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I Z A
World of Labor
Evidence-based policy making

Economic effects of differences in dialect

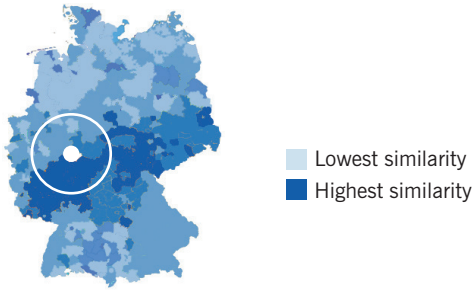
Dialects show regional cultural variation, making the idea of standardized national labor markets misleading

Keywords: dialects, cultural differences, regional migration

ELEVATOR PITCH

Countries are not perfectly integrated market areas. Even if institutional differences are much smaller within countries than between them, there are persistent local cultural differences. These differences act as barriers that reduce economic exchange: bilateral migration, trade, and knowledge diffusion flows are smaller, and individuals discriminate against unfamiliar dialects. They also act as natural limits to the degree of integration of a labor market, and they cannot (and perhaps should not) be easily affected by policy. Local dialects, shaped over centuries, provide a unique opportunity to measure these barriers.

Dialects differ substantially across regions in Germany



Note: Dialect similarity of all districts is shown in reference to the city of Marburg.

Source: [1].

KEY FINDINGS

Pros

- Speech patterns have been shaped over centuries.
- Dialects provide a rich portrayal of local cultural diversity and history.
- Dialect similarity fosters migration, trade, and knowledge flows, and people prefer to reside in, and interact with people from, linguistically familiar environments.
- Dialects, as measured by linguistic microdata, provide a unique opportunity to measure the effects of cultural differences on internal migration and economic outcomes.
- Linguistic differences slowly erode, but not the underlying cultural barriers; these remain visible in dialect differences, which are no longer actual communication barriers.

Cons

- Cultural barriers (measured via differences in dialect) reduce economic exchange across regions.
- Cultural barriers limit the possibility for perfectly integrated national labor markets.
- It is not clear if policymakers should aim for a reduction of cultural barriers, nor is it clear that they have any instruments to do so.
- Dialect data are scarce and high-quality data are available only for a few countries.

AUTHOR'S MAIN MESSAGE

Recent research based on linguistic microdata shows the significance of historical dialect (i.e. cultural) differences for contemporary economic outcomes. These differences clearly have an impact on the integration of national labor markets, though this does not mean that they reduce overall welfare. As dialect and cultural patterns have been shaped over centuries, they are difficult to reverse. Moreover, there is nothing definitive in the existing literature to suggest that policymakers should strive to erase these regional differences, which seem to offer significant, if hard to measure, value to many individuals.

MOTIVATION

It has long been argued that economic phenomena are affected by culture. This concept is not easily tested, however, and difficult to measure. What does culture include? Moreover, proxies for cultural ties are often available only at a high level of aggregation, typically for different countries. Research has found that those high-level cultural borders hinder economic exchange. They may, however, coincide with other differences and their effects on economic outcomes. For example, institutions and regulatory regimes also differ between countries, and the data on cultural ties may partly pick up the effects of these other barriers. A recent area of research has therefore developed an intra-national approach to study the economic effects of cultural barriers. Institutional barriers are much lower across regions of the same country than between countries. A regional approach may, thus, prove useful to uncover the actual and undistorted effects of culture on economic exchange. This research relies on linguistic microdata and argues that local dialects provide a unique opportunity to comprehensively measure deep and persistent cultural ties at a high geographical level.

DISCUSSION OF PROS AND CONS

A new branch of literature started in 2012 with a study that investigated the effect of historical dialect differences on contemporary internal migration flows in Germany [2]. Various other studies have exploited the same linguistic data, which come from an encompassing language survey conducted by a German linguist between 1879 and 1888, to study different economic outcomes. Given the ongoing developments in this field, it is worthwhile reviewing these data and summarizing the different studies which use them. In addition, comparable dialect data have recently become available for other countries (such as Japan and China), and it is thus interesting to survey this literature as well.

The dialect data

Linguistic microdata on local dialects were first exploited in the economics literature in a 2012 study of internal migration flows within Germany [2]. The authors use data from late-19th-century linguist Georg Wenker's comprehensive language survey of approximately 45,000 German schools across the entire German empire between 1879 and 1888. The survey asked students to read 40 German sentences which were designed to reveal specific linguistic features found in their local dialects. Wenker and his team integrated these raw data into a linguistic atlas of the German empire (*Sprachatlas des Deutschen Reichs*), which presents a detailed geographical distribution of specific language characteristics. Linguists identified 66 archetypal attributes related to the pronunciation of consonants and vowels, as well as grammar that are relevant for the formation of the German language area. The pioneering study from 2012 matched these historical data with the regional classification scheme for intra-German migration flows (NUTS3 regions, *Landkreise*), and constructed a matrix of specific dialect similarity.

The illustration on page 1 is a representation of the data used in this 2012 study. It maps the regional similarities to the dialect spoken in Marburg, Germany (Wenker's university town) as measured in the late 19th century. Regions geographically closer tended to have a more similar dialect. However, the correlation between dialect distance and geographic distance is far from perfect: when placing a circle around the reference point, it becomes

obvious that dialect distance varies considerably across geographically equidistant regions.

The geography of dialects is the result of an evolutionary process and—almost like a genome—stores information about historical interactions across regions. Charles Darwin, in his seminal book *On the Origin of Species*, noted as early as 1859 the usefulness of language data in this regard: "If we possessed a perfect pedigree of mankind, a genealogical arrangement of the races of man would afford the best classification of the languages now spoken around the world; and if all extinct languages, and all intermediate and slowly changing dialects, were to be included, such an arrangement would be the only possible one."

Of course, culture is not restricted to language; it is present in numerous other domains, including art, traditions, and habits. Even so, the prevailing view in anthropology and sociology insists that cultural and linguistic evolution proceed in parallel, and that language is the clearest indicator of cultural identity. And indeed, the 2012 study shows with various examples that this view is hard to refute [2]. Factors such as unique historical events, political borders, common religious history, and previous mass migration waves, all left long-lasting imprints on local dialect structures. Moreover, a higher degree of dialect similarity between any two regions signifies that those regions had more intensive interaction in the past, resulting in a higher degree of cultural similarity [1].

Today, dialects are much less common in Germany than in the 19th century, when Wenker collected his data. Linguistic diffusion, supported by, for example, national media, has enabled individuals to communicate with each other in standard German more easily, albeit with some variation among local accents. Nevertheless, even if dialects no longer present actual communication barriers, they are still relevant today, as they reflect persistent cultural differences that have developed over centuries.

For a subset of German regions it is even possible to quantify this persistence. In particular, the Bavarian linguistic atlas project enables researchers to recover the current spatial distribution of the same language characteristics as measured in Wenker's original survey. These data can then be used to build a comparable matrix of dialects across 69 Bavarian regions. The correlation between the historical and the contemporary matrix is as large as 0.85 (a value of 1.00 would imply perfect correlation). Furthermore, it is found that 82% of all entries are identical, and less than 18% of the evaluated language characteristics differ between the historical and the recent data. That is, even in absolute terms, there seems to be strong persistence in local language patterns in Bavaria over the past 120 years.

The impact of historical cultural differences on contemporary migration flows

The above-mentioned 2012 study investigates the extent to which these historical dialect differences affect contemporary economic exchange [2]. More specifically, the authors evaluate the impact of these differences on gross migration flows across 439 German districts (NUTS3 regions). Migration is a suitable economic outcome variable because it typically occurs rarely in an individual's lifetime and can be observed at the regional level. Cultural factors are likely to influence such decisions quite strongly. The study's estimation framework considers migration flows between any two given German regions. It accounts for distance, historical dialect similarity, and factors that are purely

origin or destination specific (such as per-capita incomes or the unemployment rate), ultimately producing an unbiased estimate of the influence of dialect differences on migration flows [2]. The central finding from this empirical model is that contemporary migration is more likely if two regions have similar dialects. The authors provide a quantitative benchmarking according to which internal migration in Germany would have been almost 20% higher had there been no dialect (i.e. cultural) barriers across German regions [2].

Several analyses were conducted to explore whether this finding can be interpreted as the causal impact of time-persistent, intangible cultural borders on current economic exchange. These analyses suggest that dialect similarity should not be confused with other types of region-pair-specific similarities, such as a common religious or political history, a similar industry structure, connectedness through historical trading routes, or regional differences in persistent geological features. While controlling for these characteristics does somewhat reduce the measured impact of historical dialect similarity on current migration flows, there is still a highly significant impact.

Moreover, the subset of Bavarian regions for which contemporary dialect data are available allows for a more robust investigation, using an instrumental variables approach. The results are even larger than the baseline estimate, which apparently underestimates the positive effect of cultural ties on economic exchange.

Dialect similarity and individual migration decisions in Germany

Exploring the impact of dialect barriers on migration, a 2014 study considers individual mobility decisions instead of aggregate regional migration flows [1]. Specifically, the study uses a balanced panel data set of 10,393 individuals from the German Socio Economic Panel (GSOEP) covering the period from 2000 to 2006. The region of residence is known for every individual for every year, which allows the authors to obtain data on regional migrations. They identify 994 individuals who moved at least once within Germany during the observation period. For each of those moves, both the geographical and the dialect distance can be observed, and the authors analyze which type of "distance" the individuals are more sensitive to. In line with previous results, they first show that geographic distance has a negative overall effect on migration. Moreover, they find that more-educated and risk-loving individuals are more likely to migrate; among those who move, these types of individuals also tend to relocate over longer distances. The authors then reveal an important aspect as to why this is the case: they show that pure geographic distances do not play any role in explaining the higher mobility of more-educated and risk-loving people. Instead, these individuals are found to be less sensitive to the cultural costs of migration, which is manifested in lower overall distance sensitivity in their migration decisions due to the general relationship between cultural and geographic dispersion [1].

Another study exploits the German dialect data to develop a quantitative measure for the psychic costs of migration (the social costs, e.g. added stress, losses to quality of life), which the authors monetize as the wage premium for moving to a culturally different location [3]. Their approach is based on the assumption that living in a culturally unfamiliar environment is equivalent to a consumption dis-amenity (i.e. having poor household goods and services in an area). Consequently, a potential internal migrant will move to a culturally unfamiliar environment only if they are compensated by a wage

premium and/or by lower rents compared to their place of origin. The authors use administrative social security panel data to identify internal migrants in Germany as job switchers who also move from one county to another. They merge the internal migrants' wage profiles over time with information on the geographic and dialect distance between their origin and destination counties. The main findings imply that internal migrants demand a wage premium of about 1% for overcoming one standard deviation in historical dialect distance. This finding is remarkable, because another plausible hypothesis is that migrants in culturally more distant regions are discriminated against, and thus earn lower wages. However, even though there is evidence for this discrimination channel (see below), this is more than offset by the compensating wage differential, so that migrants in culturally more distant regions earn more overall. Digging deeper into these effects, the study finds that it is driven by men and those who earn above-average wages. Moreover, the wage premium is relatively more pronounced for geographically short moves, and it is persistent over time. The authors also analyze individuals who made multiple moves within a relatively short timeframe. The results show that internal migrants who make a "wrong decision" in their initial move correct this in their second move by demanding much higher wage premiums [3]. These results imply that studies that neglect the psychic costs of migration are likely to overestimate the rate of return to the financial resources migrants allocate to migration.

The impact of dialect barriers on other economic outcomes

Several studies have used the same historical dialect data from the Wenker survey to explore the impact on contemporary economic outcomes within Germany in other contexts.

One such study from 2015 focuses on intra-national trade [4]. Numerous publications from the international economics literature have identified the trade-promoting factor of being able to communicate directly by speaking the same language. This 2015 study seems to be the first, however, to analyze the effects of dialects of a single language on trade across regions of the same country. The authors essentially follow the same estimation strategy as mentioned in the 2012 study [2], but exploit shipment data from the Federal Motor Transport Authority (Kraftfahrt-Bundesamt) and the Federal Statistical Office (Statistisches Bundesamt) as the outcome variable. These data are available for 101 regional units called "Verkehrsbezirke," which is a less-localized level than the NUTS3 regions considered before. The main results are consistent between the studies, and the results are, if anything, slightly larger than before. Cultural barriers thus seem to hinder trade flows just as strongly, if not more so, as migration flows.

A further study has also investigated the impact of cultural barriers on knowledge flows [5]. It considers a radical innovation from the early 19th century, namely the start of the kindergarten movement. Prior to this innovation, preschool institutions were essentially designed to "store" children from the age of two, without involving any instruction or educational objectives. The German educationalist Friedrich Froebel developed this radical new idea of preschool education institutions, founding the first kindergarten close to his birthplace in Bad Blankenburg, Thuringia, in 1839. The idea spread, but as in other instances (such as the spread of Protestantism) this happened slowly. The study finds that the diffusion process was strongly affected by cultural proximity to Bad Blankenburg [5]. That is, even conditional on geographical distance, a region was more

likely to adopt the kindergarten concept the closer it was linguistically (i.e. culturally) to the idea's original birthplace.

This result is robust to the inclusion of other similarity measures; for example, with respect to industry or religion, and to more differentiated measures of geographic distance and similarity. Moreover, the authors also exploit regional variation in modern-day kindergartens and still find an existing correlation with the historical dialect distance to Bad Blankenburg [5]. In other words, even though the kindergarten is now an omnipresent institution throughout Germany, there is evidence that persistent cultural factors still influence decisions about how to utilize this education practice.

While previous studies have shown that cultural barriers lower economic exchange because individuals are less willing to interact with (or move to) culturally unfamiliar environments, a recent experimental study provides evidence that there is also discrimination against speakers of unfamiliar dialects [6]. The authors conducted a laboratory experiment in Germany where participants completed cognitive tests in which they could choose to either cooperate or compete with a randomly matched male opponent identified only via his verbal rendering of a standardized text. They found that, when a person is matched with an opponent who speaks the accent of the participant's home region, he or she tends to cooperate significantly more often. By contrast, individuals are more likely to behave uncooperatively when matched with an accent speaker from outside their home region. This finding has two major implications. First, it suggests that the perception of an unfamiliar accent not only leads to social discrimination, but also influences economic decisions. Second, this economic behavior is not necessarily attributable to the perception of a regional accent per se, but rather to the social rating of linguistic distance and the perception it evokes.

Finally, further studies have exploited German dialects data to look at yet other economic outcomes. One found, for example, that university graduates in Germany are less likely to take up their first job in a region with a more dissimilar dialect [7], while another uses dialects as a proxy for communication frictions when investigating the knowledge transmission within multi-establishment firms [8].

Studies from other countries

While the literature on dialects in economics started with the case of Germany, due to the unique data from the Wenker survey, the literature for other countries is growing. China is another prominent case where dialect data have been used to study the effect of cultural barriers on economic exchange. An early contribution estimates the returns to speaking standard Mandarin and finds substantial wage gains, especially for female workers [9]. But, while this study distinguishes standard and non-standard language, it does not analyze the detailed linguistic variation across different local dialects. However, data that are more comparable to the Wenker survey have recently become available for China, although they are considerably less detailed. One study makes use of these data by dividing China into different "cultural zones," where a zone is based on speaking a similar dialect. It finds that economic exchange is significantly more intensive within zones than across them [10].

In Japan, a recent study investigates border effects in intra-national trade flows across Japanese prefectures. The linguistic data are also based on a language survey. Consistent

with other research [4], this study finds that dialect distance has a detrimental effect on cross-regional trade flows. This is only a side aspect in the Japanese study, however, as it is mainly interested in the identification and economic explanation of an east–west border effect. This intangible border is extremely robust in the Japanese commodity flow data, although the country was never politically divided or substantially segregated along these lines. While dialect differences reduce trade flows across prefectures, the study finds that they are not the underlying reason for this east–west border effect per se, since dialect patterns in Japan follow a general concentric pattern [11].

Finally, a recent study investigates the Dutch case and addresses a conceptually novel question [12]. The authors investigate the impact of dialects on individual academic performance, and find that dialect speakers perform significantly worse in standard language tests, but do not have lower scores in mathematics. Moreover, the authors present some causal evidence that there is no spillover effect of the dialect speakers on the academic performance of peers.

LIMITATIONS AND GAPS

Recent research has used linguistic microdata to measure the impact of cultural differences in an intra-national context. While promising and innovative, there are obviously some limitations to this approach. First, due to the unique data from the Wenker survey, most of the evidence is still exclusive to the German case. While evidence for other countries is slowly becoming available, researchers need more case studies and comparable empirical evidence for a greater number of countries before definitive conclusions can be drawn.

Furthermore, a more conceptual issue is the use of historical versus contemporary language data. One would like to identify the causal effect of current cultural/dialect differences on current economic decisions. However, the current geography of dialects is largely dispersed by linguistic diffusion and migration. Using historical dialect data is, therefore, advantageous, but requires further evidence on the degree of persistence over time. Some progress has been made in this respect [2]. However, more work is needed to further strengthen the identification of the causal effect of culture on contemporary economic decisions.

Finally, while language is one of the strongest markers of culture, researchers still need to learn more about how language differences are correlated with other types of cultural (or even genetic) differences across different sub-populations of a country.

SUMMARY AND POLICY ADVICE

Dialect differences, as a measure for cultural differences, seem to matter for a variety of economic decisions. In particular, dialect similarity fosters migration, trade, and knowledge flows, and people genuinely prefer to reside in, and to interact with people from, linguistically familiar environments. This means, vice versa, that dialect and cultural borders limit the degree of integration of a national labor or goods market. In a sense, they act as "sand in the wheel" of an optimally functioning labor market, and cross-regional economic exchange would be larger if cultural borders were absent.

Should policymakers aim at nullifying dialect and cultural differences across regions, assuming this is even possible? The answer is a definitive no. Notwithstanding the absence

of any clear policy mechanism to eliminate such differences, none of the existing studies provide a compelling welfare analysis to suggest that a country as a whole would be better off without dialect differences. By contrast, cultural and linguistic diversity seem to hold some intrinsic value. When looking at existing policy initiatives, their aim instead seems to be the preservation of dialect use and the conservation of regional cultural peculiarities, as opposed to their abolishment. There is nothing in the research agenda described in this article that would lead to the conclusion that this policy goal should be changed.

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Competing interests

The IZA World of Labor project is committed to the *IZA Guiding Principles of Research Integrity*. The author declares to have observed these principles.

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