

The Relationship between Assimilation and Immigrant Wages

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Abstract

The integration of immigrants into their host society is at the core of public immigration debate in most Organisation for Economic Co-operation and Development (OECD) countries. Integration includes two distinct dimensions: the cultural and economic integration of immigrants. This paper investigates the interplay between these two processes by studying immigrant integration in Germany. It presents three main results. First, it documents that immigrants from countries that are more culturally distant earn lower wages when they enter the German labor market. Second, it highlights that these wage differences decrease over years spent in Germany and even disappear in some cases. Finally, the paper shows that immigrants who experience a greater increase in assimilation experience more wage growth as well. Altogether, these results suggest that the cultural assimilation process can benefit the economic integration of immigrants.

Keywords: Assimilation, Cultural Distance, Immigrant Workers

JEL Classification Numbers: J61, Z10

1 Introduction

Immigration raises many concerns in most Organisation for Economic Co-operation and Development (OECD) countries, and the integration of immigrants has come under scrutiny. Integration includes two distinct but complementary dimensions: the cultural assimilation and the economic integration of immigrants. According to Dustmann and Preston (2007), each of these processes heavily affects natives' attitudes toward immigration. Over the last two decades, Germany has amended its immigration policies to encourage both the cultural assimilation and the economic integration of immigrants.¹ To understand the interactions between these two processes, this paper studies the relationship between the cultural assimilation process of immigrant workers and their integration into the German labor market.

In this paper, I first study the relationship between initial cultural differences and log hourly wages of immigrants over years spent in Germany. I exploit the heterogeneity of immigrants' origins recorded in the German Socio-Economic Panel (GSOEP) to measure cultural distance from Germany at the country level. I successively consider religious and linguistic distances, which are the main bilateral indices from the trade and migration literature. I also document the association between immigrants' individual cultural assimilation and wage growth. I approximate the cultural assimilation of immigrants relative to natives at the individual level by measuring the distance in social concerns between each immigrant in each year and comparable natives via a set of questions repeatedly asked over years in the GSOEP.

Measuring cultural differences between individuals is particularly challenging. A widespread strategy involves comparing immigrants who have successfully assimilated to those who have not. Researchers usually rely on proxies such as interethnic marriages, origins of the names immigrants give to their children, or comparisons of immigrants who have acquired the citizenship of their destination country to those who have not (Gregory and Meng, 2005, Abramitzky et al., 2020, Fouka et al., 2022, Water and Jimenez, 2005). Such a strategy is relevant for assessing the benefits of successful assimilation. However, this might not be the most appropriate approach to observe the assimilation process itself or the initial cultural differences between these immigrants. In this paper, I adopt two distinct strategies to approximate initial cultural differences and the assimilation process of immigrants.

The first approach builds on bilateral indices to measure the cultural differences experienced by immigrant workers in Germany. I successively examine religious and linguistic distances between Germany and immigrants' countries of origin, which respectively depend on the history of religions, languages, and populations across countries. According to Spolaore and Wacziarg (2016), cultural differences “include language and religion but also a broader set of norms, values and attitudes that are transmitted intergenerationally and therefore display persistence over long stretches of time”. The first index is based on the family tree of religions (Fearon and Laitin, 2003), which reflects their successive divisions throughout history. Within this tree, religions are first grouped into broad categories and then broken down into more

¹See Hertner (2021) for an overview of the immigration reforms adopted in Germany over the last two decades to encourage the cultural assimilation and economic integration of immigrants.

precise classifications. The religious distance index constructed by Spolaore and Wacziarg (2016) depends on the number of ramifications shared by each pair of religions. Linguistic distance follows the same logic (Spolaore and Wacziarg, 2016). Both indices measure cultural differences at the country-pair level. They depend on the relative representation of religions and languages in each country.

Despite cultural “persistence over long stretches of time,” immigrants adopt new cultural traits as they spend time in a destination country. The second approach approximates immigrants’ assimilation in stated preferences at the individual level. I follow Jaschke et al. (2021) and select all questions on social concerns asked in each year in the GSOEP. For each question in each year, I compute the distance between the answer given by each immigrant and the average answer given by natives belonging to the same age group and living in the same region. I then aggregate the results from each question using an index of Euclidean distance. In this paper, I use this index measured at the individual level over years to document the assimilation process and its relationship to wage growth.

Using bilateral indices, I document that immigrants from countries with a one standard deviation larger cultural distance earn, on average, 4 to 10 percent less per hour when they enter the German labor market. These wage differences between immigrants diminish over years spent in Germany. I show that the wage gap associated with a difference in cultural distance of one standard deviation disappears after 5 to 15 years, depending on the distance measure. Using the individual index of distance in social concerns, I investigate the role of assimilation in this dynamic pattern. I show that immigrants who experience a greater increase in assimilation experience more wage growth as well. This paper adopts a descriptive approach and does not make a causal claim. Nevertheless, this series of results shows that the cultural assimilation process is associated with the labor market integration of immigrants.

This paper contributes to the literature on the economic assimilation of immigrants. Since the seminal work of Chiswick (1978), this stream of research focused on determining whether wage assimilation patterns have resulted from immigrants’ economic integration or from selection mechanisms changing the composition of immigrant populations (Borjas, 1985, Lubotsky, 2007, Abramitzky et al., 2014, Dustmann and Görlach, 2016). My results bring additional evidence from the German context to this debate. They show that in addition to selection mechanisms, the cultural and social assimilation of immigrant workers helps to explain wage assimilation patterns.

This paper also relates to the literature measuring the cultural assimilation of immigrants. Abramitzky et al. (2020) and Fouka et al. (2022) rely on several proxies to document immigrants’ efforts and success in assimilation, including names immigrants give their children, naturalization, and interethnic marriage. Bertrand and Kamenic (2018) and Desmet and Wacziarg (2021) use survey responses on values, concerns, and habits to measure cultural convergence over time across different groups of individuals. Similarly, Jaschke et al. (2021) compare survey responses between natives and refugees to measure the cultural assimilation of the latter in stated preferences. In this paper, I use a methodology similar to Jaschke et al. (2021) to approximate the assimilation of immigrants in Germany.

Finally, this paper relates to the literature that specifically focuses on the relationship between cultural and labor market integration. One approach consists of comparing labor market outcomes of immigrants who have successfully assimilated to those of immigrants who have not (Gregory and Meng, 2005; Costanza et al., 2017). Another approach compares labor market outcomes of immigrants who differ in their attachment to their original culture. Mason (2004), Battu and Zenou (2010), Casey and Dustmann (2010), Bisin et al. (2011), and Islam and Raschky (2015) show that immigrants reporting a stronger ethnic identity have poorer employment prospects. Other studies document how outward signs of cultural assimilation affect labor-market outcomes. McManus et al. (1983), Dustmann and Soest (2002), Dustmann and Fabbri (2003), Bleakley and Chin (2004), Chiswick and Miller (2012), Guven and Islam (2015), and Lochmann et al. (2018) report consistent evidence indicating a negative effect of language deficiency on employment and wages. A last approach specifically focuses on the relationship between naturalization and labor market outcomes. Bratsberg et al. (2002), Gathmann and Keller (2018), Gathmann and Monscheuer (2020), Felfe et al. (2020), and Govind (2021) document several channels through which naturalization benefits the economic integration of immigrant workers.

My paper contributes to several aspects of this literature. First, it documents the relationship between wages and the cultural assimilation process itself. Most papers focus on either the labor market implications of successful assimilation or ethnic identity. My paper provides evidence that the cultural assimilation process itself is associated with higher wages. This dimension is particularly relevant from a policy perspective. Finally, this work adds to the assimilation literature by showing that the different measures of cultural differences are complementary and give results that are consistent with each other.

Section 2 of this paper presents the data used. Section 3 studies the relationship between initial cultural differences and differences in wage levels across immigrants over years spent in Germany. Section 4 focuses on the relationship between assimilation and wage growth. Section 5 concludes.

2 Data

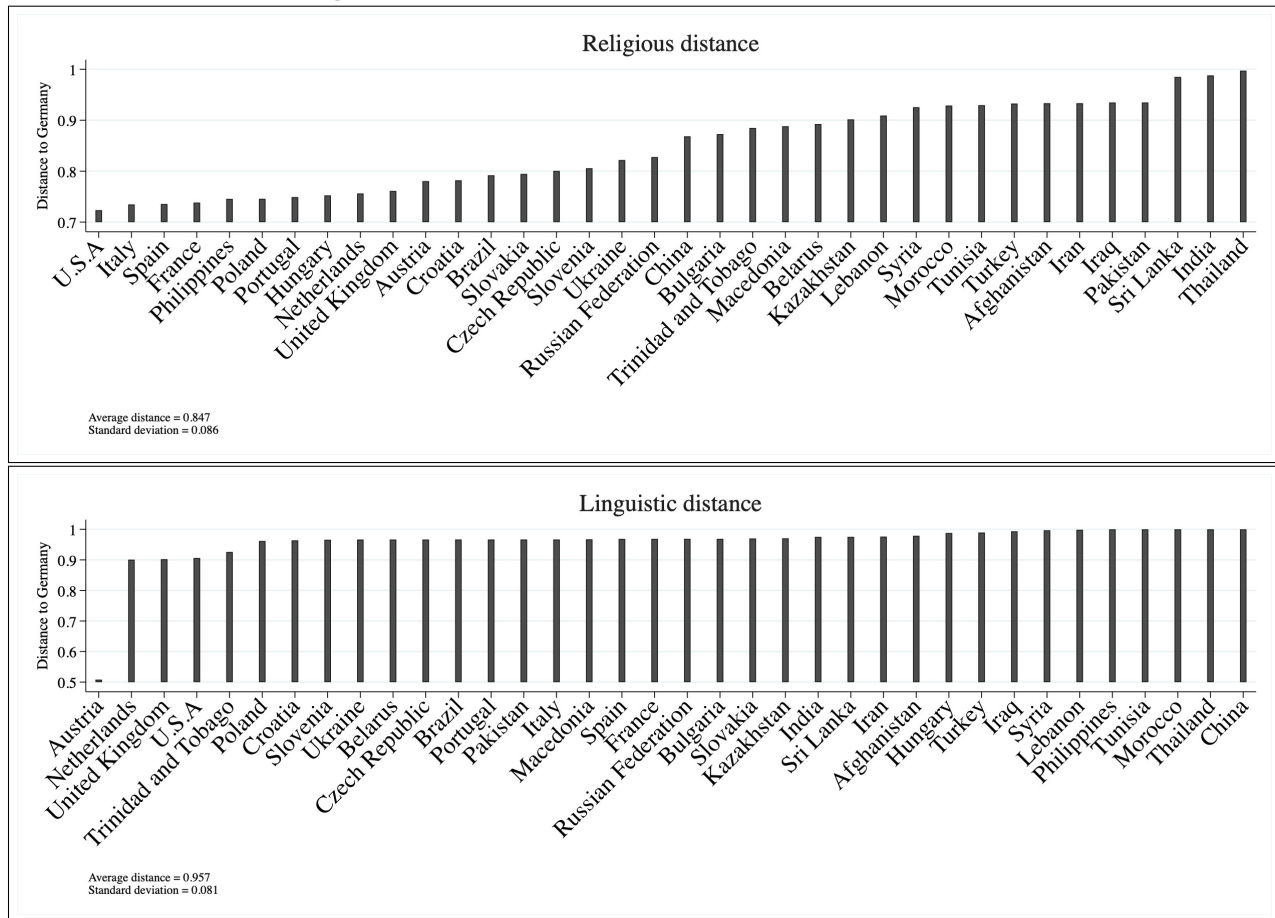
This paper relies on two sources of data. To measure initial cultural differences between immigrants, I use bilateral indices of cultural distance. The first part of this section presents these indicators. To measure immigrants' assimilation at the individual level and study immigrants' wages in Germany, I refer to the German Socio-Economic Panel (GSOEP). The second part of this section highlights the key features of this survey.

2.1 Bilateral indices of cultural distance

In this paper, I first measure cultural differences between immigrants' origins and Germany by using bilateral indices of cultural distance. I rely on the two main indicators used in the migration literature (Belot and Ederveen, 2012, Adsera and Pytlikova, 2015): religious and linguistic distance. These indices have been used to quantify the effect of cultural differences on migration flows. I use these proxies to quantify the effect of cultural differences on the labor-market performance of immigrant workers. These measures

depend on the composition of religions and languages in each country. They take the cultural diversity of each country into account. Figure 1 presents the distribution of cultural distances with respect to Germany. It ranks countries from the closest to the most distant according to each index. Although the indices are globally correlated, significant differences persist. To assess the robustness of the results, I successively consider each indicator in my estimations. In this paper, I use data from Spolaore and Wacziarg (2016) to measure religious and linguistic distance.

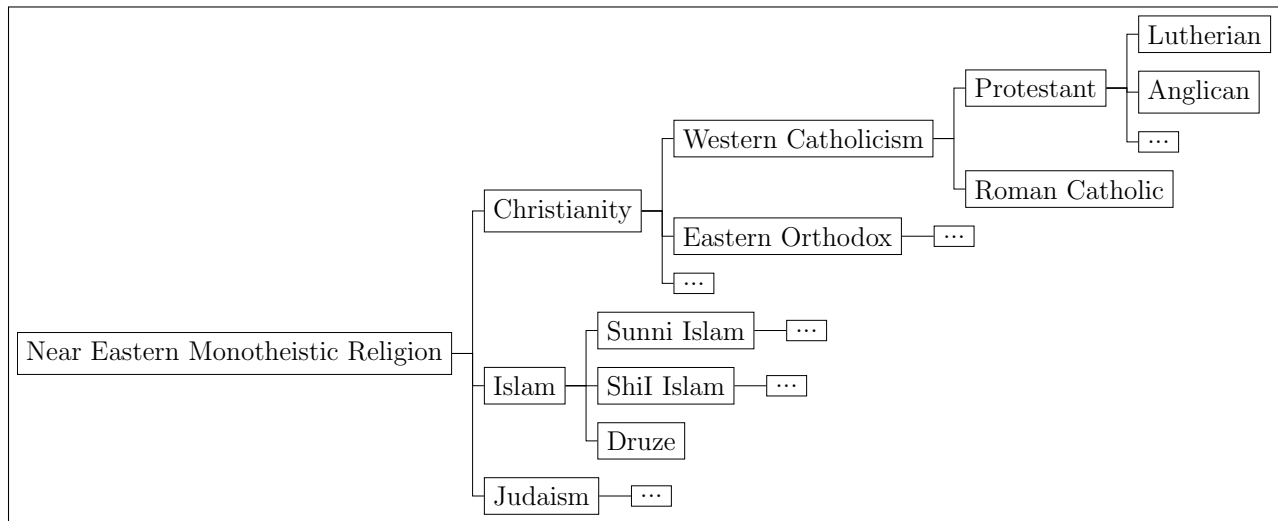
Figure 1. Distribution of bilateral indices of cultural distance.



Notes: This graph plots the distribution of cultural distance indices. All distances are calculated with respect to Germany. These distances are presented on the y-axes. The first panel focuses on the religious distance between each country of origin and Germany. The second panel presents the ranking of countries according to linguistic distance. Source: Spolaore and Wacziarg (2016).

According to Spolaore and Wacziarg (2016), religious and linguistic distances are the best proxies for measuring cultural differences between countries. Both indices follow the same logic and depend on the history of populations. Spolaore and Wacziarg (2016) summarize this idea as follows: “When populations split apart and diverge over the long span of history, their cultural traits also diverge. These cultural traits include language and religion but also a broader set of norms, values, and attitudes that are transmitted intergenerationally and therefore display persistence over long stretches of time.” This evolution can be graphically represented by a tree structure. Figure 2 presents one branch of the religion tree according to Fearon and Laitin (2003). The distance between two religions depends on the number of common nodes shared by them. The religious distance between two countries is then calculated as the weighted sum of the distances between both sets of religions represented in each country. Linguistic distance is also calculated using a tree-based approach and follows exactly the same logic.

Figure 2. Religion tree from Fearon and Laitin (2003).



Notes: This graph represents one branch of the religious tree. Over the span of history, religions and populations break away from each other. The graph summarizes these separations by highlighting the common origins of each religion. The distance between two religions depends on the number of common nodes shared by them. Source: Fearon and Laitin (2003).

2.2 German Socio-Economic Panel: 1984-2017

This paper uses the German Socio-Economic Panel to study the determinants of immigrants’ wages in Germany between 1984 and 2017. The identification strategy relies on specific features of the survey. First, it exploits the heterogeneity of immigrants’ origins to measure cultural differences with bilateral indicators. It also takes advantage of the great variety of questions on respondents’ social concerns to measure immigrants’ assimilation at the individual level. Finally, it relies on the longitudinal dimension of the data to measure the relationship between assimilation and wage growth. While this section only focuses on the dimensions used in the regressions, section B of the appendix provides additional descriptive statistics to characterize the composition of the sample.

To measure initial cultural differences experienced by immigrant workers in Germany, this paper uses bilateral indices at the country level. These indicators come from the literature studying the effect of cultural differences on trade or migration flows between countries. Using these indices within individual wage regressions requires significant variations in the immigrants' countries of origin. The GSOEP meets this requirement. My final sample consists of 5,394 immigrant workers born in 113 different countries. It includes immigrant workers aged between 18 and 65 years old who arrived in Germany at age 16 and older and who were interviewed by the GSOEP between 1984 and 2017. Table 1 lists the main countries of origin and their relative importance in the sample. It also details their cultural distance with Germany as measured by the bilateral indices. This table highlights the heterogeneity of origins that enables me to study the relationship between initial cultural differences and wages.

The survey also provides me with information to approximate immigrants' assimilation in stated preferences at the individual level. I follow Jaschke et al. (2021) and select all questions on social concerns asked in each year in the GSOEP. These nine questions focus on respondents' concerns with respect to important social issues. In particular, the questions ask immigrants whether they support a political party and whether they are interested in political issues. They also ask whether they are concerned about job security, finances, environmental issues, peace, and economic development. Finally, they ask immigrants about their overall satisfaction with health and life in general. For each question for each year, I compute the distance between the answer given by each immigrant worker and the average value computed from answers provided by natives. For each year of interviews, I compare the answers given by immigrants and natives living in the same federal state. Finally, I measure the Euclidean distance between immigrants and natives to aggregate the results from all questions. Section A.2 provides additional details on the construction of this index.

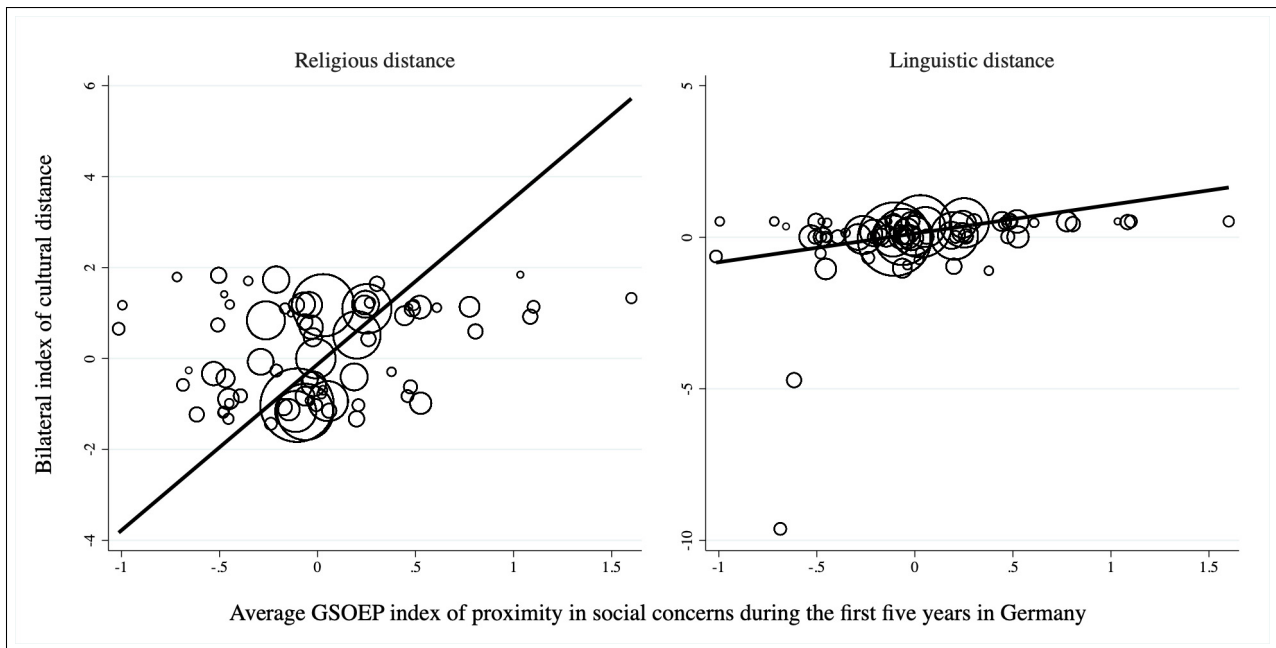
Table 1. Summary statistics on the main countries of origin.

Country of origin	Sample share	Religious distance	Linguistic distance
Turkey	16.81	0.9327	0.9894
Poland	11.94	0.7458	0.9617
Italy	10.10	0.7346	0.9665
Russian Federation	9.88	0.8277	0.9688
Kazakhstan	8.44	0.9017	0.9707
Spain	5.62	0.7354	0.9684
Croatia	2.73	0.7821	0.9641
Ukraine	2.45	0.8218	0.9663
Bulgaria	2.39	0.8728	0.9688
Syria	1.84	0.9255	0.9969
Hungary	1.65	0.7525	0.9878
Iraq	1.15	0.9348	0.9936
France	0.98	0.7382	0.9685
Macedonia	0.91	0.8881	0.9674
Iran	0.87	0.9334	0.976
Trinidad and Tobago	0.85	0.8848	0.9257
United Kingdom	0.83	0.7611	0.9021
Netherlands	0.82	0.7561	0.9005
Czech Republic	0.82	0.8004	0.9663
Morocco	0.78	0.9288	1
Afghanistan	0.76	0.9334	0.979
India	0.74	0.9879	0.9752
Austria	0.74	0.7804	0.5079
U.S.A	0.72	0.7233	0.9059
Portugal	0.65	0.749	0.9665
Slovakia	0.59	0.7945	0.9698
Pakistan	0.57	0.9348	0.9665
Belarus	0.52	0.8925	0.9663
Slovenia	0.48	0.8059	0.9659
China	0.46	0.8684	1
Sri Lanka	0.44	0.985	0.9753
Lebanon	0.44	0.9091	0.9986
Philippines	0.43	0.7457	1
Brazil	0.41	0.792	0.9665
Thailand	0.41	0.9973	1
Tunisia	0.41	0.9295	1

Notes: This table presents the main countries of origin for 90% of the observations from my sample. The table also presents the relative importance of each country in the sample as well as the two measures of bilateral cultural distance. Tables B.2.1 and B.2.2 presented in the online appendix complete the description for the full sample. Source: German Socio-Economic Panel.

Figure 3 highlights the positive relationship between the individual distance in social concerns and bilateral measures of cultural distance. Both measures are aggregated at the country level. The figure focuses on the weighted average individual measure of distance for immigrants interviewed in their first five years in Germany. Therefore, its values can be compared to the bilateral measures of cultural distance that approximate the initial cultural differences between immigrants and natives. Each cell represents a country of origin and is weighted according to the number of immigrants from this country in the final sample.

Figure 3. Positive association between bilateral indices of cultural distance and individual measure of distance in social concerns for the first five years spent in Germany.



Notes: This graph plots each bilateral index of cultural distance against the average value of the distance in social concerns as measured in the first five years spent in Germany by country of origin. Each cell represents a country of origin and is weighted according to the number of immigrants from this country in my GSOEP sample. Black lines represent the linear fit between bilateral and individual values. Both indices are standardized. Source: German Socio-Economic Panel.

Table 2 highlights an assimilation pattern from immigrant workers with the individual distance in social concerns. This table shows the evolution of the average differences in social concerns between immigrants and comparable natives over years spent in Germany. It successively considers each of the nine dimensions used in the assimilation index. I regress the difference between each immigrant's response and the average response provided by all natives living in the same federal state in the same year on a series of dummy variables measuring years since migration in five-year intervals. The constant coefficient reports the average difference in absolute value in responses given to each question by immigrants and natives. Other coefficients highlight the evolution of this difference over years spent in Germany. On average, immigrants' responses significantly converge toward natives' regarding their views in each dimension except for concerns about job security, finances, and economic development.

Table 2. Evolution of proximity in social concerns between immigrants and natives over years since migration.

Dependent variable	Difference between immigrant's responses and average natives' responses on each cultural dimension								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cultural dimension	Supports political party	Interested by politics	Concerned about job security	Concerned about finances	Concerned about environment	Concerned about peace	Concerned about economic development	Satisfaction with health	Satisfaction with life
5 to 10 years since migration	-0.1153*** (0.0237)	-0.0817** (0.0366)	-0.0026 (0.0345)	0.0113 (0.0309)	-0.1385*** (0.0314)	-0.1152*** (0.0309)	-0.0776* (0.0434)	-0.2975*** (0.0842)	-0.2176** (0.0917)
10 to 15 years since migration	-0.2055*** (0.0229)	-0.0840** (0.0354)	-0.0547 (0.0334)	-0.0059 (0.0299)	-0.1847*** (0.0304)	-0.1369*** (0.0300)	0.0341 (0.0421)	-0.4145*** (0.0816)	-0.6579*** (0.0889)
15 to 20 years since migration	-0.1964*** (0.0223)	-0.1380*** (0.0345)	-0.0571* (0.0325)	0.0514* (0.0291)	-0.2114*** (0.0296)	-0.1535*** (0.0292)	0.2012*** (0.0410)	-0.4469*** (0.0794)	-0.8426*** (0.0865)
20 to 25 years since migration	-0.2085*** (0.0226)	-0.1697*** (0.0349)	-0.0687** (0.0329)	0.0582* (0.0294)	-0.2536*** (0.0300)	-0.1676*** (0.0295)	0.2377*** (0.0414)	-0.5608*** (0.0803)	-1.0241*** (0.0875)
25 to 30 years since migration	-0.2983*** (0.0237)	-0.1570*** (0.0366)	-0.0530 (0.0346)	0.0924*** (0.0309)	-0.2434*** (0.0315)	-0.1336*** (0.0310)	0.0774* (0.0435)	-0.9251*** (0.0843)	-1.2902*** (0.0918)
30 to 35 years since migration	-0.4131*** (0.0261)	-0.2550*** (0.0403)	0.0614 (0.0380)	0.1229*** (0.0340)	-0.2835*** (0.0346)	-0.2143*** (0.0341)	-0.2878*** (0.0478)	-1.1823*** (0.0927)	-1.4430*** (0.1010)
Constant	3.9125*** (0.0205)	5.3545*** (0.0316)	4.0662*** (0.0298)	3.5821*** (0.0267)	4.5873*** (0.0272)	3.6133*** (0.0267)	9.0284*** (0.0375)	15.4036*** (0.0727)	10.8372*** (0.0792)
Observations	14,776	14,776	14,776	14,776	14,776	14,776	14,776	14,776	14,776
R-squared	0.0253	0.0045	0.0022	0.0031	0.0075	0.0033	0.0233	0.0209	0.0344

Notes: This table presents the evolution of difference between immigrants' and average natives' responses for each cultural dimension. The constant estimates correspond to the average difference between both groups. Other estimates indicate how this difference evolves over years spent in Germany. The difference between immigrants' and natives' responses is measured in absolute value. Standard errors are in parentheses, ***p<0.01, **p<0.05, *p<0.1. Source: German Socio-Economic Panel.

This paper draws on the longitudinal dimension of the GSOEP to explore the mechanism at play in the relationship between cultural differences and wages. The survey includes almost 30,000 individuals from 15,000 households in each year since 1984. To continue to represent the German population after large influxes of immigrants in the country, the survey includes enlargement samples targeting these new populations. Once included in the sample, households are interviewed in each year. However, the survey suffers from attrition and respondents are on average interviewed in eight consecutive years. I use the longitudinal dimension to implement first-difference specifications where I study the relationship between changes in the distance in social concerns and wage growth. This type of estimate eliminates variations associated with changes in the composition of the sample of immigrants over time.

I also exploit information on labor-market characteristics of immigrants to obtain more precise estimates of the relationship between cultural differences and wages. To distinguish between the effect of cultural differences and linguistic skills on wages, I use a measure of proficiency in German reported in the GSOEP. During each interview, immigrants are asked to report their level of proficiency in German. The questionnaire asks the respondents about both their writing and speaking skills. The answers to these questions are divided into five categories from very good to very poor. The fact that these same questions are asked during each interview enables me to observe the immigrants' improvements in German fluency.

3 Bilateral cultural differences and wage differences

This section presents how initial cultural differences translate into wage differences between immigrants from different countries of origin. It describes these wage differences when immigrants enter the German labor market and their evolution in the following years spent in Germany. The first part details the empirical design. The second part highlights the results.

3.1 Empirical design

To interact and work with each other, individuals need to share a common set of norms and values, usually referred to as their "culture." On the one hand, this common set of norms and values is, by definition, a decreasing function of cultural differences. On the other hand, it is strengthened as individuals spend time in the same environment.

I approximate the first component using cultural distance indices measured at the country level. I use the number of years spent in Germany as a proxy for the second component. I estimate the relationship between initial cultural differences and wages by focusing on the interaction between bilateral indices of cultural distance and a series of dummy variables measuring years since migration in five-year intervals. This specification exploits variations over time (indexed by t) and across immigrant workers (indexed by i) as follows:

$$\log(w_{it}) = \beta_0 + \beta_1 \text{CD}_{O(i)} + \sum_y \gamma_y \text{YSM}_{iy(t)} + \sum_y [\alpha_y \text{YSM}_{iy(t)} \times \text{CD}_{O(i)}] + \beta_3 X_{it} + u_{it}. \quad (1)$$

The dependent variable is the logarithm of hourly wages denoted as w_{it} . I focus on wage differences associated with the cultural distance ($CD_{O(i)}$) between the country of origin O of individual i and Germany. I use variations at the country level between immigrants only. I successively estimate equation (1) based on religious and linguistic distance indices. These measures depend on the relative representation of religions and languages in both Germany and each country of origin.

Coefficient β_1 reflects entry wage differences associated with initial cultural differences. Interaction terms between cultural distance indices and the series of dummy variables denoted as $\sum_y YSM_{iy(t)}$ capture the relationship between initial cultural differences and wages over the following years spent in Germany. The variables $\sum_y YSM_{iy(t)}$ measure the number of years spent in Germany in five-year intervals, as the difference between the year in which immigrants participated in the survey and the first year in which they arrived in Germany. This approach estimates the relationship between cultural distance and earnings separately for each five-year spell. I focus on wage differences between immigrants from the reference group that consists of immigrants who have spent less than five years in Germany.

I control for several individual observable characteristics. This set of control variables is denoted as X_{it} . In particular, it includes a self-reported measure of proficiency in spoken German. Isphording and Otten (2014) show that cultural distance is a good predictor of immigrants' proficiency in their destination language. By controlling for fluency in German in equation (1), the coefficients of interest (β_1 and $\sum_y \alpha_y$) identify a channel other than linguistic skills through which cultural differences relate to immigrants' wages.

In addition to proficiency in German, I also control for the migration cohort through a dummy variable distinguishing immigrants based on whether they arrived before or after 1980. According to Borjas (1987), flattening wage profiles could also be explained by a change in the average ability of immigrant cohorts that have successively arrived in Germany over time. Finally, this specification controls for an immigrant's age, gender, college education, and citizenship status. It also controls for year of survey fixed effects to get rid of systematic trends in the evolution of wages.

3.2 Results

Table 3 presents the results of the estimation of equation 1. This table successively presents the results estimated with each bilateral index of cultural distance. It documents a negative relationship between bilateral cultural distance and wages. During the first five years spent in Germany, immigrants from countries with a one standard deviation larger cultural distance earn, on average, 4 to 10 percent less per hour. These wage differences eventually disappear after 5 to 15 years spent in Germany, depending on the distance measure. The results are robust across several measures of years since migration.²

²See section C.1 of the appendix.

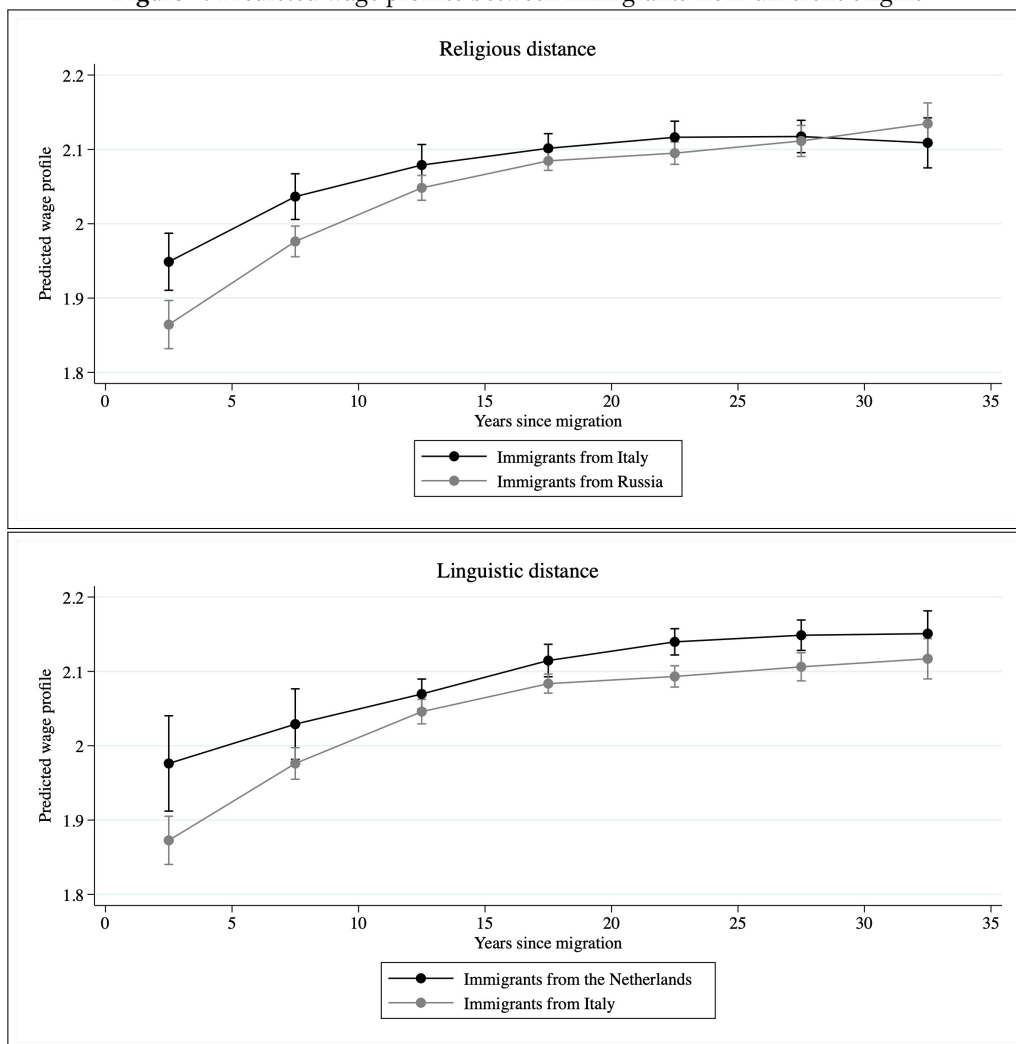
Table 3. Bilateral cultural distance and wage levels over years since migration.

Dependent variable	log hourly wages			
	(1)	(2)	(3)	(4)
Index of cultural distance		Religious distance	Linguistic distance	
Cultural distance (Baseline; 0–5 years since migration)	-0.0738*** (0.0175)	-0.0721*** (0.0154)	-0.1002*** (0.0255)	-0.0977*** (0.0266)
Cultural distance × (5–10) years since migration	0.0202 (0.0183)	0.0207 (0.0171)	0.0483 (0.0316)	0.0477 (0.0328)
Cultural distance × (10–15) years since migration	0.0498*** (0.0187)	0.0460*** (0.0173)	0.0795*** (0.0242)	0.0753*** (0.0259)
Cultural distance × (15–20) years since migration	0.0588*** (0.0187)	0.0576*** (0.0169)	0.0681** (0.0277)	0.0683** (0.0283)
Cultural distance × (20–25) years since migration	0.0541*** (0.0186)	0.0539*** (0.0167)	0.0551** (0.0256)	0.0537** (0.0269)
Cultural distance × (25–30) years since migration	0.0651*** (0.0200)	0.0670*** (0.0179)	0.0591** (0.0260)	0.0576** (0.0269)
Cultural distance × (30–35) years since migration	0.0931*** (0.0208)	0.0942*** (0.0188)	0.0668*** (0.0254)	0.0658** (0.0267)
(5–10) years since migration	0.0997*** (0.0177)	0.1119*** (0.0168)	0.0903*** (0.0182)	0.1028*** (0.0173)
(10–15) years since migration	0.1499*** (0.0181)	0.1841*** (0.0174)	0.1381*** (0.0180)	0.1722*** (0.0175)
(15–20) years since migration	0.1734*** (0.0191)	0.2204*** (0.0181)	0.1628*** (0.0191)	0.2099*** (0.0182)
(20–25) years since migration	0.1720*** (0.0202)	0.2308*** (0.0192)	0.1611*** (0.0202)	0.2198*** (0.0193)
(25–30) years since migration	0.1814*** (0.0225)	0.2472*** (0.0216)	0.1679*** (0.0217)	0.2327*** (0.0209)
(30–35) years since migration	0.1976*** (0.0249)	0.2706*** (0.0240)	0.1718*** (0.0240)	0.2434*** (0.0234)
Constant	2.1596*** (0.0309)	2.1115*** (0.0300)	2.1574*** (0.0325)	2.1099*** (0.0318)
Observations	20,361	20,361	20,361	20,361
R-squared	0.2890	0.3153	0.2918	0.3178
Education controls		Yes		Yes

Notes: this table presents the results from the estimation of equation 1. Standard errors clustered by country of origin and year of survey are in parentheses, ***p<0.01, **p<0.05, *p<0.1. All specifications control for age, German proficiency, gender, citizenship status, and immigration cohort. Source: German Socio-Economic Panel.

Figure 4 presents predicted wage profiles for two pairs of immigrant groups that differ by one standard deviation in each measure of cultural distance. This figure illustrates the evolution of wage differences over years spent in Germany as presented in table 3. It also highlights the magnitude of the relationship between cultural distance and wages for some of the main groups of immigrants included in the sample. The upper panel shows that immigrants from the Russian Federation earn seven percent less per hour than comparable immigrants from Italy when they enter the German labor market. This wage difference is no longer statistically significant after 10 to 15 years spent in Germany. The lower panel describes similar results by comparing immigrants from the Netherlands and immigrants from Italy that differ by one standard deviation in linguistic distance. In this example, the 10 percent initial wage difference disappears after 5 to 10 years spent in Germany.

Figure 4. Predicted wage profiles between immigrants from different origins



Notes: This graph highlights predicted wage profiles for two different pairs of immigrant groups that approximately differ by one standard deviation in each measure of cultural distance. Immigrants from Italy and from the Russian Federation differ by 1.17 standard deviation in religious distance. Immigrants from the Netherlands differ from the immigrants from Italy by 1.06 standard deviation in linguistic distance. The predicted wage profiles are obtained from the estimations of equation (1). Source: German Socio-Economic Panel.

Previous evidence in the literature has shown that immigrants who successfully assimilate benefit from earnings premiums on the labor market (Gregory and Meng, 2005). Therefore, such work suggests that immigrants who, after spending time in a country, eventually discard most of their cultural differences earn higher wages. The results presented in table 3 and figure 4 supplement this research. They suggest that cultural differences translate into wage differences, even between immigrants recently arrived in the country. These results are also consistent with the notion that assimilation can benefit labor market integration. As stated by Gregory and Meng (2005), as they spend time in their new destination, “immigrants acquire host country customs [...] and knowledge of the local labor market and obtain contacts and connections, which, in turn, improve their job prospects and increase the rate of economic assimilation.”

The literature has documented two other mechanisms that could explain this pattern in wages. First, these dynamics could also be driven by a change in the average ability of immigrant cohorts that have successively arrived in Germany over time. Borjas (1987) describes this composition effect in the US context. The dynamic pattern described in this section could also be driven by a change in the correlation between unobserved ability and cultural distance across successive cohorts. For instance, the relationship between cultural distance and wages, which increases over the years since migration, could result from the correlation between immigrants’ ability and their cultural distance, which decreases across successive cohorts.

Second, the dynamics of the effect could also be driven by a change in the average ability of immigrants who successively leave Germany. This type of selection in return migration was highlighted by Dustmann and Görlach (2016). According to this paper, selection in return migration could drive the dynamic pattern by changing the correlation between immigrants’ ability and cultural distance. For instance, if this correlation is greater for the group of immigrants who have spent more years in Germany, this might produce an increasing trend in the relationship between cultural distance and wages over the years since migration. To investigate the role of assimilation in this pattern independent of these selection mechanisms, section 4 implements a first-difference specification exploiting within-career variations in cultural distance and wage growth.

4 Distance in social concerns and wage growth

This section builds on the longitudinal dimension of the GSOEP to estimate the relationship between immigrants’ assimilation and wage growth. The first part details the first-difference specification. The second part presents the results.

4.1 Empirical design

This section builds on the individual measure of distance in social concerns presented in section 2. I interpret a decrease in the individual distance in social concerns as a sign of assimilation.

In this section, I take advantage of the longitudinal features of the GSOEP and focus on within-career estimates. The survey follows immigrant workers over several years. This enables me to implement

first-difference specifications to measure the determinants of immigrants' wage growth and, in particular, the relationship with their assimilation. First-difference estimates only rely on time variations and enable me to identify the relationship between immigrants' assimilation and wage growth independent of the aforementioned selection mechanisms. Within-career coefficients eliminate variations associated with changes in the size and the composition of immigrant samples. However, the average point estimates can be driven by specific subgroups of immigrants. I investigate different sources of heterogeneity in a second part.

This new specification only exploits variations over time (indexed by t) for each immigrant worker (indexed by i) as follows:

$$\Delta \log(w_{it}) = \eta_0 + \beta_1 \Delta \text{DSC}_{it} + \beta_2 X_{it} + \varepsilon_{it} \quad (2)$$

The dependent variable is the change in the logarithm of hourly wages denoted $\Delta \log(w_{it})$. I focus on variations in wage growth associated with changes in the individual index of distance in social concerns denoted as ΔDSC_{it} . The set of control variables denoted as X_{it} is similar to equation (1). It includes a self-reported measure of proficiency in spoken German in first difference. Other control variables are measured in levels and include an immigrant's age, gender, college education, and year of survey fixed effects. It finally includes a dummy variable distinguishing naturalized immigrants from the others. The latter is also measured in level and not in first-difference because the date of naturalization is not reported in the data.

This specification enables me to describe the relationship between assimilation and wage growth. This approach is not causal, and its interpretation is limited by potential omitted variables. Variations captured by the coefficient of interest (β_1) can be driven by specific subgroups of immigrant workers, and I cannot rule out the possibility that a third factor could simultaneously affect both assimilation and wage growth. In addition, the survey suffers from attrition, and this might introduce another selection layer. Nevertheless, first-difference estimates can still provide new evidence on the economic integration process of immigrant workers and specify its relationship to the assimilation process.

4.2 Results

Table 4 documents a positive relationship between assimilation and wage growth. The estimate reported in column (1) shows that a one standard deviation decrease in the distance in social concerns is associated with a 0.7 percentage point increase in wage growth. This relationship is significant at the 10 percent level. This result is robust across several definitions of the assimilation index.³ Results presented in section C.3 of the appendix also show that the result is not driven by one specific subgroup of immigrants.

The following columns investigate its heterogeneity across different groups of immigrants. The coefficients reported in column (2) of table 4 show that this relationship is larger for naturalized immigrants. It reports

³See section C.2 of the appendix.

the interaction coefficients between changes in the distance in social concerns and the dummy variable identifying naturalized immigrants.

Several channels may explain this result. Gathmann and Keller (2018) and Bratsberg et al. (2002) suggest that citizenship may affect immigrants' labor market outcomes by removing employment barriers. This could suggest that the relationship between assimilation and wage growth is larger when immigrants are no longer exposed to employment barriers. Gathmann and Keller (2018) and Govind (2021) also claim that citizenship improves immigrants' labor market outcomes by providing a credible signal of assimilation convincing employers to invest in the human capital of immigrant workers. This could suggest that assimilation is associated to a larger wage return when immigrants highlight outward signs of their assimilation. Finally, the heterogeneity between naturalized and non-naturalized immigrants might also relate to several dimensions of self-selection into citizenship.

The last column of table 4 highlights that the relationship between assimilation and wage growth does not statistically differ between European Union (EU) immigrants and non-European Union immigrants. This

Table 4. Negative relationship between changes in distance in social concerns and wage growth.

Dependent variable	Change in log hourly wages		
	(1)	(2)	(3)
Change in distance in social concerns	-0.0072** (0.0035)	-0.0040 (0.0043)	-0.0087* (0.0047)
Naturalized immigrants		0.0106 (0.0084)	
Change in distance in social concerns for naturalized immigrants		-0.0129* (0.0076)	
EU immigrants			-0.0033 (0.0070)
Change in distance in social concerns for EU immigrants			0.0029 (0.0070)
Observations	9,272	9,272	9,272
R-squared	0.0081	0.0083	0.0079

Notes: This table presents the relationship between changes in log hourly wages and changes in individual distance in social concerns. Standard errors clustered by country of origin and survey year are in parentheses, ***p<0.01, **p<0.05, *p<0.1. All specifications control for year of survey fixed effects. Additional controls include German proficiency in first difference, immigrant's age, gender, college education, citizenship status, and year of survey fixed effects. Source: German Socio-Economic Panel.

column reports the interaction coefficients between changes in the assimilation index and a dummy variable distinguishing each group of immigrants.

This result nuances the interpretation related to the role of employment barriers. Similar to naturalized immigrants, EU immigrants are not concerned by most employment barriers that apply to non-EU immigrants.⁴ The absence of significant difference in the relationship between assimilation and wage growth between EU and non-EU immigrants suggests that employment barriers are not the main determinant of the heterogeneous relationship between naturalized and non-naturalized immigrants.

5 Conclusion

This paper uses several measures of cultural differences between immigrants and natives to investigate the relationship between the assimilation and the economic integration of immigrants. The work sheds light on the interplay between these two distinct processes.

I find that initial cultural differences between immigrants from different countries of origin translate into wage differences when they enter the German labor market. I also show that these wage differences disappear after 5 to 20 years spent in Germany. While changes in the composition of immigrants over years can partly explain this pattern (Borjas, 1987, Dustmann and Görlach, 2016), I show that immigrants who experience a greater increase in assimilation over years also experience more wage growth. This shows that immigrants' assimilation coevolves with their labor market integration.

This work also suggests that immigration policies designed to enhance the assimilation of immigrant workers also favor their economic integration and vice-versa.

⁴Only some civil service occupations are not accessible to EU-immigrants.

References

- Abramitzky, R., Boustan, L., and Eriksson, K. (2020). Do immigrants assimilate more slowly today than in the past? *American Economic Review: Insights*, 2(1):125–141.
- Abramitzky, R., Boustan, L. P., and Eriksson, K. (2014). A Nation of Immigrants: Assimilation and Economic Outcomes in the Age of Mass Migration. *Journal of Political Economy*, 122(3):467–506.
- Adsera, A. and Pytlikova, M. (2015). The role of language in shaping international migration. *The Economic Journal*, 125(586):49–81.
- Battu, H. and Zenou, Y. (2010). Oppositional identities and employment for ethnic minorities: Evidence from England. *The Economic Journal*, 120(542):52–71.
- Belot, M. and Ederveen, S. (2012). Cultural barriers in migration between OECD countries. *Journal of Population Economics*, 25(3):1077–1105.
- Bertrand, M. and Kamenic, E. (2018). Coming Apart? Cultural Distances in the United States over Time. *NBER Working paper*.
- Bisin, A., Patacchini, E., Verdier, T., and Zenou, Y. (2011). Ethnic identity and labour market outcomes of immigrants in Europe. *Economic Policy*, 26(65):57–92.
- Bleakley, H. and Chin, A. (2004). Language skills and earnings: Evidence from childhood immigrants. *Review of Economics and Statistics*, 86(2):481–496.
- Borjas, G. J. (1985). Assimilation, changes in cohort quality, and the earnings of immigrants. *Journal of Labor Economics*, 3(4):463–489.
- Borjas, G. J. (1987). Self-selection and the earnings of immigrants. *The American Economic Review*, 77(4):531–553.
- Bratsberg, B., Ragan, J. F., and Nasir, Z. M. (2002). The Effect of Naturalization on Wage Growth: A Panel Study of Young Male Immigrants. *Journal of Labor Economics*, 20(3):568–597.
- Casey, T. and Dustmann, C. (2010). Immigrants' identity, economic outcomes and the transmission of identity across generations. *The Economic Journal*, 120(542):31–51.
- Chiswick, B. R. (1978). The effect of americanization on the earnings of foreign-born men. *Journal of Political Economy*, 86(5):897–921.
- Chiswick, B. R. and Miller, P. W. (2012). Negative and positive assimilation, skill transferability, and linguistic distance. *Journal of Human Capital*, 6(1):35–55.
- Costanza, B., Corrado, G., and Zahra, S. (2017). The economic payoff of name Americanization. *Journal of Labor Economics*, 35(4):1089–1116.

- Desmet, K. and Wacziarg, R. (2021). The Cultural Divide. *The Economic Journal*, 131(637):2058–2088.
- Dustmann, C. and Fabbri, F. (2003). Language proficiency and labour market performance of immigrants in the UK. *The Economic Journal*, 113(489):695–717.
- Dustmann, C. and Görlach, J.-S. (2016). Estimating immigrant earnings profiles when migrations are temporary. *Labour Economics*, 41:1–8.
- Dustmann, C. and Preston, I. (2007). Racial and economic factors in attitudes to immigration. *The BE Journal of Economic Analysis & Policy*, 7(1).
- Dustmann, C. and Soest, A. V. (2002). Language and the earnings of immigrants. *Industrial and Labor Relations Review*, 55(3):473–492.
- Fearon, J. D. and Laitin, D. D. (2003). Ethnicity, insurgency, and civil war. *The American Political Science Review*, 97(1):75–90.
- Felfe, C., Rainer, H., and Saurer, J. (2020). Why Birthright Citizenship Matters for Immigrant Children: Short- and Long-Run Impacts on Educational Integration. *Journal of Labor Economics*, 38(1):143–182.
- Fouka, V., Mazumder, S., and Tabellini, M. (2022). From Immigrants to Americans: Race and Assimilation during the Great Migration. *Review of Economic Studies*.
- Gathmann, C. and Keller, N. (2018). Access to Citizenship and the Economic Assimilation of Immigrants. *The Economic Journal*, 128(616):3141–3181.
- Gathmann, C. and Monscheuer, O. (2020). Naturalization and citizenship: Who benefits? *IZA World of Labor*.
- Govind, Y. (2021). Is naturalization a passport for better labor market integration? Evidence from a quasi-experimental setting. *PSE Working paper*.
- Gregory, R. G. and Meng, X. (2005). Inter-marriage and the Economic Assimilation of Immigrants. *Journal of Labor Economics*, 23(1):135–174.
- Güven, C. and Islam, A. (2015). Age at migration, language proficiency and socioeconomic outcomes: Evidence from Australia. *Demography*, 52(2):513–542.
- Hertner, I. (2021). Germany as ‘a country of integration’? The CDU/CSU’s policies and discourses on immigration during Angela Merkel’s Chancellorship. *Journal of Ethnic and Migration Studies*, pages 1–21.
- Islam, A. and Raschky, P. A. (2015). Genetic distance, immigrants’ identity and labor market outcomes. *Journal of Population Economics*, 28(3):845–868.
- Isphording, I. E. and Otten, S. (2014). Linguistic barriers in the destination language acquisition of immigrants. *Journal of Economic Behavior and Organization*, 105(30–50).

- Jaschke, P., Sardoschau, S., and Tabellini, M. (2021). Scared Straight? Threat and Assimilation of Refugees in Germany. *CEPR Discussion Paper*.
- Lochmann, A., Rapoport, H., and Speciale, B. (2018). The effect of language training on immigrants' economic integration - empirical evidence from France. *European Economic Review*, 113:265–296.
- Lubotsky, D. (2007). Chutes or Ladders? A Longitudinal Analysis of Immigrant Earnings. *Journal of Political Economy*, 115(5):820–867.
- Mason, P. L. (2004). Annual income, hourly wages, and identity among Mexican-Americans and other Latinos. *Industrial Relations: A Journal of Economy and Society*, 43(4):817–834.
- McManus, W., Gould, W., and Welch, F. (1983). Earnings of Hispanic men: The role of English language proficiency. *Journal of Labor Economics*, 1(2):101–130.
- Spolaore, E. and Wacziarg, R. (2016). Ancestry, language and culture. In *The Palgrave Handbook of Economics and Language*, pages 174–211.
- Water, M. C. and Jimenez, T. R. (2005). Assessing Immigrant Assimilation: New Empirical and Theoretical Challenges. *Annual Review of Sociology*, 31:105–125.

A Individual index of distance in social concerns

This section provides additional details on the construction of the individual index of distance in social concerns between immigrants and natives. I follow Jaschke et al. (2021) in measuring cultural differences in stated preferences between immigrants and natives at the individual level. I select all questions on social concerns asked each year in the German Socio-Economic Panel (GSOEP) since 1984. These nine questions focus on political orientations with respect to important social issues. In particular, these questions ask immigrants whether they support a political party and whether they are interested in political issues. They also ask whether the respondent is concerned about job security, finances, environmental issues, peace, and economic development. Finally, they ask immigrants about their overall satisfaction with health and life in general.

This index builds on Euclidean distance to approximate the distance in social concerns between immigrants and natives as highlighted in the following equation :

$$DSC_{it} = \sqrt{\sum_{q=1}^9 (a_{qit}^m - \bar{a}_{qt}^n)^2}$$

For each question q for each year t , I compute the squared distance between the answer given by each immigrant worker a_{qit}^m and the average value \bar{a}_{qt}^n computed from the answers provided by all natives living in the same federal state. I take the square root of this term.

Table A.1 lists the questions used to construct the individual measure of distance in social concerns between immigrants and natives. All nine questions belong to the category defined as political orientations in the GSOEP. They relate to the respondent's interest in political issues, the respondent's concerns about major political issues, and the respondent's satisfaction with life. The table details the questions asked to respondents as well as the scale of possible responses.

Table A.1. Nine dimensions of the individual measure of distance in social concerns.

Dimension	Question	Possible answers
1	Do you support a political party?	1 = Yes; 2 = No; 3 = Do not know
2	Are you interested in political issues?	1 = Very Strongly; 2 = Strongly; 3 = Not Much; 4 = Not at all
3	Are you worried about job security?	1 = Very concerned; 2 = Somewhat concerned; 3 = Not concerned at all
4	Are you worried about finances?	1 = Very concerned; 2 = Somewhat concerned; 3 = Not concerned at all
5	Are you worried about the environment?	1 = Very concerned; 2 = Somewhat concerned; 3 = Not concerned at all
6	Are you worried about peace?	1 = Very concerned; 2 = Somewhat concerned; 3 = Not concerned at all
7	Are you worried about economic development?	1 = Very concerned; 2 = Somewhat concerned; 3 = Not concerned at all
8	How would you rate your satisfaction with life?	Scale from 0 (completely dissatisfied) to 10 (completely satisfied)
9	How would you rate your satisfaction with your health?	Scale from 0 (completely dissatisfied) to 10 (completely satisfied)

Notes: This table presents the nine dimensions along which I construct the individual measure of distance in social concerns between immigrants and natives. Source: German Socio-Economic Panel.

B Sample description

B.1 Representativeness of the sample

This paper builds on the German Socio-Economic Panel (GSOEP) and concerns of immigrants living in Germany. It focuses on the relationship between log hourly wages and cultural distance between immigrant workers and natives. The analysis relies on econometric specifications that take numerous control variables into account. Missing values led to the exclusion of many survey respondents from the analysis. I retained only 5,394 out of 8,378 immigrant workers. This section provides descriptive statistics to assess the representativeness of my subsample with respect to the entire population of immigrant workers included in the GSOEP. I refer to this as the “complete sample” in the following section.

Table B.1.1 compares the time-invariance characteristics of my sample to those of the complete sample. The table focuses on gender representation, years of education, and the three bilateral measures of cultural distance. Column 1 presents the average values for my sample. Column 2 focuses on the complete sample. Column 3 compares the average values of both samples with a t test. This last column shows both average differences and standard errors. Immigrants from both samples do not differ statistically in terms of gender representation, years of education, or religious and linguistic distance. This suggests that the results of the paper may be instructive vis-a-vis the entire population.

Table B.1.1. Representativity of the sample.

	Immigrants in my sample	All immigrant workers in GSOEP	T-test
Share of males (in percentages)	54.02	54.66	-0.63 (.87)
Years of education	11.09	11.01	0.09 (0.05)
Linguistic distance	0.97	0.96	0 (0)
Religious distance	0.83	0.84	0 (0)
Number of individuals	5394	8378	

Notes: This graph compares the demographics of immigrants included in my sample to all immigrants in the GSOEP. Standard errors are presented in parentheses. **Source:** German Socio-Economic Panel 1984–2017.

Table B.1.2 documents the labor-market characteristics taken into account in the analysis. The table successively describes the hourly wage in euros, the number of years of experience in the labor market, the number of years since migration, and the number of employees working in the companies in which immigrants are employed. Column 1 presents the average values for my sample. Column 2 focuses on the complete sample of immigrants surveyed by the GSOEP. Column 3 compares the average values of both samples with a t test. This last column shows both average differences and standard errors. The results suggest that my analysis sample is not perfectly representative of the entire population of immigrants included in the GSOEP. The immigrants in my sample earn slightly higher wages than the rest of the immigrants surveyed by the GSOEP. They are also more experienced and have been living in Germany for two more years than the rest of immigrants surveyed by the GSOEP.

Even if the magnitude of the differences between the samples is small, this raises an issue related to the external validity of the results. One could legitimately wonder if these differences affect the results of this paper. Note that all preferred specifications presented in this paper control for these demographic and labor market characteristics. Therefore, they should present results unaffected by the variations associated with these several dimensions. Nevertheless, this does not entirely address the external validity issue, and one should keep this limitation in mind when considering the results of the paper.

Table B.1.2. Representativity of the sample with respect to labor market characteristics.

	Immigrants in my sample	All immigrant workers in GSOEP	T-test
Hourly wages (in euros)	9.04	8.35	0.69 (0.12)
Years of previous experience	15	13	1.43 (0.2)
Years since migration	14	11	2.92 (0.14)
Firm size	6.67	6.67	0.01 (0.05)
Number of individuals	5394	8378	

Notes: This graph compares the labor market characteristics of immigrants included in my sample to all immigrants in the GSOEP. Standard errors are presented in parentheses. **Source:** German Socio-Economic Panel 1984–2017.

B.2 Summary statistics on all countries of origin

Tables B.2.1 and B.2.2 present summary statistics for all countries of origin that are not included in table 1.

Table B.2.1. Summary statistics on all countries of origin.

Country of origin	Sample share	Religious distance	Linguistic distance
Thailand	0.41	0.9973	1
Albania	0.39	0.8985	0.9665
Cameroon	0.37	0.9333	1
Switzerland	0.35	0.7305	0.7049
Nigeria	0.35	0.9111	1
Vietnam	0.33	0.9785	1
Ghana	0.33	0.9477	1
Uzbekistan	0.3	0.9259	0.9946
Mexico	0.28	0.7425	0.967
Latvia	0.28	0.79	0.9664
Egypt	0.28	0.9256	1
Armenia	0.24	0.8723	0.9675
Peru	0.24	0.7616	0.9665
Georgia	0.24	0.8797	0.9942
Colombia	0.24	0.7616	0.9665
Moldova	0.24	0.8649	0.9676
Azerbaijan	0.24	0.9277	0.9971
Tajikistan	0.2	0.9141	0.9759
Cuba	0.2	0.777	0.9669
Belgium	0.2	0.7154	0.9232
Ethiopia	0.19	0.9181	1
Algeria	0.19	0.9334	1
Eritrea	0.17	0.897	1
Denmark	0.17	0.7333	0.932
Chile	0.17	0.7234	0.9665
Sweden	0.15	0.7712	0.9338
Argentina	0.15	0.7366	0.9668
Finland	0.15	0.7611	0.996
Jordan	0.13	0.9283	0.9997
South Africa	0.13	0.9079	0.983
Ecuador	0.11	0.7458	0.9665
Canada	0.11	0.7644	0.919
Congo	0.11	0.9328	1
Venezuela	0.09	0.735	0.9665
Turkmenistan	0.09	0.9251	0.9962
Indonesia	0.09	0.9158	1
Togo	0.09	0.9672	1
Taiwan	0.09	0.9936	1

Notes: This table completes the list of origin countries of immigrants included in my sample. The table also presents the relative importance of each country in the sample as well as the two measures of bilateral cultural distance. Source: German Socio-Economic Panel.

Table B.2.2. Summary statistics on all countries of origin (cont.).

Country of origin	Sample share	Religious distance	Linguistic distance
Japan	0.09	0.9987	1
Kenya	0.09	0.807	1
Norway	0.07	0.7403	0.932
Ireland	0.07	0.749	0.9643
Nepal	0.07	0.998	0.9705
New Zealand	0.07	0.7533	0.9081
Bangladesh	0.07	0.9382	0.9665
Estonia	0.07	0.8062	0.989
Dominican Republic	0.07	0.7458	0.9665
Guinea	0.07	0.9294	1
Malaysia	0.06	0.9561	1
Bolivia	0.06	0.7268	0.9854
Jamaica	0.06	0.8036	0.8971
Israel	0.06	0.9338	1
Somalia	0.04	0.9327	1
Libya	0.04	0.9348	1
United Arab Emirates	0.04	0.9355	0.9763
Kuwait	0.04	0.9431	0.988
Mozambique	0.04	0.9468	1
Zimbabwe	0.04	0.9343	0.997
Angola	0.04	0.8609	1
Korea	0.04	0.9356	1
Australia	0.04	0.7613	0.8962
Sudan	0.04	0.9444	1
Rwanda	0.02	0.8041	1
El Salvador	0.02	0.7739	0.9665
Honduras	0.02	0.7394	0.9672
Uruguay	0.02	0.7765	0.9665
Chad	0.02	0.9318	1
Niger	0.02	0.944	1
Myanmar(Burma)	0.02	0.9922	0.9993
The Gambia	0.02	0.9244	1
Laos	0.02	1	1
Namibia	0.02	0.8853	0.9819
Paraguay	0.02	0.724	1
Mali	0.02	0.9353	1
Nicaragua	0.02	0.777	0.9682
Benin	0.02	0.9703	1
Costa Rica	0.02	0.725	0.9672
Mongolia	0.02	0.9973	0.9989

Notes: This table completes the list of origin countries of immigrants included in my sample. The table also presents the relative importance of each country in the sample as well as the two measures of bilateral cultural distance. Source: German Socio-Economic Panel.

C Robustness checks

This section presents a series of robustness tests conducted to challenge the main results presented in sections 3 and 4. It first replicates the specifications studying the evolution of wage differences over different measures of years spent in Germany. It then replicates the analysis of wage growth by modifying the sample used in the analysis.

C.1 Year ranges

Table C.1.1 replicates the log hourly wage specifications presented in table 2 with another measure of years since migration. This table highlights the interaction coefficients between bilateral indices of cultural distance and a series of dummy variables measuring years since migration in three-year intervals. Results are similar to those presented in table 2. Wage differences associated with cultural distance disappear after 5 to 15 years spent in Germany.

Table C.1.1. Bilateral cultural distance and wage levels over years since migration.

Dependent variable	log hourly wages	
	(1)	(2)
Index of cultural distance	Religious distance	Linguistic distance
Cultural distance (Reference; 0–3 years since migration)	-0.0761*** (0.0270)	-0.1478** (0.0644)
Cultural distance × (3–6) years since migration	-0.0126 (0.0275)	0.0419 (0.0695)
Cultural distance × (6–9) years since migration	0.0239 (0.0299)	0.1012 (0.0686)
Cultural distance × (9–12) years since migration	0.0547* (0.0293)	0.1207* (0.0680)
Cultural distance × (12–15) years since migration	0.0428 (0.0286)	0.1189* (0.0647)
Cultural distance × (15–18) years since migration	0.0519* (0.0280)	0.1282** (0.0651)
Cultural distance × (18–21) years since migration	0.0697** (0.0286)	0.0986 (0.0654)
Cultural distance × (21–24) years since migration	0.0610** (0.0287)	0.1106* (0.0657)
Cultural distance × (24–27) years since migration	0.0740*** (0.0283)	0.1005 (0.0649)
Cultural distance × (27–30) years since migration	0.0733** (0.0295)	0.1077* (0.0649)
Cultural distance × (30–33) years since migration	0.1090*** (0.0303)	0.1117* (0.0651)
Observations	19,976	19,976
R-squared	0.2887	0.2909

Notes: This table presents the results from the estimations of equation (1). Standard errors clustered by country of origin and year of survey are in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All specifications control for age, German proficiency, gender, citizenship status, college education, immigration cohort, and year of survey fixed effects, where time is measured through a series of dummy variables measuring years of survey in five-year intervals. Source: German Socio-Economic Panel.

C.2 Clustering standard errors

This section shows that the results presented in table 2 are robust to another type of standard errors clustering. It replicates the specification presented in table 2 clustering standard errors by country of origin. Therefore, it enables standard errors to be correlated across years.

Table C.2.1. Bilateral cultural distance and wage levels over years since migration.

Dependent variable	log hourly wages			
	(1)	(2)	(3)	(4)
Index of cultural distance		Religious distance	Linguistic distance	
Cultural distance (Baseline; 0–5 years since migration)	-0.0866*** (0.0296)	-0.0834*** (0.0173)	-0.1059*** (0.0348)	-0.1026*** (0.0296)
Cultural distance × (5–10) years since migration	0.0294 (0.0201)	0.0291 (0.0184)	0.0479* (0.0271)	0.0472 (0.0359)
Cultural distance × (10–15) years since migration	0.0602* (0.0306)	0.0550*** (0.0190)	0.0805*** (0.0279)	0.0757*** (0.0282)
Cultural distance × (15–20) years since migration	0.0711** (0.0279)	0.0686*** (0.0187)	0.0730** (0.0293)	0.0728** (0.0308)
Cultural distance × (20–25) years since migration	0.0698** (0.0317)	0.0680*** (0.0186)	0.0608** (0.0293)	0.0587* (0.0303)
Cultural distance × (25–30) years since migration	0.0826** (0.0386)	0.0830*** (0.0198)	0.0620* (0.0317)	0.0600** (0.0301)
Cultural distance × (30–35) years since migration	0.1102*** (0.0315)	0.1098*** (0.0206)	0.0721** (0.0332)	0.0704** (0.0298)
(5–10) years since migration	0.1045*** (0.0209)	0.1175*** (0.0179)	0.0945*** (0.0208)	0.1079*** (0.0188)
(10–15) years since migration	0.1554*** (0.0253)	0.1926*** (0.0186)	0.1427*** (0.0218)	0.1799*** (0.0191)
(15–20) years since migration	0.1827*** (0.0235)	0.2337*** (0.0192)	0.1713*** (0.0206)	0.2225*** (0.0197)
(20–25) years since migration	0.1842*** (0.0277)	0.2477*** (0.0204)	0.1720*** (0.0250)	0.2356*** (0.0209)
(25–30) years since migration	0.1917*** (0.0323)	0.2633*** (0.0229)	0.1752*** (0.0296)	0.2460*** (0.0224)
(30–35) years since migration	0.2060*** (0.0325)	0.2858*** (0.0253)	0.1765*** (0.0285)	0.2550*** (0.0248)
Constant	2.4339*** (0.0573)	2.3540*** (0.0306)	2.4326*** (0.0524)	2.3534*** (0.0319)
Observations	20,361	20,361	20,361	20,361
R-squared	0.2553	0.2876	0.2579	0.2899
Education controls		Yes		Yes

Notes: This table presents the results from the estimations of equation (1). Standard errors clustered by country of origin and year of survey are in parentheses, ***p<0.01, **p<0.05, *p<0.1. All specifications control for age, German proficiency, gender, citizenship status, and immigration cohort. Source: German Socio-Economic Panel.

C.3 Excluding one dimension at a time

Tables C.3.1 and C.3.2 replicate the estimation of equation (2) with different indices of distance in social concerns at the individual level to ensure that the results are not driven by one specific dimension taken into account in the individual measure used in table 3.

Table C.3.1. Robustness: The relationship between changes in distance in social concerns and wage growth is not driven by one specific cultural dimension.

Dependent variable	Change in log hourly wages					
	(1)	(2)	(3)	(4)	(5)	(6)
Measure	Main measure	Excluding dimension 1	Excluding dimension 2	Excluding dimension 3	Excluding dimension 4	Excluding dimension 5
Change in distance in social concerns	-0.0072** (0.0035)	-0.0077** (0.0036)	-0.0070** (0.0034)	-0.0070** (0.0035)	-0.0079** (0.0035)	-0.0063* (0.0035)
Observations	9,272	9,291	9,283	9,292	9,296	9,578
R-squared	0.0083	0.0082	0.0084	0.0083	0.0084	0.0079

Notes: This table presents the relationship between changes in log hourly wages and changes in the individual measure of distance in social concerns. Distance in social concerns is measured through several indices successively excluding each political dimension. Standard errors clustered by country of origin and year of survey are in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All specifications control for year of survey fixed effects. Additional controls include German proficiency in first difference, immigrant's age, gender, college education, citizenship status, and year of survey fixed effects. Source: German Socio-Economic Panel.

The first columns in tables C.3.1 and C.3.2 replicate the preferred specification presented in column (1) of table 3. This specification uses the main measure of distance in social concerns at the individual level including the nine cultural dimensions. The next columns replicate this specification with different measures that successively exclude each of the questions on social concerns.

Both tables show that the relationship between assimilation and wage growth is fairly similar across all specifications. Not all coefficients are significant, but point estimates are fairly similar.

Table C.3.2. Robustness: The relationship between changes in distance in social concerns and wage growth is not driven by one specific dimension.

Dependent variable	Change in log hourly wages				
	(1)	(2)	(3)	(4)	(5)
Measure	Main measure	Excluding dimension 6	Excluding dimension 7	Excluding dimension 8	Excluding dimension 9
Change in distance in social concerns	-0.0072** (0.0035)	-0.0069** (0.0032)	-0.0046 (0.0033)	-0.0052 (0.0037)	-0.0065** (0.0032)
Observations	9,272	10,221	9,297	9,280	10,570
R-squared	0.0083	0.0077	0.0080	0.0082	0.0096

Notes: This table presents the relationship between changes in log hourly wages and changes in distance in social concerns. The latter is measured through several indices successively excluding each dimension of social concerns. Standard errors clustered by country of origin and year of survey are in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All specifications control for year of survey fixed effects. Additional controls include German proficiency in first difference, immigrant's age, gender, college education, citizenship status, and year of survey fixed effects. Source: German Socio-Economic Panel.

C.4 Excluding one country at a time

Table C.4.1 replicates the estimation of equation (2) with different samples to ensure that the results are not driven by one specific group of immigrant workers.

Column (1) of table C.4.1 replicates the preferred specification presented in column (1) of table 3. The next five columns replicate this specification on different subsamples. Each one of these subsamples successively excludes a specific group of immigrant workers by country of origin. The table only considers the main countries of origin included in the original sample: Turkey, Poland, Italy, Russia and Kazakhstan.

Table C.4.1. Robustness: The relationship between changes in distance in social concerns and wage growth is not driven by one specific group of immigrants.

Dependent variable	Change in log hourly wages					
	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Main sample	Excluding Turkish immigrants	Excluding Polish immigrants	Excluding Italian immigrants	Excluding Russian immigrants	Excluding Kazakh immigrants
Change in distance in social concerns	-0.0072** (0.0035)	-0.0071 (0.0046)	-0.0075** (0.0037)	-0.0066* (0.0038)	-0.0067* (0.0037)	-0.0081** (0.0036)
Observations	9,272	7,017	8,456	7,754	8,585	8,685
R-squared	0.0083	0.0081	0.0082	0.0088	0.0089	0.0095

Notes: This table presents the relationship between changes in log hourly wages and changes in distance in social concerns. Standard errors clustered by country of origin and survey year are in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All specifications control for year of survey fixed effects. Additional controls include German proficiency in first difference, immigrant's age, gender, college education, citizenship status, and year of survey fixed effects. Source: German Socio-Economic Panel.

The relationship between assimilation and wage growth is fairly similar across samples. Coefficients are not all significant, but point estimates are fairly similar across columns. This suggests that the results are not driven by variations associated with immigrants from a specific country.