Does Population Diversity Matter for Economic Development in the Very Long Term? Historic Migration, Diversity and County Wealth in the US

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Overview

Motivation

- In 2015, migration stock numbers worldwide exceeded expectations and rose to 244 million (UNDESA, 2016).
- The analysis of the economic implications of migration is of utmost importance.
- The majority of existing studies focus on the short term economic impact of migration (Altonji and Card, 1991; Friedberg and Hunt, 1995; Bijak et al., 2007), while the medium to long-term effects have been mostly neglected.

Research question

- Does having a very diverse population at one point in time lead to persistently higher levels of economic growth? Or is the economic impact of diversity only evident in the short term, vanishing once the different population groups become part of the society's "melting pot"?
- **Hypothesis:** Time will not significantly alter the impact of diversity on economic development. We assume that a highly fragmented (highly polarized) society will maintain its positive (negative) impact consistently in the short, medium and long term.

Related literature

Two lines dominate the debate, each one using different measures of diversity:

Diversity as growth-enhancing

This literature uses population fractionalization measures. It is an index that assumes that the greater the number of groups, the greater the diversity assumed in a society, which positively influences the growth potential.

Diversity as growth-reducing

The majority of literature in this area refers to polarization and segregation measures, which emphasize the relative size of groups and the distance that separates them. These indices aim to capture the social tension and conflict dimension linked to a heterogeneous population.

Diversity as growth-enhancing

Thesis: Diversity as a central engine of innovation and creativity, which in turn fosters technological growth and progress.

- The connection between diversity and innovation (Jacobs, 1961; 1969).
- Qualified and liberal people prefer to live in various regions, skilled jobs and innovation will be grouped into these same areas (Florida, 2002).
- The speed of technological progress driven by the incoming population does not depend on the size of the influx, but on its composition (Bove and Elia, 2017).

Diversity as growth reducing

Thesis: The presence of various groups as a destabilizing factor within a society that increases the potential for unrest and social conflict.

- Low school performance, financial debt, and poor quality of infrastructure are consequences of high levels of segregation (Easterly and Levine, 1997).
- La Porta et al. (1999), Mauro (1995) and Easterly et al. (2006) find that the most fragmented societies reduce the performance of the public sector and generate poor institutions.

Context

Table 1 US population composition, 1840–1920 (in percentages of total population)

Year	Population (millions)	Black (%)	Foreign parentage (%)	Foreign born (%)
1840	17.1	16.8	n.d.	n.d.
1850	23.2	15.7	n.d.	12.9
1860	31.4	14.1	n.d.	17.9
1870	39.8	13.5	19.0	19.6
1880	50.2	13.1	22.5	17.8
1890	62.9	11.9	25.0	19.9
1900	76.0	11.6	27.6	18.1
1910	92.0	10.7	27.8	18.0
1920	105.7	9.9	28.0	16.9

Source: Ward (1990)

n.d. no data

Context

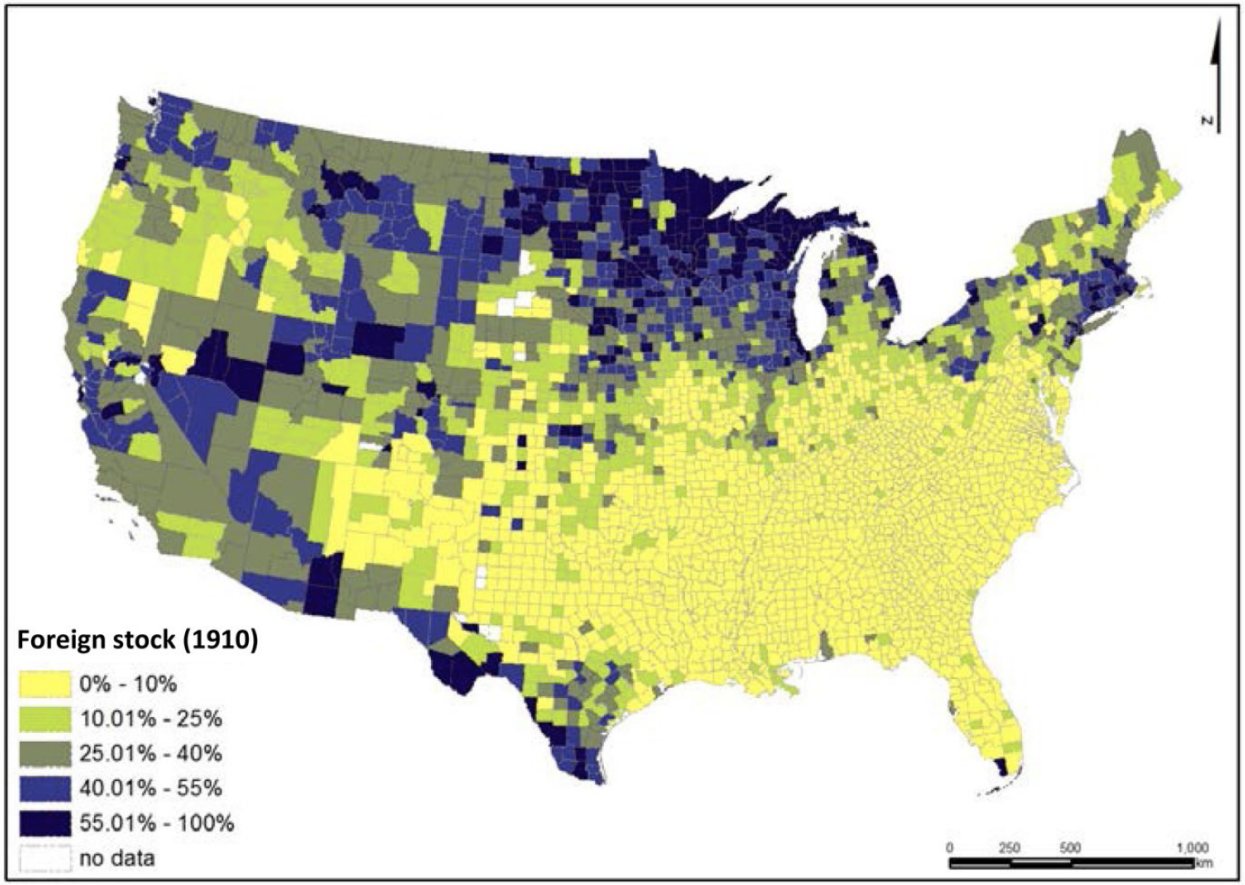

Fig. 1 International migrants and their children as share of population by county in 1910. *Source*: Rodríguez-Pose and von Berlepsch (2014)

Empirical approach

Model 1: The case of diversity

$$y_{i,t} = \alpha + \beta Fract_{i,t_o} + \lambda Pol_{i,t_0} + \partial X_{i,t-k} + \theta Z_{i,t_0} + \mu state + \varepsilon_{is}$$

$y_{i,t}$: Income per capita of county i in period t.
$Fract_{i,t_0}$: Level of fractionalization in a given county i in t_0.
Pol_{i,t_0}: Degree of polarization in a given county i in t_0.
Z_{i,t_0}, $X_{i,t-k}$: Vector of factors which may have influenced the development of the county i at time t_0 and t.

$t = (2010, 2000, ..1900)$
$t_0 = (1880, 1900, 1910)$

Empirical approach

Model 2: The case of concentration

$$y_{i,t} = \chi + \delta Conc_{i,t_0} + \phi X_{i,t-k} + \eta Z_{i,t_0} + \vartheta state + \omega_{is}$$

$Conc_{i,t_0}$: Level of concentration within the population of any given county i in t_0.

- Main identification problem: reverse causality $\rightarrow$ instrumental variables approach.

Empirical approach

Measures of diversity and an Index of Concentration

Fractionalization

$$Fract_{i,t_0} = 1 - \sum_{g=1}^{n} s_{g,i,t_0}^2$$

Polarization

$$Pol_{i,t_0} = 1 - \sum_{g=1}^{n} \left(\frac{0.5 - s_{g,i,t_0}}{0.5} \right)^2 * s_{g,i,t_0}$$

Concentration

$$Conc_{i,t_0} = max\left(s_{g,i,t_0}\right)$$

Data

Income per capita data

- US Bureau of Economic Analysis (BEA) database
- Current Population Survey tables (CPS) of the US Bureau of Labor Statistics (BLS)

Fractionalization, polarization and concentration measures

- Birthplace data at county level of the years 1880, 1900 and 1910, extracted from the IPUMS USA database.

Data

Measures of diversity and an Index of Concentration

Figure: Fractionalization and Polarization Index

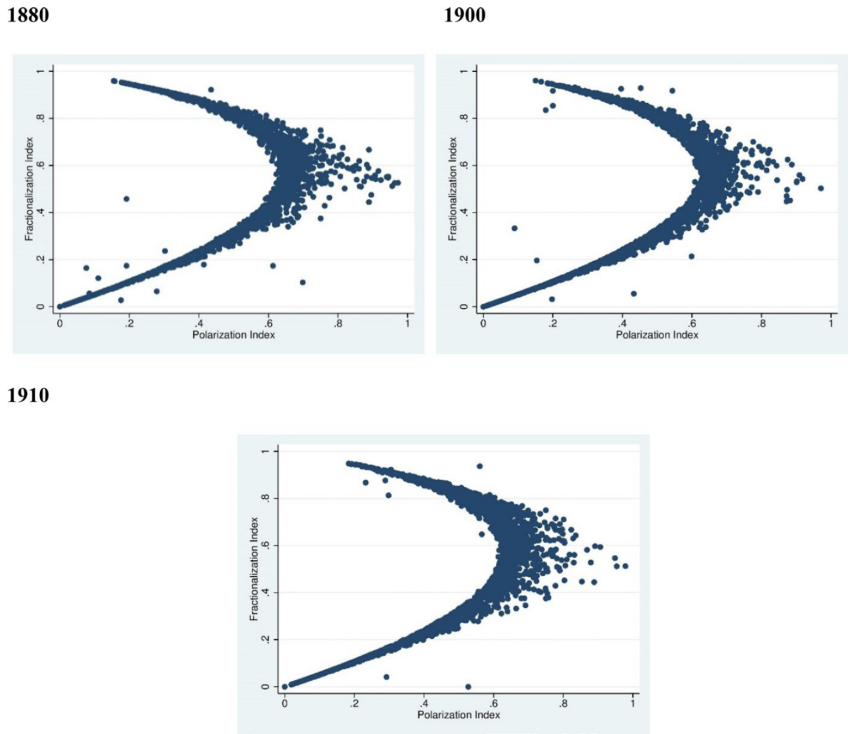

Fig. 4 Fractionalization versus polarization for all three base years. *Source*: Own elaboration, using Rugg-les et al. (2015) data

Results

Figure: Results OLS diversity measures

Table 2 Long-term impact of diversity—OLS 1880, 1900 and 1910

Dep. variable: income p.c. 2010 (ln)	1880 OLS	1900 OLS	1910 OLS
Fractionalization[a]	0.144***	0.176***	0.155***
	(0.0501)	(0.0474)	(0.0323)
Polarization[a]	−0.0365	−0.0470	−0.0301
	(0.0411)	(0.0376)	(0.0308)
Education 2000	0.0125***	0.0125***	0.0123***
	(0.000782)	(0.000826)	(0.000822)
Total population 2000 (ln)	0.00145	0.00296	−0.00257
	(0.00566)	(0.00560)	(0.00562)
Share of black population 2000	−0.00133***	−0.000912*	−0.00141***
	(0.000462)	(0.000489)	(0.000493)
Female participation 2000	−0.000141	0.000245	0.000563
	(0.00117)	(0.00110)	(0.00107)
Unemployment 2000	−0.0247***	−0.0264***	−0.0246***
	(0.00461)	(0.00421)	(0.00452)
Infant mortality 2000	−8.41e−05	−0.000161	−0.000126
	(0.000322)	(0.000288)	(0.000286)

Results

Figure: Results OLS diversity measures (continued)

Agriculture 2000	−0.000330	−0.000405	−0.000333
	(0.00208)	(0.00224)	(0.00226)
Mean income (ln)[a]	−0.000603	−0.000442	−0.00535*
	(0.00333)	(0.00407)	(0.00285)
Literacy[a]	0.0976**	0.0368	0.0679
	(0.0395)	(0.0850)	(0.0499)
Total population (ln)[a]	−0.0120**	−0.0125	−0.00806
	(0.00498)	(0.00761)	(0.00834)
Share of black population[a]	0.219***	0.173***	0.209***
	(0.0459)	(0.0375)	(0.0435)
Female participation[a]	0.0319	−0.0287	0.000231
	(0.0895)	(0.0910)	(0.0513)
Unemployment[a]	−0.00865	−0.0468**	−0.207
	(0.00959)	(0.0189)	(0.161)
Agriculture[a]	−0.0687	0.000508	−0.0963***
	(0.0531)	(0.0675)	(0.0204)
State controls	Yes	Yes	Yes
Observations	2825	3024	3094
R^2	0.642	0.637	0.642

Robust standard errors in parentheses, clustered at state level

*** $p<0.01$; ** $p<0.05$; * $p<0.1$

[a]Variables date from respective year of migration 1880, 1900 or 1910

Results

Figure: Results OLS concentration measures

Table 3 Long-term impact of concentration—OLS 1880, 1900 and 1910

Dep. variable: income p.c. 2010 (ln)	1880 OLS	1900 OLS	1910 OLS
Concentration [a]	−0.158***	−0.175***	−0.149***
	(0.0486)	(0.0467)	(0.0329)
Education 2000	0.0125***	0.0125***	0.0123***
	(0.000777)	(0.000831)	(0.000822)
Total population 2000 (ln)	0.00196	0.00284	−0.00251
	(0.00572)	(0.00569)	(0.00576)
Share of black population 2000	−0.00133***	−0.000857*	−0.00141***
	(0.000458)	(0.000492)	(0.000496)
Female participation 2000	−0.000129	0.000223	0.000535
	(0.00115)	(0.00110)	(0.00108)
Unemployment 2000	−0.0249***	−0.0268***	−0.0247***
	(0.00476)	(0.00428)	(0.00462)
Infant mortality 2000	−4.60e−05	−0.000160	−0.000127
	(0.000320)	(0.000293)	(0.000290)
Agriculture 2000	−0.000157	−0.000259	−0.000287
	(0.00207)	(0.00227)	(0.00223)

Results

Figure: Results OLS concentration measures (continued)

Mean income (ln)[a]	−0.00108	−0.000371	−0.00504*
	(0.00342)	(0.00408)	(0.00289)
Literacy[a]	0.104**	0.0522	0.0754
	(0.0393)	(0.0926)	(0.0531)
Total population (ln)[a]	−0.0116**	−0.0111	−0.00585
	(0.00470)	(0.00758)	(0.00816)
Share of black population[a]	0.224***	0.172***	0.208***
	(0.0441)	(0.0389)	(0.0427)
Female participation[a]	0.0339	−0.0308	−0.00295
	(0.0927)	(0.0888)	(0.0514)
Unemployment[a]	−0.00965	−0.0463**	−0.207
	(0.00924)	(0.0193)	(0.167)
Agriculture[a]	−0.0743	−0.00275	−0.0974***
	(0.0525)	(0.0614)	(0.0199)
State controls	Yes	Yes	Yes
Observations	2826	3024	3094
R^2	0.643	0.636	0.641

Robust standard errors in parentheses, clustered at state level

*** $p<0.01$; ** $p<0.05$; * $p<0.1$

[a]Variables date from respective year of migration 1880, 1900 or 1910

Results

Figure: IV results

Table 4 Long-term impact of diversity and concentration—IV 1880, 1900 and 1910

Dep Var: Inc. p.c. 2010 (ln)	(1) 1880 IV	(2) 1900 IV	(3) 1910 IV	(4) 1880 IV	(5) 1900 IV	(6) 1910 IV
Fractionalization[a]	0.371***	0.391***	0.271***			
	(0.0997)	(0.123)	(0.0810)			
Polarization[a]	−0.175**	−0.165*	−0.100*			
	(0.0784)	(0.0941)	(0.0570)			
Concentration[a]				−0.375***	−0.389***	−0.261***
				(0.102)	(0.115)	(0.0683)
Education 2000	0.0125***	0.0126***	0.0123***	0.0124***	0.0126***	0.0124***
	(0.000782)	(0.000857)	(0.000806)	(0.000767)	(0.000880)	(0.000811)
Total population 2000 (ln)	0.00265	0.00107	−0.00327	0.00272	0.000932	−0.00302
	(0.00518)	(0.00594)	(0.00510)	(0.00532)	(0.00623)	(0.00540)
Black population 2000	−0.00160***	−0.00116**	−0.00145***	−0.00156***	−0.00106**	−0.00146***
	(0.000451)	(0.000479)	(0.000456)	(0.000437)	(0.000502)	(0.000467)
Female participation 2000	−4.24e−05	0.000852	0.000747	9.59e−05	0.000814	0.000752
	(0.00115)	(0.000995)	(0.000993)	(0.00111)	(0.00102)	(0.00100)
Unemployment 2000	−0.0227***	−0.0243***	−0.0248***	−0.0242***	−0.0255***	−0.0249***
	(0.00472)	(0.00390)	(0.00440)	(0.00480)	(0.00427)	(0.00461)
Infant mortality 2000	−0.000113	−3.90e−05	−0.000212	−1.49e−05	−5.21e−05	−0.000216
	(0.000336)	(0.000303)	(0.000287)	(0.000317)	(0.000308)	(0.000293)
Agriculture 2000	9.45e−05	−0.00109	−0.000798	0.000716	−0.000661	−0.000415
	(0.00220)	(0.00212)	(0.00228)	(0.00228)	(0.00235)	(0.00232)
Income (ln)[a]	−0.00337	−0.00617	−0.00764**	−0.00367	−0.00634	−0.00749**
	(0.00364)	(0.00431)	(0.00333)	(0.00382)	(0.00448)	(0.00337)
Literacy[a]	0.0451	0.0221	0.0302	0.0694	0.0476	0.0523
	(0.0537)	(0.0783)	(0.0499)	(0.0492)	(0.0939)	(0.0536)

Results

Figure: Short, medium and long-term results

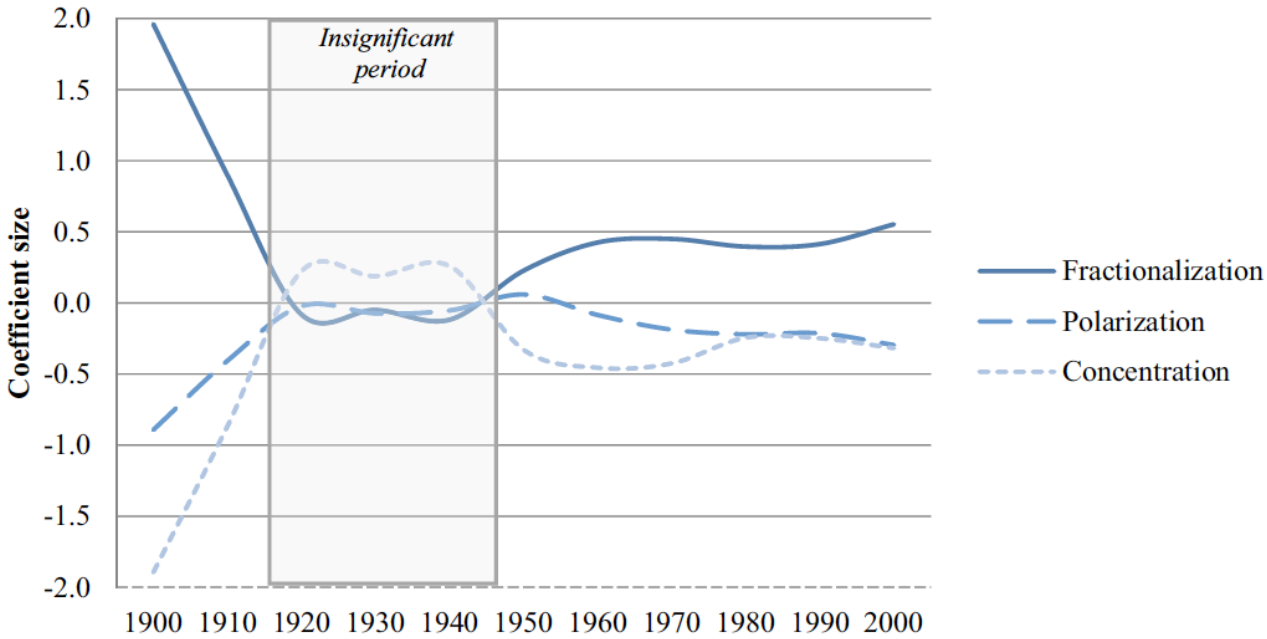

Fig. 5 Evolution of coefficients for population fractionalization, polarization and concentration over time (IV, base year 1880). *Source*: Own elaboration

Conclusions

1. High levels of population fractionalization have a strong and positive influence in economic development in the short, medium and long run.
2. In contrast, high levels of polarization undermine development.
3. These findings reinforce the idea that more diverse places are more innovative and productive than homogeneous places.
3. However, channels for dialogue between the different groups need to be established, as polarization in a territory appears to be detrimental for sustainable economic development.

References

Rodríguez-Pose, Andrés and von Berlepsch, Viola (2019) Does population diversity matter for economic development in the very long term? Historic migration, diversity and county wealth in the US. *European Journal of Population* 35(5), 873 - 911.