.92	1268.423	160.84	6037.13

Geographic variables. We include six variables to isolate the effect of geography on cultural distance: contiguity dummy, dummy for when both countries are landlocked, dummy for when both countries are islands, log difference in surface area, absolute difference in latitude, and geographic and geological distance. The geological distance is itself calculated as the Mahalanobis distance in country-pairs' 11 geographic features taken from Ashraf and Galor

(2013).[9] Geographic distance is calculated as a population-weighted kilometer distance between countries (CEPII). It measures both inter- and intra-national distances by taking into account distances between countries' biggest cities.[10]

Institutional variables capture country-pair differences in formal and informal institutions. They include a dummy for when countries in the dyad were ever in a colonial relationship with each other, linguistic proximity index, a dummy for if countries were once a member of the same polity, a dummy for common colonizer, a dummy for common legal origin, and an index of religious proximity. The linguistic proximity index is computed as an index of lexical similarity for 40 words based on Automated Similarity Judgment Program (ASJP) data. The religious proximity index is computed as the sum of the products between the shares of Catholic, Protestant, and Muslim populations in each country (derived using La Porta *et al*. 1999 data).[11]

Economic and demographic variables include controls for differences in real GDP per capita $\log\left|GDPpc_i - GDPpc_j\right|$ (Penn World Tables 9.1), population size $\log\left|Pop_i - Pop_j\right|$ (World Bank World Development Indicators), and genetic distance between countries. Genetic distance (Spolaore and Wacziarg 2018) is a summary measure of relatedness between societies that capture the impact of historical patterns of migration of different human sub-populations. It acts as a catch-all variable that measures societal divergence in terms of intergenerationally transmitted traits such as culture, beliefs, language, habits, and religion (Spolaore and Wacziarg 2018, p. 750). More genetically distant societies imply a longer elapsed period since their shared common ancestry and greater present-day obstacles to cross-societal interaction and communication. We include this variable to control for any confounding influence of different aspects of social on cultural distance.[12]

Figure 2 depicts partial leverage plots of the *conditional* effects on cultural distance of log product of economic (left) and social (right) globalization for the period 1970-2010. The effects are conditional on the values of the other globalization dimension. The correlation between the log products of the two dimensions of globalization is +0.82, suggesting a high degree of collinearity between the two dimensions.

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[9] These are: mean land quality, variation in land quality, mean elevation, variation in elevation, dispersion in elevation, percentage of arable land, distance to waterways, temperature, precipitation, percentage of land in tropical and subtropical climate, and disease richness.

[10] The formula used to compute population-weighted distance is:
$d_{ij} = \sum_{k \in i}(pop_k / pop_i) \times \sum_{l \in j}(pop_l / pop_j) \times d_{kl}$, where pop_k is the population of city *k* in country *i*.

[11] Data borrowed from CEPII GeoDist, Gravity, and Language datasets. URL: http://www.cepii.fr/CEPII/en/bdd_modele/bdd.asp.

[12] The specific genetic distance variable used is coded as F_{ST}, or weighted genetic distance, computed as the expected distance between two randomly selected individuals in each country-pair. Importantly, genetic distance encompasses neutral changes amongst populations that are not subject to natural selection (Spolaore and Wacziarg 2018, p. 749).

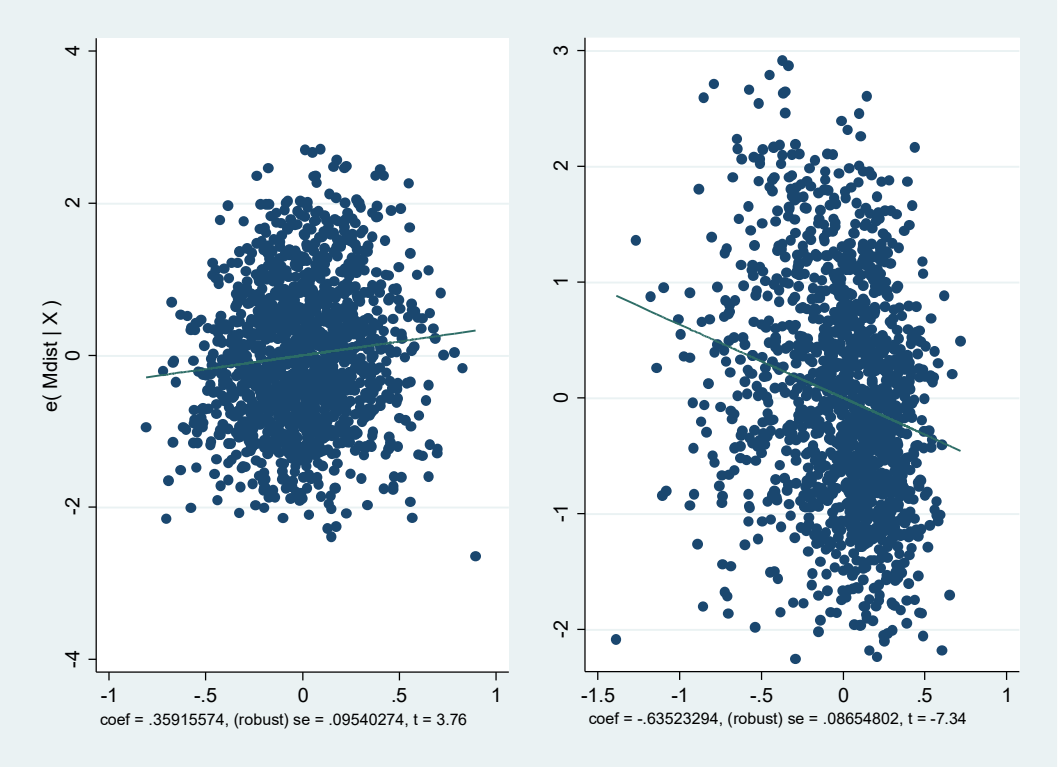

Figure 2. Partial regression plots between cultural distance and log product of economic globalization (left), and log product of social globalization (right).

4. Results and Discussion

Table 4 reports empirical estimates for semi-elasticities β and γ. When $\log(KOF_i^{soc} \times KOF_j^{soc})$ and $\log(KOF_i^{econ} \times KOF_j^{econ})$ enter regression equations separately (specifications 1 and 2), the coefficients on these terms are individually statistically significant at 1 percent level. When both variables are included (specification 3), the coefficients are likewise statistically significant but the direction of marginal effects on *Mdist* is reversed: a higher KOF^{soc} product is associated with smaller cultural distance between countries, while a higher KOF^{econ} product with greater cultural distance, suggesting that the impact of cultural (differentiated) goods and services integration (social globalization) fundamentally differs from that of the commodity product integration (economic globalization).

Table 4. Globalization and cross-country cultural distance in up to 49 countries, OLS estimates.

Dependent Variable	$Mdist_{ij}$, 1970-2010 (1)	$Mdist_{ij}$, 1970-2010 (2)	$Mdist_{ij}$, 1970-2010 (3)	$Mdist_{ij}$ ratio, 1970-1990 (4)	$Mdist_{ij}$ ratio, 1970-1990 (5)	$Mdist_{ij}$ ratio, 1970-1990 (6)
$\log(KOF_i^{social} \times KOF_j^{social})$	-0.500***		-0.694***	-0.009		-0.116***
	(0.064)		(0.099)	(0.020)		(0.025)
$\log(KOF_i^{econ} \times KOF_j^{econ})$		-0.228***	0.383***		0.058***	0.172***
		(0.069)	(0.104)		(0.029)	(0.036)
$\log(KOF_i^{social} / KOF_j^{social})$	0.048		0.260***	0.030***		0.001
	(0.046)		(0.089)	(0.009)		(0.021)
$\log(KOF_i^{econ} / KOF_j^{econ})$		-0.115**	-0.374***		0.025*	0.026
		(0.056)	(0.106)		(0.013)	(0.029)
Joint GDP weight	-0.026***	-0.040***	-0.027***	-0.002	-0.004**	-0.001
	(0.005)	(0.005)	(0.005)	(0.002)	(0.002)	(0.001)
Geographic controls	Y	Y	Y	Y	Y	Y
Institutional controls	Y	Y	Y	Y	Y	Y
Economic & Demographic controls	Y	Y	Y	Y	Y	Y
R^2	0.278	0.246	0.293	0.077	0.087	0.117
Observations	1,163	1,163	1,163	589	589	589

Note: Geographic controls include contiguity dummy, landlocked dummy, islands dummy, log difference in surface area, absolute difference in latitude, geographic distance, and geological distance. Institutional controls include colonial relationship dummy, linguistic proximity index, same country dummy, common colonizer dummy, common legal origin dummy, and religious proximity index. Economic and geographic controls include log absolute difference in GDP per capita and population size, and genetic distance. Population and GDP variables are averaged over the relevant period of observation (1970-2010 or 1970-1990). Robust standard errors in parentheses. Constant term included but not reported. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Based on Table 4, for a 1 percent increase in KOF^{soc} product we expect *Mdist* to decrease by 0.007 units. Alternatively, a 1 percent increase in KOF^{econ} product is associated with an increase in *Mdist* by about 0.004 units. For a 100 percent increase—a doubling in KOF^{soc} product — cultural distance is expected to decrease by as much as 0.7 units, or about 70 percent of one standard deviation of *Mdist*. For each doubling in KOF^{econ} product, *Mdist* is expected to increase by about 0.4 units, or 40 percent of the in-sample standard deviation of *Mdist*. In general, a doubling of KOF product may occur when each country's KOF score increases by a factor of

$\sqrt{2}$, or by about 41 percent. Such increases in individual countries' (1970-2010 average) KOF scores over time are not implausible given that dyadic KOF^{soc} products range in value from 366 to 6,678 in the studied sample—an difference of 1,724 percent. For KOF^{econ} product, the range is from 344 to 5,871, or a 1,606 percent difference.

Specifications (4)-(6) relate the *generational change* in cultural distances $\left(Mdist_{ij}^{young} \middle/ Mdist_{ij}^{old}\right)$ to (log) products in KOF scores averaged over 1970-1990 period within countries. Only the coefficient on KOF^{econ} is statistically significant (and positive) when KOF products enter the specification separately. In the full model (specification 6), KOF^{soc} product exhibits a significant and inverse correlation with $Mdist_{ij}^{young} \middle/ Mdist_{ij}^{old}$, indicating that more socially globalized country-pairs on average see smaller cultural distance between their younger than between the older generations. We calculate that a doubling of KOF^{soc} product is associated with 11.3 percent smaller gap between cultural distances of younger and older cohorts. Alternatively, a doubling of KOF^{econ} product is associated with 16.2 percent greater gap between $Mdist_{ij}^{young}$ and $Mdist_{ij}^{old}$.

The empirical results uncover opposite effects on cultural distance of the two dimensions of globalization: all else equal, more economically globalized country-pairs that experience (and open up to) relatively greater product and capital flows tend to have *greater* bilateral cultural distance; alternatively, country-pairs that are more socially globalized and that have relatively greater levels of migrant stock, tourism, trade in cultural goods and personalized services, and freedom of press as well as travel tend to be more culturally alike. However, on net there is little change in cultural distance stemming from globalization. Given the R^2 value of about 0.3 in the full model and the in-sample $Mdist_{ij}^{young} \middle/ Mdist_{ij}^{old}$ mean of 1.03, we recognize that countries are in fact (slowly) culturally diverging and that further work is needed to identify the processes underlying this divergence.

These results attempt to address some of the disparate findings in recent theoretical literature on socio-economic integration and cultural diversity. Olivier *et al*. (2008) model cultural dynamics endogenously in an international trade equilibrium and find that product market integration results in bilateral cultural divergence and social integration in cultural convergence. Belloc and Bowles (2017) assume that cultural-institutional diversity between countries represents the basis of comparative advantage and trade; in this case, specialization and gains from trade raise the cost of deviating from existing cultural-institutional norms, thus reinforcing cultural differences between countries. In their model, factor (labor) mobility decreases cultural distance by lowering the penalty of deviating from cultural-institutional *status quo*. Alternatively, Maystre *et al*. (2014) assume a world of one global and many local cultural types, whereby bilateral and multilateral product openness as well as greater joint internet and telephone access and communication create greater exposure to the global type, enabling convergence in cultural values across societies.

Some of the differences in the above findings stem from different assumptions and theoretical mechanisms driving the relationship between culture and globalization. Although the empirical work presented here does not stipulate on the validity of these mechanisms, it does hint at the possible net effect between them. Assuming the world of one global and many local cultural types, social globalization works to facilitate cross-cultural transitions while economic globalization and trade networks contribute to the "lock-in" effect of existing conventions and promote further cultural divergence. Further research is needed to assess the relative magnitudes

of the two effects as well as the nature of the long run global cultural evolution: does social globalization promote melding of local cultural types into a new common global type, or is there global convergence to one particular local type? Alternatively, does economic globalization counteract social globalization, pushing countries to diverge culturally and reinforce their differences in the long run? The answers to these empirical questions ultimately hinge on the availability of longer time series data on cultural attitudes and globalization by country, as well as exhaustive identification of existing local and global cultural types.

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