The Cultural Roots of Firm Entry, Exit, and Growth[*]

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Abstract

Can culture explain persistent differences in economic activity among individuals and across regions? A novel measure of cultural origin enables us to contrast the entrepreneurial activity of individuals located in the same municipality but whose ancestors lived just on opposite sides of the Swiss language border in the 18th century. Individuals with ancestry from the German-speaking side create 20% more firms than those with ancestry from the French-speaking side. These differences persist over generations and independent of the predominant culture at the current location. Yet, founders' ancestry does not affect exit or growth of newly-founded firms. A model of entrepreneurial choice and complementary survey evidence suggest that the empirical patterns are mainly explained by differences in preferences, rather than skill. The results have sizable economic implications, accounting for 120,000 additional jobs over a period of 15 years.

Keywords: Culture, Entrepreneurship, Natural experiment, Spatial RDD

JEL Classifications: D22, L26, O12, Z10

1 Introduction

Firm entry is widely viewed as a central driver of economic growth. Foster, Haltiwanger and Krizan (2001) find that net entry of plants accounts for 25% of U.S. manufacturing productivity growth. Asturias et al. (2017) show that net entry is even more important in times of fast growth, with its contribution to aggregate productivity growth being as high as 37-58%. As a result, research on the economic and institutional determinants of entrepreneurial outcomes is vast.[1] Nonetheless, persistent regional differences regarding firm entry, exit, and growth remain unexplained (e.g. Audretsch, Grilo and Thurik, 2007; Glaeser, Kerr and Kerr, 2015; Stuetzer et al., 2016). Are these striking differences in entrepreneurial activity rooted in culture?

The idea of an 'entrepreneurial culture' has a long tradition in economic thought (Weber, 1905; Hoselitz, 1957; Leff, 1979; Bloom, Sadun and Van Reenen, 2012). From an empirical perspective, however, identifying and quantifying the impact of an 'entrepreneurial culture' is challenging since culture can rarely be considered separately from the institutional environment of its economic agents (Benabou and Tirole, 2006; Alesina and Giuliano, 2015). Ideally, one would like to set up a large-scale experiment, where agents of different cultural backgrounds are randomly assigned to identical environments, and the differences in their entrepreneurial activity as well as aggregate economic implications thereof could be analyzed cleanly.

In this paper, we use a novel quasi-experimental setting of that very flavor by exploiting two unique institutional features of Switzerland. The first is the concept of *place of origin* – an institution dating back to the 18th century – which until today is recorded for every Swiss citizen in lieu of the place of birth that is commonly recorded in other countries. The *place of origin* is the municipality where one's ancestors had the right to common goods. It is passed on over generations through the paternal line and has remained unchanged for centuries, no matter where a person lives today. Nowadays, the place of origin has no practical relevance aside from its mention in official registers.

The second feature, and the one that allows us to assign different *places of origin* to different cultural origins, is the Swiss language border. This language border provides a unique empirical opportunity to identify cultural effects in three ways. First, the language border is also a cultural border where values and

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[1]Among other things, entrepreneurial activity has been shown to be correlated with per capita income, technological progress, labor market regulations, education and tax incentive schemes (see Acs and Audretsch, 2010 for an overview).

norms diverge.[2] Second, the predominantly spoken language changes sharply at the language border: within a distance of just a few kilometers the share of native French language speakers changes from more than 90 percent to less than 10 percent on the German-speaking side of the language border, and vice-versa. Lastly, at the same time, the language border largely runs *within* cantons (states), holding laws and institutions constant on both sides. (e.g. Eugster et al., 2011, 2017; Eugster and Parchet, 2019)

In order to measure entrepreneurial activity we make use of a newly compiled data set on the universe of firms founded in Switzerland between the years 2002 and 2016. Specifically, these data provide information on the place of origin as well as on the place of residence of firm founders. We complement the data with information on the overall distribution of residents in each Swiss municipality by place of origin as well as with the respective nearest distances of these places of origin to the language border.[3]

In the spirit of the ideal experiment outlined earlier, we contrast the entrepreneurial activity of individuals that are exposed to the same economic environment – people living in the same municipality – but have their cultural origins on different sides of the language border in a spatial regression discontinuity design (RDD). While we focus on firm founders with cultural origins around the language border, the municipalities of residence considered in the analysis are *all* municipalities of Switzerland.[4]

We find that individuals with their cultural origin on the German-speaking side of the Swiss language border found 20% more firms than individuals who live in the same municipality but who have their cultural origin on the French-speaking side. Importantly, we can exclude any market-specific explanations as this difference is found independently of the current location of individuals: We find an effect of the same magnitude when considering individuals that live in the French-speaking part of Switzerland only or vice versa when considering solely individuals that live in the German-speaking part.

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[2]See, for example, Eugster et al. (2011), Eugster et al. (2017), and Eugster and Parchet (2019). Intriguingly, we show that these cultural differences can also be observed in the contrasting voting behavior about entrepreneurship. Unlike Chen (2013) and Herz et al. (2019) we do not intend to separate language from culture but consider language as an integral component of culture that can serve as proxy for it.

[3]We focus on male firm founders, as past literature has shown strong gender differences between cultures with respect to labor force participation in general, and entrepreneurship specifically (Fernandez and Fogli, 2009; Alesina and Giuliano, 2010; Alesina, Giuliano and Nunn, 2013). Moreover, our indicator of cultural origin is noisy for women due to patriarchal inheritance rules. Males make up roughly 80% of all firm founders.

[4]As shown in Appendix Tables 12 and 13 the regression sample is largely representative for the universe of all firms.

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While the baseline results already suggest a strong persistence of the cultural component, we provide further evidence on the persistence of the effect by focusing only on individuals that carry a first name that is characteristic of their current place of residence. In that exercise, we compare only individuals who live in the same municipality *and* who have a first name that is characteristic of their respective municipality of residence but who are of different cultural origin. As an example we can think of comparing two individuals that both live in Geneva and who carry a typical French first name (e.g. François) but who have their respective cultural origins on different sides of the language border in the German-speaking and the French-speaking region, respectively. Even in this sub-sample of fully assimilated individuals, we find that individuals with their cultural origin on the German-speaking side of the Swiss language border found 18% more firms than those with their cultural origin on the French-speaking side.

As an instructive exercise to further emphasize that the identified effect is truly driven by different cultures and not by an omitted channel that simultaneously changes discontinuously at the language border we re-estimate the effect separately for different sections of the language border. In particular, we consider cultural origins of each of the three bilingual cantons separately. These three language border sections are geographically not connected and up to 200 km apart from each other. Importantly, they lie in different institutional environments and have a different composition of economic activity. We show that the differences across cultural backgrounds exist independently in each of these three cantons, which credibly excludes any non-cultural channels such as differences in wealth endowment.

In the second part of our empirical analysis, we complement the firm registry data with data on firm-level characteristics and study if firms that are founded by individuals of different cultural origins differ in their types or economic success. First, we repeat the main exercise for each sector of the economy and each legal form separately. The results show that similar differences in firm foundation rates exist for all these firm types. This is first evidence that firms, once founded, are remarkably similar across founders with cultural origins from both language regions. Second, when contrasting firm-level outcomes such as bankruptcy, employment size, and revenues along the life cycle of firms we find again that, once founded, firms are identical for founders of both cultural origins.

We rationalize these findings in a theoretical model of entrepreneurial choice that allows for three commonly discussed individual determinants of entrepreneurship: risk aversion, entrepreneurial skill, and sheer preferences for entrepreneur-

ship. In our model, individuals decide whether to become regular workers, obtaining a risk-free income, or to become entrepreneurs, obtaining a risky profit that is increasing in individual entrepreneurial abilities. The model suggests that the empirical findings, namely the observation of higher firm foundation rates for individuals of German-speaking origin combined with identical measures of entrepreneurial success across founders with different cultural origins, can be explained either by differences in risk aversion or differences in preferences for being self-employed, but not by differences in skills alone. These results are supported by survey evidence across these two cultural areas from both, entrepreneurs and the general population, which points towards risk aversion being the dominant factor.

This result is consistent with previous research that has documented the inter-generational persistence of risk attitudes (Dohmen et al., 2011). In particular, these findings are in line with theoretical work by Doepke and Zilibotti (2014) who model the vertical cultural transmission of risk aversion in a setting where parents invest in those traits in order to influence the occupational choice of their children. Their model explicitly links the cultural transmission of risk aversion to innovation and growth through entrepreneurship.[5]

In our work, we can quantify that link and find that the magnitude and significance of the cultural component in entrepreneurial activity are indeed sizable. Specifically, the observed differences in net entry rates account for around 120,000 additional jobs that have been created by entrepreneurs of German-speaking origin solely over the 15 years covered in our data. This amounts to 2.5% of current employment in Switzerland.

Previous studies highlight that firm entry is a fundamental driver of economic activity at large and its contribution to aggregate productivity growth lies between 25-58% (Foster, Haltiwanger and Krizan, 2001; Asturias et al., 2017). By identifying and quantifying the role of culture in explaining firm entry and firm success, we add an important channel to the rapidly growing literature on the relationship between culture and aggregate economic outcomes.[6] Earlier studies in this field have examined how culturally-driven differences in education, female labor force participation, preferences for redistribution, fertility rates, and living arrangements influence economic outcomes at large (Becker and Woessmann,

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[5]Aside from risk aversion, Doepke and Zilibotti (2014) consider patience as a second preference-rooted factor determining entrepreneurship. In the stylized model of this paper risk and time preferences are observationally equivalent. We acknowledge that the role we ascribe to risk aversion cannot be separated from patience and we find survey evidence for both channels. This is in line with previous literature that documents a strong correlation between the two channels (e.g. Andersen et al., 2008).

[6]See e.g. Nunn (2009) for an overview of this literature.

2009; Caicedo, 2019; Alesina, Giuliano and Nunn, 2013; Luttmer and Singhal, 2011; Alesina and Giuliano, 2010; Fernandez and Fogli, 2009; Giuliano, 2007).

Our paper also makes a methodological contribution. A widely-used identification strategy in the aforementioned literature relies on differences in the outcomes of second-generation immigrants to the US or Europe. While this method credibly holds the environment at the country of residence constant, there are two potential drawbacks. First, the children of immigrants are not a representative sample of their parents' country of origin and second, there might be unobserved non-cultural differences between the children of immigrants with origins from different countries or regions of the world, due to diverse reasons for self-selection into migrating (Alesina and Giuliano, 2015). In our setting, the environment of origin is very homogeneous. We exploit only within-canton variation at the place of origin of ancestors, whose cultural background changes discontinuously at the language border. In other words, we compare individuals whose ancestors originate from the same canton, within a few kilometers of each other, but happened to live in different cultures. Thus, we can credibly exclude non-cultural factors like institutional, climatic, and geographic differences at the place of origin, while at the same time holding the current environment constant. Importantly, the identification in our setting does not stem from the subset of people whose ancestors have left their home, but we take into account the whole population including those who still live at their place of origin today.

While this paper is not the first to explore the relationship between culture and entrepreneurial activity, causal evidence has remained scarce.[7] Several studies have established a positive relationship based on cross-regional comparisons (Davidsson, 1995; Davidsson and Wiklund, 1997; Obschonka et al., 2015). Lassmann and Busch (2015) look at the self-employment decisions of first-generation immigrants with different origins and find a positive correlation between self-employment rates in the immigrants' countries of origin and the probability of them being self-employed in the US. However, this effect does not carry over to the second generation. Nunziata and Rocco (2016) show that Protestants, when a minority in their current location, exhibit a higher propensity of becoming entrepreneurs.[8] Glaeser, Kerr and Kerr (2015) show reduced form evidence that hints to the existence of a regional entrepreneurial culture by using the locations of past mines as an instrument. Stuetzer et al. (2016) use a similar historical instrument to explain the regional differences in self-employment and the regional

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[7]See e.g. Guiso, Sapienza and Zingales (2006); Hayton, George and Zahra (2002); Stuetzer et al. (2016) stating the need for causal identification.

[8]In contrast, Cantoni (2015) finds no effects of Protestantism on economic growth.

differences of a measure for entrepreneurial culture, without establishing a causal link between the two.

We contribute to this literature in three ways. First, we identify a causal effect of culture on entrepreneurship. Second, the firm-level data allow us to look at the life cycle of newly founded firms and give us a measure for the success and failure of entrepreneurial activity and various other firm characteristics. Eventually, this additional information allows us to contrast different mechanisms that can help to explain the observed cultural differences. Third, we use administrative data on firm registrations and observe the universe of firm foundings in Switzerland which allows us to draw aggregate economic implications.

Finally, we contribute to the historic debate among economists regarding the question of the nature of entrepreneurs and its cultural manifestation – most prominently between Knight (1921) and Schumpeter (1934). Knight (1921) underlines the role of risk bearing as one of the fundamental characteristics of an entrepreneur while Schumpeter (1934) emphasizes the innovative capacity and quality of the entrepreneur. Translated into economic models, Lucas (1978) considers a model where the more able agents become entrepreneurs while Kihlstrom and Laffont (1979) provide a model of risk-averse agents, where the least risk-averse become the entrepreneurs. We show that the results found in our paper can be rationalized in a model of risk aversion in the spirit of Knight (1921) and Kihlstrom and Laffont (1979) but not in a model of skill as put forward by Schumpeter (1934) and Lucas (1978).

2 Historical Background

2.1 Language Regions and Language Border

Switzerland provides an ideal setting to study the effect of culture on entrepreneurship. Spanning the intersection of Germanic and Romance Europe, Switzerland comprises multiple linguistic and cultural regions within an otherwise very homogeneous environment. Historically, the Swiss multilingualism has its origins in the late antiquity when Alemannic groups immigrated into previous Latin regions. Since the middle ages language regions within current Swiss territory stayed remarkably stable (Lüdi, 2013). Figure 1 shows the distribution of official languages across the country.

The Swiss-German/Swiss-French language border is of particular interest in our context. First, it comprises the two main language regions of Switzerland accounting for 86% of the total population (Swiss Federal Statistical Office, 2014). Second, the Swiss-German/Swiss-French language border runs within cantons,

FIGURE 1: LANGUAGE REGIONS IN SWITZERLAND.
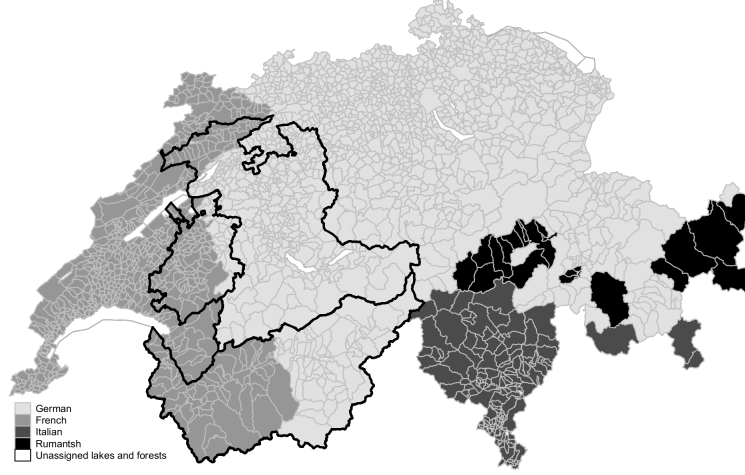
Municipalities coded by majority language. Borders of bilingual cantons are marked in bold.
Data Source: Federal Statistical Office and Federal Office of Topography.

thereby providing a very sharp spatial separation of the language regions while institutions remain the same. To see this, note that most institutions and policies are set at the cantonal level, especially in the historical context that we will exploit later on. Third, the Swiss-German/Swiss-French language border does not follow main geographical barriers. On these grounds, we will focus on the Swiss-German/Swiss-French language border and in particular, on the three bilingual cantons Bern, Fribourg, and Valais, i.e. on the parts of the language border that run within, rather than between cantons, in subsequent analyses. These three bilingual cantons are marked with a bold line in Figure 1.

In all three cantons the mainly spoken language changes sharply at the language border. Figure 2 shows local polynomial regressions of this language discontinuity. For municipalities in the French-speaking region, shortest road distances to the language border are coded negatively while for municipalities in the German-speaking region road distances are positive.[9] Within just a few kilometers the share of French-speakers drops from more than 90% to below 10% and vice versa for German-speakers.

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[9]Municipalities are coded as French- and German-speaking based on the major first language spoken in the municipalities according to the 2000 Census by the Swiss Statistical Office. Shortest road distances to the language border have been calculated as the shortest distance between a municipality center and the closest municipality center on the other side of the language border. Road distance data between municipalities are taken from search.ch and have been kindly provided by Eugster and Parchet (2019). Slightly different methods for calculating road distances have been used in the literature. In our setting, employing different methods does not affect the results.

(A) SHARE OF FRENCH SPEAKERS (B) SHARE OF GERMAN SPEAKERS
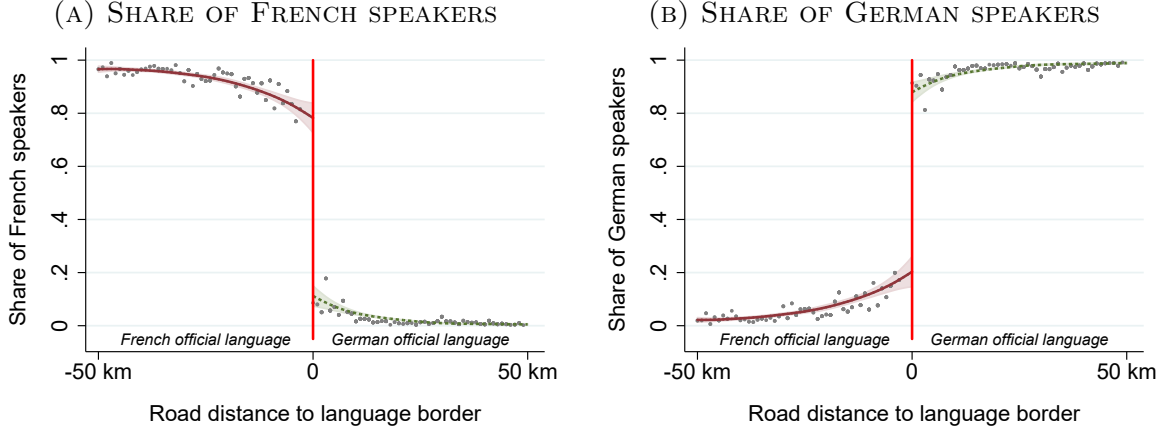
Share of Swiss population speaking French (a) and German (b) as their first Language as a function of the road distance to the language border. Estimates from local linear regressions, along with 95% confidence intervals and scatters representing population weighted 1km averages.

The Swiss-German/Swiss-French language border does not only separate the mainly spoken language but also defines two distinct cultural groups with different norms, values, and preferences. Swiss citizens experience these differences firsthand when comparing results of elections and votes whose outcomes typically strongly diverge at the language border. But also past research has exploited this setting to study the role of culture on various economic outcomes. Eugster and Parchet (2019) show evidence on cultural differences with respect to the desired role of the state: While voters in French-speaking regions regularly favor high taxes and large government involvement, German-speaking voters rather favor low taxes, a slim state, and strong individual responsibilities. Further studies focus on the role of culture on unemployment (Eugster et al., 2017), on the demand for social insurance (Eugster et al., 2011), or on financial literacy (Brown, Henchoz and Spycher, 2018).

2.2 Stylized Facts on Distinct Entrepreneurial Cultures

Stylized facts suggest that also attitudes towards entrepreneurship vary across cultural regions in Switzerland: The direct democracy in Switzerland allows voters to voice their opinion in numerous federal referenda every year, among those some votes directly revealing their preferences for entrepreneurship. We analyze 246 federal referenda between 1981 and 2017 for which the leading um-

Figure 3: Stylized Fact – Voting in line with the *Swiss Federation of Small and Medium Enterprises.*
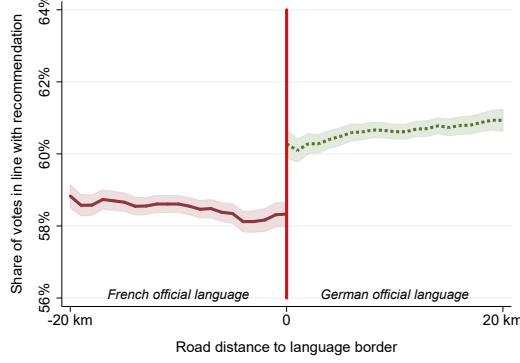
Share of population voting in line with recommendation by the *Swiss Federation of Small and Medium Enterprises* in 246 federal referenda between 1981 and 2017. Lines represent 10 km moving averages (along with 95% confidence intervals). Negative distances are municipalities in French-speaking regions while positive distances are municipalities German-speaking regions.

brella organization of Swiss Firms, the *Swiss Federation of Small and Medium Enterprises (sgv)*[10] issued an endorsement (source: swissvotes.ch).

We exploit the setting at the Swiss language border within the three bilingual cantons and contrast electoral support for the *sgv* in referenda by municipalities on both sides of the language border. Figure 3 shows the analysis thereby relying on the same distance coding that was described in the previous section. Crossing the language border from the French-speaking to the German-speaking region we observe a discrete increase of about 2%-points in favor of the position endorsed by the *sgv.*

While this analysis provides some first suggestive evidence that the attitude towards entrepreneurial activities is different in the German-speaking region compared to the French-speaking region, an analysis of this kind is not well suited for causal identification. Specifically, knowing that cultural differences at the language border can potentially also affect the entrepreneurial environment, such as demand factors or tax incentives, this type of analysis does not allow for disentangling cultural origin from the immediate environment of potential entrepreneurs.

To tackle this identification challenge, we introduce a novel measure of cultural origin beyond the current place of residence in the subsequent section. This measure allows us to contrast different cultural backgrounds of entrepreneurs

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[10]The *sgv* represents the majority of all Swiss Enterprises and is politically independent. The goal of the federation is to improve the economic and political environment for enterprises. They cover a wide range of topics like education, labor market, taxes, and environmental issues.

while at the same time holding constant the immediate environment of these entrepreneurs.

2.3 Place of Origin

Swiss citizens do not only have a national citizenship but also a municipal citizenship, formally called *place of origin*. The place of origin is the place where an individual's ancestors are from and is passed on from generation to generation through the paternal line.[11] Married women often have two places of origin: one obtained from their father and one obtained from their husband (Swiss Confederation, 2013).[12]
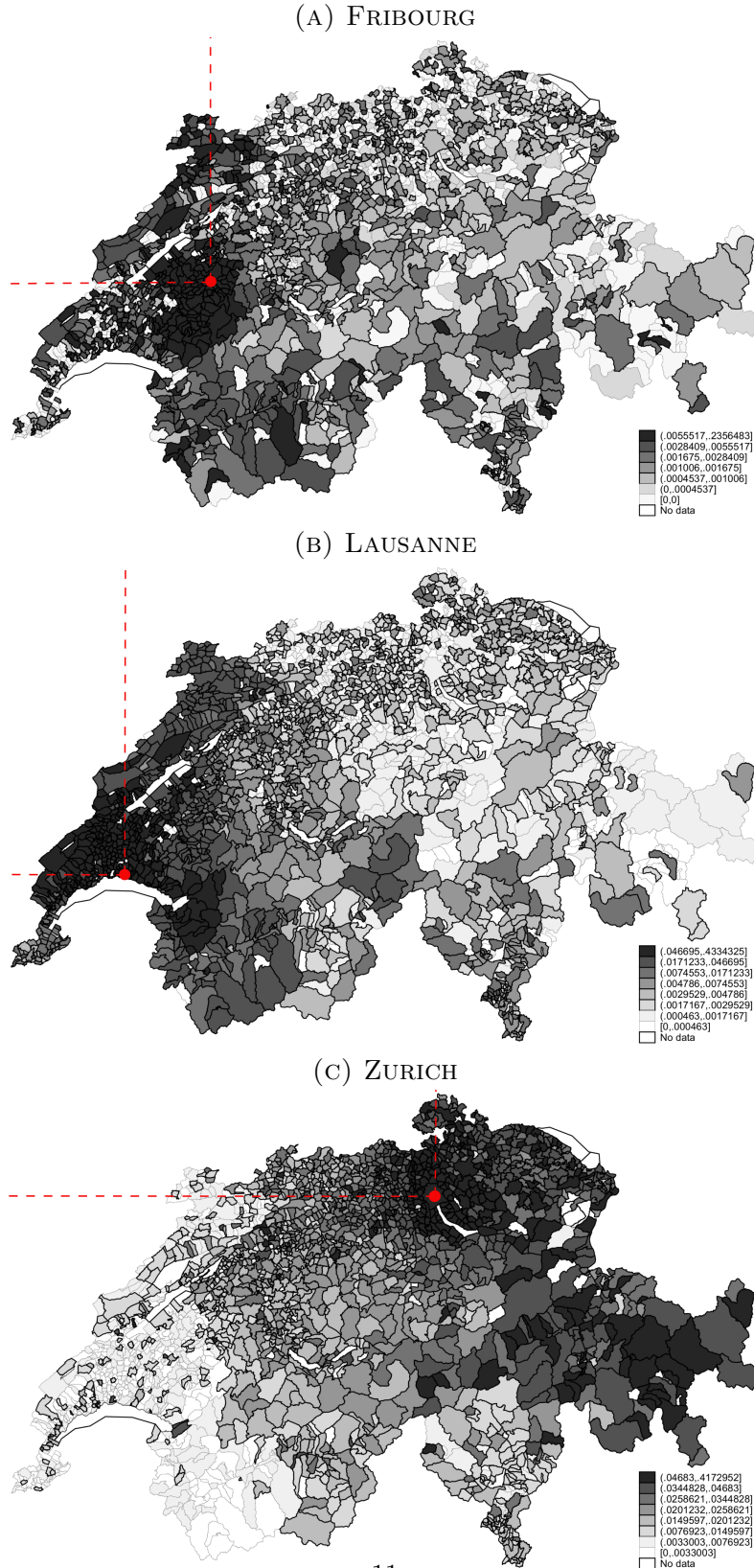
The concept of place of origin has its roots in medieval times when established citizens were hesitant to share common goods with new residents and provoked a separation of place of origin and place of residence. This institution was later standardized in the Helvetic constitution of 1798 (Schweizer, 2011). Until the revision of the constitution in 1874 even political rights were linked to the place of origin, rather than the place of residence. During the course of the 19th and 20th century the place of origin gradually lost all its competences to the place of residence as more and more people started to move away from their ancestors' place of origin (Schweizer, 2011). While in 1860 59% of Swiss citizens lived at their place of origin, this share decreased to 34% until 1910 (Christ, 2006). Today, in the median Swiss municipality, only 14% of its residents have their cultural origin in this very municipality (Swiss Federal Statistical Office).

However, until today, the concept of the place of origin remains and it is still mentioned in official documents, like passports and official registries, instead of the place of birth. Even though the place of origin is largely irrelevant in day-to-day life, for many citizens the concept has sentimental value: It is the place where the ancestors are from and roots of family names can often be traced back to the place of origin (Britt, 2013). So far, all legislation trying to abandon the concept failed and even municipalities that do no longer exist due to municipality mergers often remain 'existent' as place of origin and are passed on to the next generation (Swiss Confederation, 2018).

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[11]Only since 2013 parents can choose whether the child receives a mothers or fathers place of origin.

[12]In principal, it is possible to become naturalized at the current place of residence, after having lived there for several years. However, doing so is costly and has purely symbolic value. Indeed, very few citizens take advantage of this possibility: E.g. in Zurich - the largest Swiss municipality - only 1/626 Swiss citizens with place of origin outside of Zurich chooses to get naturalized each year. In case a Swiss citizens obtains a second place of origin, we rely on the original place of origin that was inherited and is generally still recorded. Similarly, naturalized immigrants are not included in the analyses.

(a) Fribourg

(b) Lausanne

(c) Zurich

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Share of individuals from each place of origin living in three exemplary major cities (Fribourg, Lausanne, and Zurich). Darker colors indicate higher population shares from a certain place of origin living in the respective cities.

Using a novel data set provided by the Swiss Federal Statistical Office, we know the exact composition of the places of origin of the residents of any Swiss municipality in 2016. Figure 4 exemplarily shows the distribution of places of origin for three major cities: Fribourg is located right on the language border, Lausanne is located in the French-speaking region, and Zurich is located in the German-speaking region. We see that in all three cities individuals have their place of origin in all parts of the country, but in a gravity-like pattern the density decreases with distance to the place of residence.

In our setting the place of origin provides an ideal measure for the origin of the family of an entrepreneur that is not affected by today's policies and institutions. In combination with the place of residence it allows us to disentangle cultural origin from current environmental influences. We discuss the role of cultural origin in our identification strategy in more detail in section 4.1.

3   Data

3.1   Data Set

Our main data source are all 26 cantonal commercial registers of Switzerland. These registers cover the universe of newly registered firms between January 2002 and December 2016. Reported information includes company registration and deregistration dates, reason for deregistration, place of business, legal structure of the company, and some information about the founders, such as name, gender, place of residence, and place of origin. For the empirical analysis we focus on profit-oriented firms and exclude public corporations, nonprofit associations, and foundations. If several founders are listed, we consider the person listed first in official documents as the founder.[13]

We focus on firm founders with *place of origin* within 50 km from the language border in the three bilingual cantons Bern, Fribourg, and Valais.[14] Today's places of residence of these founders are, however, all over Switzerland. Throughout the analysis, we focus on male firm founders, accounting for roughly 80% of all firm founders, for two main reasons. First, until recently, women were required to adapt the place of origin of their husband. Second, there is evidence that attitudes towards female labor market participation differ across the

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[13]Note that founders are *not* listed in alphabetical order but according to their role within the firm. Excluding firms with more than one founder does not change our results.

[14]Considering a 50 km window around the language border has become the standard in previous papers exploiting the setting at the Swiss language border (e.g. Eugster et al., 2011, 2017). We will, however, show the robustness of our results to choosing different distance windows in Table 4.

TABLE 1: SUMMARY STATISTICS OF THE FIRM REGISTRY DATA.

Variable	Mean	SD	Min.	Max.	N
Founding year			2002	2016	40,193
French-speaking origin	0.357	0.479	0	1	40,193
Distance to language border	9.782	27.318	-49.094	49.466	40,193
Deregistration year			2002	2016	10,496
Deregistration	0.261	0.439	0	1	40,193
Liquid./Closure/Bankruptcy	0.185	0.388	0	1	40,193
Bankruptcy	0.057	0.231	0	1	40,193

different cultural regions of Switzerland and we want to avoid wrongly ascribing the effects we identify with different attitudes towards female labor market participation (Steinhauer, 2013).

We assign places of origin (indexed by j) to one of the two cultural areas, French-speaking and German-speaking, depending on the majority language according to the 2000 census (Federal Statistical Office, 2000).[15] Of all places of origin that are within the 50 km distance window in the three bilingual cantons, 231 municipalities are classified as French-speaking and 307 are classified as German-speaking. For every municipality we calculate the shortest distance to the language border, D_j.[16] In French-speaking municipalities distances are coded negatively while in German-speaking municipalities distances are coded positively. Table 1 shows the summary statistics of the information extracted from the firm registries.[17]

Using these registry data we can construct the total number of firms that are founded by people living in every Swiss municipality i with place of origin in j (that lies in canton c) in year t, N_{ijct}. We match this information with a comprehensive data set on the number of residents in every Swiss municipality i from each place of origin j, P_{ij} (obtained from the Swiss Federal Statistical Office). Note that we focus on places of origin that are within 50 km of the language border and lie within the bilingual cantons of Bern, Valais or Fribourg. The municipalities of residence considered are, however, all municipalities in Switzerland.

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[15]Majority languages have remained largely unchanged since the middle ages (Lüdi, 2013).

[16]Shortest road distances to the language border have been calculated as the shortest distance between a municipality center and the closest municipality center on the other side of the language border. Road distance data between municipalities are taken from search.ch and have been kindly provided by Eugster and Parchet (2019). Slightly different methods for calculating road distances have been used in the literature. In our setting, employing different methods does not affect the results, as is shown in robustness section 4.4.

[17]As shown in Appendix tables 12 and 13 the regression sample is largely representative for the universe of all firms.

Variable	Mean	SD	Min.	Max.
No of firms, N_{ijct}	0.014	0.164	0	36
French-speaking origin, F_j	0.302	0.459	0	1
Log no of residents from j in i, $log(P_{ij})$	1.039	1.019	0	9.308
Distance to language border in km, D_j	12.783	25.497	-49.094	49.466
No of observations		2,696,955		

Summary statistics of the respective data set are provided in Table 2. These summary statistics correspond to the sample of the baseline estimation in Table 3. Hence, all singletons that are captured by fixed effects are already dropped from this sample.

We complement these data with further information on the places of origin, such as the average educational background, main religion, and population size classes, as well as three official municipality classifications of the Swiss Federal Statistical Office that distinguish between three degrees of urbanization, three degrees of agglomeration, and 22 municipality types that define the sectoral specialization of these municipalities such as 'agrarian municipality' or 'touristic municipality'.[18]

4 Cultural Differences in Firm Foundations

4.1 Identification Strategy

In order to measure the effect of cultural origin on entrepreneurial activity we contrast the entrepreneurial activity of individuals, that are exposed to the very same economic environment – hence, Swiss citizens living in the same municipality – but have their cultural origin just on different sides of the language border, in a spatial RDD. The proposed strategy allows us to tackle two main identification challenges.

First, we want to separate cultural origin from the environment of firm founders. Therefore, we control for the environment of firm founders by absorbing municipality-of-residence fixed effects, i.e. we compare firm founders with different places of origin but who live in the same municipality. Second, we want to ensure that our measure of cultural origin only picks up cultural differences. This is achieved by contrasting only individuals with *place of origin* in the same (bilingual) canton in a spatial regression discontinuity setting. Hence, we de-

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[18]These information are based on the 2000 Census conducted by the Swiss Federal Statistical Office.

rive our cultural estimate by comparing firm founders who i) live in the same municipality, ii) with cultural origin in the same canton, but from different municipalities either just on the French-speaking or just on the German-speaking side of the language border.[19]

To illustrate better what is picked up by our measure of culture, let us consider an individual s and her choice to become an entrepreneur. The literature has identified a host of determinants entering this choice function. Those can be classified into determinants of the current environment (a_s) and individual-level determinants. For our purpose, it is useful to further distinguish between non-cultural individual-level determinants (b_s) and cultural individual-level determinants (c_s).[20] For the moment, let us abstract from the question of classification into these schemes and consider these factors as given.

Thus, we can express an individual's likelihood to become an entrepreneur as a function of three distinct factors (a_s, b_s, c_s). To find the probability of N events of entrepreneurship in a population of P individuals, we divide P into n subintervals, $P_1, P_2, ..., P_n$, and approximates the answer as the binomial probability of observing N successes in n trials. For $n \to \infty$ we obtain the Poisson distribution (Cameron and Trivedi, 2013). Hence, the expected number of events of entrepreneurship for a population m with exposure to P_m people is

$$\mathbb{E}[N_m|P_m; a_m, b_m, c_m] = e^{\ln(P_m)+\beta_0+\beta_a a_m+\beta_b b_m+\beta_c c_m}, \tag{1}$$

where (a_m, b_m, c_m) characterizes the distribution of determinants (a_s, b_s, c_s) in population m. Any population in our data set is characterized by the tuple $m = \{ijct\}$ indicating the municipality of residence, the municipality of origin, the canton of origin, and the respective year.

In the empirical setting, we want to compare outcomes of populations that are characterized by the same place of residence i and canton of origin c but differ in the prevailing language at their place of origin j. For identification, it is important to ensure comparability of these populations. In particular, it is crucial to explicitly take account of the role language played in shaping the

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[19]We also include a handful of additional controls at the municipality of origin level. These controls absorb further potential heterogeneities like religion, size, or wealth of the municipality and help us to estimate the cultural effect more precisely. Note, however, that none of these controls is crucial for our findings, as is reported in the last Column of robustness table 4.

[20]We acknowledge that the environment of the entrepreneur also consists of culturally determined components (Benabou and Tirole, 2006). However, since we will be able to perfectly account for this dimension later on, we can treat the environment-level components jointly in what follows.

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distribution of places of origin within places of residence. Specifically, the distribution of individual characteristics might be different in the subset of individuals that settled down far from their place of origin or possibly even in a different language region. Even though the establishment of a family in its current place of residence often took place many generations back, these specific characteristics could have been transmitted over generations and could be correlated with entrepreneurial activity today.[21]

In general, as becomes evident from Figure 4, the distribution of places of origins within a municipality of residence follows a gravity-like pattern and is largely determined by distance. These distance-related patterns are perfectly accounted for by implementing a spatial RDD.[22]

However, apart from distance, language differences also affect the current distribution of places of origin across municipalities of residence. We will therefore explicitly account for the differences in individual characteristics that all populations share where the mainly spoken language in place of origin and municipality of residence differs by introducing an indicator variable ζ_m. This indicator is assumed to be symmetric for both language regions: we allow for compositional differences in types of people who currently live in a different cultural environment compared to their place of origin but we assume that this compositional difference is the same independent of the direction of migration.

We validate this assumption by looking at the relationship between places of origin and places of residence in Table 10 in the Appendix. While both, distance and a different main language spoken, affect migration negatively, the latter estimate is identical for French and German-speaking places of origin.

Explicitly accounting for the indicator ζ_m, (1) can be rewritten as

$$\mathbb{E}[N_m|P_m; a_m, b_m, c_m; \zeta_m] = e^{\ln(P_m) + \beta_0 + \beta_a \tilde{a}_m + \beta_b \tilde{b}_m + \beta_c \tilde{c}_m + \zeta_m}, \tag{2}$$

where $(\tilde{a}_m, \tilde{b}_m, \tilde{c}_m)$ characterizes the distribution of individual determinants (a_s, b_s, c_s) in population m controlling for differences stemming from migration across the language border ζ_m.

Now, consider the citizens of a municipality i at time t with cultural origin from municipality j that lies in canton c and compare them to the citizens of

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[21]To further emphasize that our results are not driven by first-generation residents, we will explicitly consider only firm founders who have a first name which is typical for their current place of residence in an additional specification.

[22]In a robustness check we additionally control for the distance between the municipality of residence and the place of origin, capturing the composition of people migrating there. We will also account for the share of people of a place of origin j living in municipality i to capture any compositional effects related to the probability to migrate to a specific place.

the same municipality i at time t but with cultural origin from municipality j' that also lies in canton c. Municipality j lies at $D_j > 0$ while municipality j' lies at $D_{j'} < 0$. At $D = 0$ the language border introduces a discrete change in the composition of mainly spoken language and the associated culture. Let us now compare how individual characteristics (a_s, b_s, c_s) are distributed within the populations of $m = \{ijct\}$ and $m' = \{ij'ct\}$, abstracting from any difference captured by ζ_m. Without loss of generality, we focus on the first moment of the distribution and state our identification assumptions

$$\lim_{\epsilon \to 0} \mathbb{E}[a|s \in \{ijct|D_j = 0+\epsilon\}; \zeta_{ij}] - \lim_{\epsilon \to 0} \mathbb{E}[a|s \in \{ij'ct|D_{j'} = 0-\epsilon\}; \zeta_{ij}] = 0 \quad (3)$$

$$\lim_{\epsilon \to 0} \mathbb{E}[b|s \in \{ijct|D_j = 0+\epsilon\}; \zeta_{ij}] - \lim_{\epsilon \to 0} \mathbb{E}[b|s \in \{ij'ct|D_{j'} = 0-\epsilon\}; \zeta_{ij}] = 0 \quad (4)$$

$$\lim_{\epsilon \to 0} \mathbb{E}[c|s \in \{ijct|D_j = 0+\epsilon\}; \zeta_{ij}] - \lim_{\epsilon \to 0} \mathbb{E}[c|s \in \{ij'ct|D_{j'} = 0-\epsilon\}; \zeta_{ij}] = \delta. \quad (5)$$

Hence, for identification of δ we require that the composition of all *non-cultural* determinants of entrepreneurship is on average the same for any population of individuals living in the same municipality today and with cultural origins from the same canton but either directly to the left ($\lim_{\epsilon \to 0} D_{j'} = 0 - \epsilon$) or directly to the right from the language border ($\lim_{\epsilon \to 0} D_j = 0 + \epsilon$).

At this point it is informative to come back to the question of classification of potential determinants of entrepreneurship into the vectors (a_s, b_s, c_s). It is straightforward to argue that municipality-specific components such as taxes and market size are captured in a and are the same for individuals of population m and m' that actually live in the same municipality today and can thus be captured by municipality-of-residence fixed effects.

In order to highlight the differences between non-cultural and cultural components, b and c, more clearly, consider the example of education.[23] Schooling has been mandatory and free-of-charge for all children since the mid of the 19th century in all of Switzerland. Additionally, the ancestors of the persons in m and m' were exposed to the same educational environment because their ancestors are from the same canton that provides the education system. Thus, if the educational composition of m and m' were entirely driven by the provision of access to education, there should not be any differences in the two groups. However, if one of the two cultural groups valued education more than the other, we would

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[23]One customary definition prevailing in the economic literature considers culture to be 'those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation' (Guiso, Sapienza and Zingales, 2006).

expect education levels to differ between the two groups, but for cultural reasons and hence being captured in c.[24]

This separation is at the heart of our identification strategy and relies on the spatial RDD at the place of origin within cantons accounting for all components of b. In plain words, we consider that any effect that is estimated in this specific spatial RDD setting to be driven by cultural origin alone. Not only is this assumption credible in the specific context exploited in this paper and described in detail in section 2, but we can also provide convincing plausibility checks. Specifically, we will estimate the spatial RDD separately for each of the three cantons in our sample. As becomes evident from Figure 1, the language borders of these cantons are geographically not connected and up to 200 km apart from each other. The only common characteristic of these three language borders is the separation of the German-speaking and the French-speaking culture.[25] Any effect that is identified at the language border in any of these three cantons separately can plausibly be attributed to culture.

For the moment, we remain agnostic about what exactly the cultural determinants are, but it is reasonable to think of them as a composite of potentially many elements. We will shed more light on the nature of this composite in section 6.

4.2 Estimation

In order to measure the effect of cultural origin on new firm foundations we look at the number of new firms founded by individuals with origin in municipality j and canton c who live in municipality i in year t (N_{ijct}). We estimate the following Poisson regression model,

$$N_{ijct} = \mathbb{E}\left[e^{\alpha_i + \kappa_c + \sigma_t + \delta F_j + \gamma \ln(P_{ij}) + \zeta D_j + \eta F_j \times D_j + \beta X_j + \lambda Z_{ij}} \right], \tag{6}$$

where δ is the main coefficient of interest, capturing the effect of French-speaking origin (F_j). P_{ij} is the exposure variable, controlling for the population at risk to become an entrepreneur. D_j and the interaction $F_j \times D_j$ control for the shortest distance from the place of origin to the language border. These variables will account for the continuous change in composition of the population in terms of their cultural heritage as we move away from the language border. X_j denotes

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[24]Note that results are not sensitive to controlling for average education levels at the place of origin.

[25]In Appendix A.2 we show additionally that place of origin characteristics are balanced at the language border.

a vector of control variables at the level of the place of origin[26] and Z_{ij} captures variables that control for the compositional differences of the population from j in i such as the indicator variable that accounts for the effect of living in a municipality that lies in a different language region than the place of origin. Further, regressions absorb municipality fixed effects for places of residence (α_i), canton fixed effects for places of origin (κ_c), and year fixed effects (σ_t).[27] Standard errors are heteroskedasticity-robust and clustered at the municipality of residence.

4.3   Results

We show the main results of estimating equation (6) in Table 3. Column (i) shows the baseline regression while Columns (ii) and (iii) control for additional compositional differences by including the (log) distance between place of origin and place of residence and by accounting for the share of municipal residents of j living in municipality i, respectively. The coefficient of primary interest on French$_j$ is almost identical in Columns (i)-(iii) and suggests that persons with cultural origin on the French side of the language border found $1 - \exp(-0.22) \approx$ 20% fewer firms than persons with a cultural origin on the German side of the language border.

The indicator variable $\mathbb{1}(F_j \neq F_i)$ that accounts for the effect of living in a municipality that lies in a different language region than the place of origin enters negatively. The same sign is found for the distance between place of origin and place of residence, log Distance$_{ij}$. Moreover, the higher the share of municipal residents living in a municipality, the more firms are founded. These findings may suggest an important role for social networks in explaining entrepreneurship, which might be stronger the closer people live to their place of origin. However, accounting for these compositional differences does not affect the main coefficient of interest and, hence, cannot explain the strong effect effect of cultural origin on firm foundations.

The log number of residents from j living in i denotes the exposure variable and is expected to be one if the number of firms founded by people from j in i is perfectly proportional to the population of people from j in i. While the estimated coefficient is statistically different from one it is very close to one, sug-

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[26]These controls absorb further potential heterogeneities like religion, size, or economic specialization of the municipality and help us to estimate the cultural effect more precisely. Note, however, that none of these controls is crucial for our findings, as is reported in the last Column of robustness table 4.

[27]Absorbing municipality of residence × year fixed effects instead leads to virtually identical results. The respective regression in presented in Table 11 in the Appendix.

Table 3: Poisson regression: Number of firms founded.

	Full sample			Role of assimilation		Effects by canton			Effect across regions	
	(i)	(ii)	(iii)	assimilated (iv)	not assimilated (v)	Bern (vi)	Fribourg (vii)	Valais (viii)	French-speaking residence (ix)	German-speaking residence (x)
French$_j$	−0.221***	−0.204***	−0.219***	−0.176**	−0.207***	−0.163**	−0.284**	−0.495**	−0.224***	−0.154*
	(0.056)	(0.055)	(0.056)	(0.079)	(0.061)	(0.079)	(0.144)	(0.211)	(0.072)	(0.092)
$\mathbb{1}(F_j \neq F_i)$	−0.115***	−0.073**	−0.122***	−0.121**	−0.144***	−0.098**	−0.074	−0.214**		
	(0.029)	(0.029)	(0.029)	(0.059)	(0.035)	(0.041)	(0.054)	(0.096)		
log Population$_{ij}$	0.946***	0.916***	0.933***	0.944***	0.945***	0.936***	0.873***	0.936***	0.943***	0.943***
	(0.007)	(0.008)	(0.010)	(0.007)	(0.007)	(0.008)	(0.019)	(0.017)	(0.011)	(0.008)
Distance$_j$ × French$_j$	−0.002	−0.001	−0.002	−0.003	−0.003	−0.006**	−0.012	0.007	0.001	0.005
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.011)	(0.006)	(0.003)	(0.003)
Distance$_j$	0.001	0.001	0.001	0.001	0.001	0.003***	0.009	−0.007	−0.002	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.010)	(0.005)	(0.002)	(0.001)
log Distance$_{ij}$		−0.002***								
		(0.000)								
$\frac{Population_{ij}}{\sum_i Population_{ij}}$			0.289*							
			(0.161)							
Municipality of residence FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Canton of origin FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Additional controls (X_j)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	2,696,955	2,696,955	2,696,955	2,681,970	2,688,360	1,736,340	498,915	208,425	1,029,060	1,623,315
No. cluster	1,927	1,927	1,927	1,897	1,907	1,734	908	603	609	1,237

***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. All standard errors are clustered at the municipality-of-residence level. The number of observations reported excludes singleton observations emerging from fixed effects. Controls captured in X_j are a dummy for a protestant majority at the place of origin, share of population in j with primary, secondary or tertiary education (Census 2000), size, agglomeration, urbanization and municipality-type indicators.

gesting a close-to-proportional relationship.[28] The coefficients estimated on the two measures of distance to the language border are small and not statistically significant.

So far, the place of origin has not revealed when individuals or their ancestors have left their place of origin. In order to investigate if the results persist also for those entrepreneurs whose families are likely to be already well assimilated in the current cultural region, we use the first names of firm founders and categorize them as typical names of the language region of the place of residence.[29] The estimates on French cultural origin in the two sub-samples of assimilated entrepreneurs in Column (iv) and non-assimilated entrepreneurs in Column (v) are statistically not distinguishable and suggest that the effect of cultural origin is not driven by entrepreneurs that only recently moved to their current municipality of residence. Moreover, this analysis provides evidence against the claim that communication barriers may be driving the results.

As indicated before, the French-German language border runs through three very different cantons with the border being geographically not connected. It is very unlikely that any non-cultural determinants change discontinuously at the language border in each of these three cantons. To that end, Columns (vi) - (viii) show baseline estimates for each canton of origin separately. Even though sample sizes are reduced considerably, all three estimates of cultural origin are individually significant and of similar magnitude. These results reassure that the estimated effect is indeed attributable to cultural origin.

Finally, to argue that our estimates are not driven by differences rooted in the language region of the municipalities of residence, we estimate the model separately for people living in the French and the German language region in Columns (ix) and (x), respectively. Importantly, we find that individuals with cultural

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[28]In a robustness check reported in the Table 4, we treat $\ln(P_{ij})$ as a classical exposure variable and fix its coefficient to be one. All results stay the same.

[29]Specifically, we take the 100 most frequent names of all German- and French-speaking Swiss citizens and ignore any names that are common in both language regions. Based on this classification, we classify entrepreneurs with a German name living in the German-speaking region but with French-speaking place of origin and entrepreneurs with a French name living in the French-speaking region but with German-speaking place of origin as *assimilated* and compare them with the native population in Column (iv). In contrast, in Column (v) we classify entrepreneurs with a non-German name living in the German-speaking region but with French-speaking place of origin and entrepreneurs with a non-French name living in the French-speaking region but with German-speaking place of origin as *not assimilated* and compare them with the native population. In order to correct the exposure variable log Population$_{ij}$, we adjust the number by the share of the respective names in the sample of people with French-speaking origin living in the German-speaking region and the sample of people with German-speaking origin living in the French-speaking region, respectively. Since the coefficient estimated on the exposure variable is very close to the specifications of the full sample, the adjustment seems to perform well.

background from the French-speaking side of the language border found fewer firms than individuals with cultural background from the German-speaking side, no matter in which language region they live today. The estimated coefficients in Column (ix) and (x) are within one standard deviation from one another.

4.4   Robustness

In order to assess the sensitivity of our results, we conduct various robustness checks which we report in Table 4. Columns (i)-(iii) report estimated coefficients when constraining the distance of municipalities of origin to the language border from 50 km in the baseline to 20 km, 30 km, and 40 km, respectively. We see that the coefficients are virtually identical across all specifications and stay significant at conventional levels even though the sample size is reduced considerably.

In Column (iv), we omit any distance controls. We can think of this specification as estimating an *average treatment effect* of culture as treatment variable rather than a *local average treatment effect* as estimated by the spatial RDD. All results stay the same.

We also consider the sensitivity of our results to functional form assumptions in Columns (v)-(vii). First, instead of a Poisson regression, we estimate a negative binomial regression which is a standard alternative to Poisson in models of count data. Second, we estimate a Poisson regression as in the baseline but fix the exposure variable log Population$_{ij}$ to enter with a coefficient of one. Third, we allow for a zero-inflated Poisson regression to take account of the high number of zeros in our data set with the inflation process being a function of the municipality of origin size and the municipality of residence size. The estimated coefficients in Columns (v)-(vii) are nearly identical to the baseline regression result.

Furthermore, we exclude the bilingual places of origin, Fribourg and Bienne, from our data set in Column (viii), consider only municipalities of residence within 50 km of the language border in Column (ix), and rerun the main specification without control variables at the level of the place of origin in Column (x). None of the estimated coefficients of these robustness exercises turns out to be notably different from our baseline coefficient.

We present further robustness exercises in Table 11 in the Appendix. Those results additionally show that the results are insensitive to using municipality-of-residence × year fixed effects, to excluding the control for $\mathbb{1}(F_j \neq F_i)$, to controlling for individuals who never left their place of origin, to considering only the 10 biggest cities in Switzerland as places of residence, to considering all but the 10 biggest cities in Switzerland, to altering the definition of the

TABLE 4: ROBUSTNESS: NUMBER OF FIRMS FOUNDED.

	Role of distance				Functional form			Other		
	Constrain radius to			Baseline w/o distance	Negative binomial	Poisson w/ fixed exposure	Zero-inflated poisson	Exclude bilingual cities	Exclude mun. of res. > 50km	No additional controls
	20 km	30 km	40 km							
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
French_j	−0.218**	−0.214***	−0.227***	−0.202***	−0.219***	−0.211***	−0.220***	−0.236***	−0.206***	−0.126***
	(0.093)	(0.068)	(0.061)	(0.041)	(0.056)	(0.057)	(0.056)	(0.058)	(0.064)	(0.049)
$\mathbb{1}(F_j \neq F_i)$	−0.036	−0.056	−0.091***	−0.119***	−0.125***	−0.047*	−0.137***	−0.128***	−0.086**	−0.086***
	(0.041)	(0.036)	(0.032)	(0.029)	(0.028)	(0.028)	(0.029)	(0.030)	(0.035)	(0.030)
$\log \text{Population}_{ij}$	0.943***	0.949***	0.946***	0.946***	0.943***		0.908***	0.946***	0.959***	0.966***
	(0.013)	(0.010)	(0.008)	(0.007)	(0.007)		(0.009)	(0.007)	(0.007)	(0.007)
$\text{Distance}_j \times \text{French}_j$	0.006	−0.002	−0.002		−0.003	−0.003	−0.002	−0.003	−0.002	−0.000
	(0.007)	(0.003)	(0.003)		(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)
Distance_j	−0.008*	−0.002	0.000		0.001	0.001	0.001	0.001	0.000	0.000
	(0.005)	(0.002)	(0.001)		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Municipality of residence FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Canton of origin FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Additional controls (X_j)	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Observations	982,740	1,524,750	2,144,055	2,696,955	2,696,955	2,696,955	2,696,955	2,663,535	1,391,880	2,696,955
No. cluster	1,416	1,640	1,820	1,927	1,927	1,927	1,927	1,921	887	1,927

***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. All standard errors are clustered at the municipality-of-residence level. The number of observations reported excludes singleton observations emerging from fixed effects. Controls captured in X_j are a dummy for a protestant majority at the place of origin, share of population in j with primary, secondary or tertiary education (Census 2000), size, agglomeration, urbanization and municipality-type indicators.

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language border and defining the border $D_j = 0$ at the French municipalities that are closest to the language border[30], and finally, to considering a second-order polynomial of distance.

5 Cultural Differences in Firm Characteristics

Having established strong cultural differences in new firm foundations in the previous section, the natural follow-up question arising is how these newly founded firms differ by cultural origin of the firm founder. To do so, we will compare the newly founded firms along four dimensions: Industry composition, legal form, failure rates, and firm size.

5.1 Industry Composition

Using data provided by Bisnode Business Information Group we can match 6-digit industry classifications (NOGA 2008) to 99% of the firms in our sample. We plot the distribution of the major industries for both types of cultural origin in Figure 5. These industries account for more than 85% of newly founded firms in Switzerland.

A first glance at the distribution reveals remarkable similarities. The sheer comparison of frequencies does, however, not allow for any causal inference since we do not control for any covariates such as demand conditions at the level of the municipality of the firm. To achieve the latter, we rerun our baseline specification (6) separately for the eight major industries in Switzerland. Hence, N_{ijct} corresponds to the number of firms founded in a specific industry with each industry corresponding to a column in Table 5. The estimated coefficient on the role of cultural origin is overall very close to the main effect in Table 3 even though it is generally estimated less precisely due to the increase in observations with zeros and the accompanied loss in observations through their absorption in fixed effects.

5.2 Legal Form

The second heterogeneity we consider is the legal form of the firm. The three most common legal forms, Corporation, Individual Enterprise, and Limited Liability Company make up 97% of all firms founded in Switzerland. One could consider the legal form as a proxy for the size of the firm and for the willingness

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[30]Compare Eugster and Parchet (2019).

FIGURE 5: INDUSTRY SHARES OF NEWLY FOUNDED FIRMS BY CULTURAL ORIGIN OF FOUNDERS.
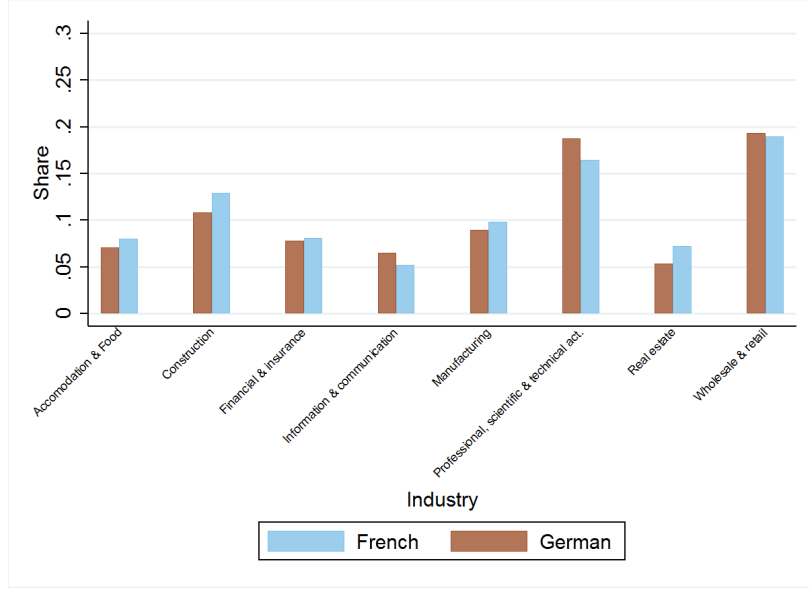

TABLE 5: POISSON REGRESSION: NUMBER OF FIRMS FOUNDED BY INDUSTRY.

	Accom. & food (i)	Constr. (ii)	Finan. (iii)	Info. (iv)	Manu. (v)	Prof. act. (vi)	Real est. (vii)	Wholesale (viii)
French$_j$	−0.296**	−0.178	−0.371*	−0.238*	−0.203*	−0.171**	−0.547***	−0.228***
	(0.146)	(0.109)	(0.191)	(0.136)	(0.116)	(0.084)	(0.194)	(0.087)
$\mathbb{1}(French_j \neq French_i)$	−0.175**	−0.062	−0.144	−0.314***	−0.103	−0.091*	−0.259**	−0.119**
	(0.084)	(0.069)	(0.100)	(0.070)	(0.076)	(0.047)	(0.115)	(0.051)
log Population$_{ij}$	0.917***	1.031***	0.953***	0.792***	1.010***	0.875***	0.985***	0.950***
	(0.016)	(0.014)	(0.023)	(0.021)	(0.014)	(0.013)	(0.023)	(0.011)
Distance$_j \times$ French$_j$	−0.011**	−0.002	0.009	0.002	−0.003	−0.005*	0.003	−0.006**
	(0.005)	(0.004)	(0.006)	(0.005)	(0.004)	(0.003)	(0.006)	(0.003)
Distance$_j$	0.007**	0.001	−0.007**	−0.002	0.001	0.002	−0.001	0.002
	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)
Municipality of residence FE	✓	✓	✓	✓	✓	✓	✓	✓
Canton of origin FE	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓	✓	✓
Additional controls (X_j)	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,585,440	1,981,290	1,673,070	1,567,530	1,925,220	2,179,620	1,521,345	2,288,985
No. cluster	762	1,071	795	718	1,014	1,212	697	1,348

***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. All standard errors are clustered at the municipality-of-residence level. The number of observations reported excludes singleton observations emerging from fixed effects. Controls captured in X_j are a dummy for a protestant majority at the place of origin, share of population in j with primary, secondary or tertiary education (Census 2000), size, agglomeration, urbanization and municipality-type indicators.

TABLE 6: POISSON REGRESSION: NUMBER OF FIRMS FOUNDED
BY LEGAL FORM.

	Corporation (i)	Indiv. enterprise (ii)	LLC (iii)
$French_j$	-0.256^*	-0.194^{***}	-0.234^{***}
	(0.132)	(0.058)	(0.069)
$\mathbb{1}(French_j \neq French_i)$	-0.034	-0.194^{***}	-0.102^{***}
	(0.075)	(0.035)	(0.036)
log $Population_{ij}$	0.988^{***}	0.912^{***}	0.947^{***}
	(0.016)	(0.008)	(0.009)
$Distance_j \times French_j$	0.006	-0.005^{***}	-0.007^{***}
	(0.004)	(0.002)	(0.002)
$Distance_j$	-0.004^*	0.002^*	0.003^{**}
	(0.002)	(0.001)	(0.001)
Municipality of residence FE	✓	✓	✓
Canton of origin FE	✓	✓	✓
Time FE	✓	✓	✓
Additional controls (X_j)	✓	✓	✓
Observations	$2,303,175$	$2,507,820$	$2,468,595$
No. cluster	$1,348$	$1,604$	$1,557$

***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. All standard errors are clustered at the municipality-of-residence level. The number of observations reported excludes singleton observations emerging from fixed effects. Controls captured in X_j are a dummy for a protestant majority at the place of origin, share of population in j with primary, secondary or tertiary education (Census 2000), size, agglomeration, urbanization and municipality-type indicators.

of the firm founder to take financial risks in case of bankruptcy: While Corporations and Limited Liability Companies cover debt only with firm assets, firm owners account for firm debt with their private assets in case of bankruptcy of an Individual Enterprise. At the same time, Corporations and Limited Liability Companies require more assets and are more expensive to found and run.

We follow the same strategy as before and rerun Equation 6 with different dependent variables according to their legal form. Table 6 shows the results. The estimated coefficient on French-speaking place of origin is virtually identical in all three columns and coincides with the counterpart in the baseline regression in Column (i) of Table 3.

5.3 Probability of Failure

The third firm characteristic we consider is the probability of firm failure. The probability of firm failure can be seen as a valid first proxy for the quality of a firm. In contrast to the previous analyses, we will run a slightly different estimation that relies, however, on the same identification assumptions that were introduced in Section 4.1. The new unit of observation is the firm itself rather

TABLE 7: LINEAR PROBABILITY MODEL: PROBABILITY OF FAILURE.

	Deregistration		Liqu./Closure/Bankrupt.		Bankruptcy	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
French$_j$	0.003	−0.011	−0.004	0.000	−0.001	0.003
	(0.014)	(0.015)	(0.012)	(0.013)	(0.006)	(0.007)
Distance$_j \times$ French$_j$	−0.000	−0.000	−0.000	−0.000	0.000	0.000
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Distance$_j$	0.000	0.000	0.000	0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Place of firm × year FE	✓	✓	✓	✓	✓	✓
Canton of origin FE	✓	✓	✓	✓	✓	✓
Controls X_j and Z_f		✓		✓		✓
Mean (dependent variable)	0.26		0.18		0.06	
Observations	33,436	32,884	33,436	32,884	33,436	32,884
No. cluster	1,177	1,167	1,177	1,167	1,177	1,167
R^2	0.28	0.39	0.25	0.33	0.19	0.22

***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. All standard errors are clustered at the place-of-firm level. The number of observations reported excludes singleton observations emerging from fixed effects. Controls captured in X_j are a dummy for a protestant majority at the place of origin, share of population in j with primary, secondary or tertiary education (Census 2000), size, agglomeration, urbanization and municipality-type indicators. Controls captured in Z_f are 6-digit industry dummies and the legal form of the firm.

than the number of firms founded in a certain population. This allows for a richer set of controls such as the legal form or the industry of the firm. Also, this setting allows for absorbing fixed effects at the level of the municipality the firm is located in. To assess the probability of failure of a firm f we estimate variants of the following linear probability model for firms founded by individuals with origin in municipality j and canton c founded in municipality i at time t,

$$Y_{ijctf} = \alpha_{it} + \kappa_c + \delta F_j + \zeta D_j + \eta F_j \times D_j + \beta X_j + \lambda Z_f + \epsilon_{ijct}, \qquad (7)$$

where Y_{ijctf} is an indicator for firm failure, F_j is an indicator for the language region of the founder's place of origin, D_j is the shortest road distance from the founder's place of origin to the language border, and X_j captures controls at the founder's place of origin. We subsume firm characteristics, such as their legal form or sector dummies, in the vector Z_f. Further, all regressions absorb fixed effects for the municipality where a firm is based times the founding year (α_{it}) and canton fixed effects for the founder's places of origin (κ_c). Standard errors are heteroskedasticity-robust and clustered at the level of the municipality where the firm is based.

We consider three different outcomes to assess failure of newly founded firms, based on the classifications in the commercial registry. The broadest measure

TABLE 8: SUMMARY STATISTICS OF THE ORBIS PANEL.

Variable	Mean	SD	Min.	Max.	N
Year			2007	2015	123,864
log(No of employees)	0.921	1.054	0	9.054	123,864
$\mathbb{1}(Employees > 1)$	0.514	0.5	0	1	123,864
log(Revenue)	7.522	1.187	2.639	16.423	76,540
French-speaking origin, F_j	0.348	0.476	0	1	123,864
Distance to language border, D_j	10.26	27.233	-49.094	49.466	123,864
Firm age	5.179	3.375	0	13	123,760

covers any deregistration from the commercial registry. As this measure may not capture failure accurately the second measure covers only liquidation, closure, and bankruptcies, while the last measure focuses solely on bankruptcies.

We report two specifications for each of the three outcomes, once with and once without additional place of origin and firm-level controls and report them in Table 7. In all six columns we estimate a precise zero effect at the language border. I.e. there is no difference in probability of firm failure between firms founded by individuals with place of origin on the German-speaking side compared to individuals with place of origin on the French-speaking side of the language border. All results are robust to replacing municipality-of-registration×founding-year fixed effects by municipality-of-registration fixed effects and to omitting industry controls or varying their digit-level. Moreover, the significance levels are not affected by cluster choice.

5.4 Firm Size

Using the unique commercial register identifier we can merge data on employment and revenue, as provided by the ORBIS database (Van Dijk, 2018), to the founded firms. The ORBIS data covers the years 2007-2015 but the coverage varies across years. While only a subset of firms is covered for the years before 2012, almost the universe of firms is covered for the years from 2012-2015. Generally, coverage is better for employment than for revenue. Of the 40,193 firms that are in our baseline sample, we can match ORBIS data with at least one non-missing employment observation to 31,729 firms. Summary statistics are provided in Table 8.

We estimate separate regressions for age groups in order to approximate the role of cultural origin over the life cycle of the firm. The firm-level analysis is analogous to the analysis of firm failure in Equation (7).

We report estimated coefficients on the indicator of French-speaking place of origin of the founder by age of the firm in Figure 6. Panel (a) shows the

(A) LOG(NUMBER OF EMPLOYEES)   (B) MORE THAN ONE EMPLOYEE   (C) LOG(REVENUE)
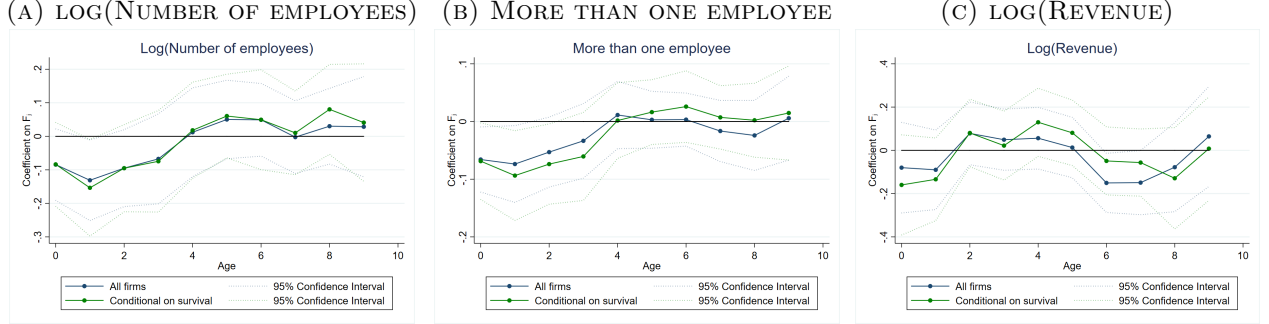
Coefficients are obtained estimating Equation (7) by age group. Standard errors are clustered at the place-of-firm level. The regressions include fixed effects on the municipality-of-registration×year-of-registration level and the canton-of-origin level. Controls captured in X_j are a dummy for a protestant majority at the place of origin, share of population in j with primary, secondary or tertiary education (Census 2000), size, agglomeration, urbanization and municipality-type indicators. Controls captured in Z_f are 6-digit industry dummies and the legal form of the firm.

analysis for the log number of employees as dependent variable, Panel (b) uses an indicator for firms with more than one employee (i.e. employer-firms), and Panel (c) shows the estimated coefficients for the regression of log revenue. The figures indicate that, if anything, firms founded by entrepreneurs with French-speaking origin are somewhat smaller in the first years after firm foundation. At the latest after three years, firms of founders with French- and German-speaking origin employ the same number of employees and are equally likely to be employer-firms, while there is no difference in revenues across cultural origin. The estimated coefficients are nearly identical when conditioning on the set of surviving firms.

Taken together, the four analyses in this chapter show that firms that are founded by entrepreneurs with French- and German-speaking cultural origin are remarkably similar. This finding combined with the strong effect of cultural origin on firm foundation can help us to shed light on the specific nature of the cultural determinants driving the results. We will do so by considering a theoretical model of entrepreneurial choice in the next section.

6   A Stylized Model of Entrepreneurial Choice

The question concerning the nature of entrepreneurs and its distribution across cultural groups is at the heart of a historical debate among economists – most prominently by Knight (1921) and Schumpeter (1934). Knight (1921) under-

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lines the role of risk bearing as one of the fundamental characteristics of an entrepreneur while Schumpeter (1934) emphasizes the innovative capacity and quality of the entrepreneur. Translated into economic models, Lucas (1978) considers a model where more able agents become entrepreneurs while Kihlstrom and Laffont (1979) provide us with a model of risk averse agents with the least risk averse individuals becoming entrepreneurs. More recently, Hurst and Pugsley (2015) consider the sheer preference for entrepreneurship to be driving particularly small business formation.

Apart from these three dimensions, an extensive literature in economics and management has identified a host of other drivers of entrepreneurial choice (see, e.g. Jovanovic, 1982; Evans and Jovanovic, 1989; Clementi and Hopenhayn, 2006). We focus on the aforementioned parameters, however, guided by the identification strategy of the empirical model. First, since all effects are identified within the very same environment (within a municipality) we will not focus on parameters that can be taken as constant in this environment such as wage rates, taxes, costs of entering a business, or bankruptcy laws. Second, the identification strategy at the language border (but within cantons) allows us to hold constant factors such as the social and professional background of both the potential entrepreneurs and their ancestors.

We propose the following stylized model, abstracting from any general equilibrium considerations. Consider a set of agents on the interval $[0, 1]$ with each agent being denoted by α. Each agent's utility is described by the function $U = u(I, \alpha) + \gamma(\alpha) \times \mathbb{I}(entrepreneur)$, where $I \geq 0$ denotes income and $\gamma(\alpha)$ is a constant that additively increases utility if an agent chooses to become an entrepreneur (to allow for non-pecuniary benefits of entrepreneurship as in Hurst and Pugsley, 2015). Further, assume that $u'(\cdot) > 0$ and $u''(\cdot) \leq 0$ exist and are continuous. Analogously to Kihlstrom and Laffont (1979), we assume that the Arrow-Pratt coefficient of relative risk aversion $\eta(I, \alpha) = -\frac{u''(I,\alpha)}{u'(I,\alpha)}$ is nondecreasing in α.

Agents can choose to be regular workers, obtaining a risk-free income w, or to become entrepreneurs, obtaining a risky income $y = a(\alpha)x$, where $a(\alpha) \geq 0$ denotes entrepreneurial ability, and x is the realization of a random variable with density function $f(x)$ and support $[0, \bar{x}]$. Hence, the expected profits from entrepreneurship for agent α are

$$\mathbb{E}(\pi(\alpha)) = a(\alpha) \int_0^{\bar{x}} x f(x) dx \qquad (8)$$

and increasing in entrepreneurial ability. Agents choose to become entrepreneurs if the expected utility from doing so, $\mathbb{E}(u^e(\alpha))$ is at least as high as the expected utility from being a worker, $\mathbb{E}(u^w(\alpha))$:

$$\mathbb{E}(u^e(\alpha)) = \int_0^{\bar{x}} u(a(\alpha)x, \alpha)f(x)dx + \gamma(\alpha) \geq u(w, \alpha) = \mathbb{E}(u^w(\alpha)). \qquad (9)$$
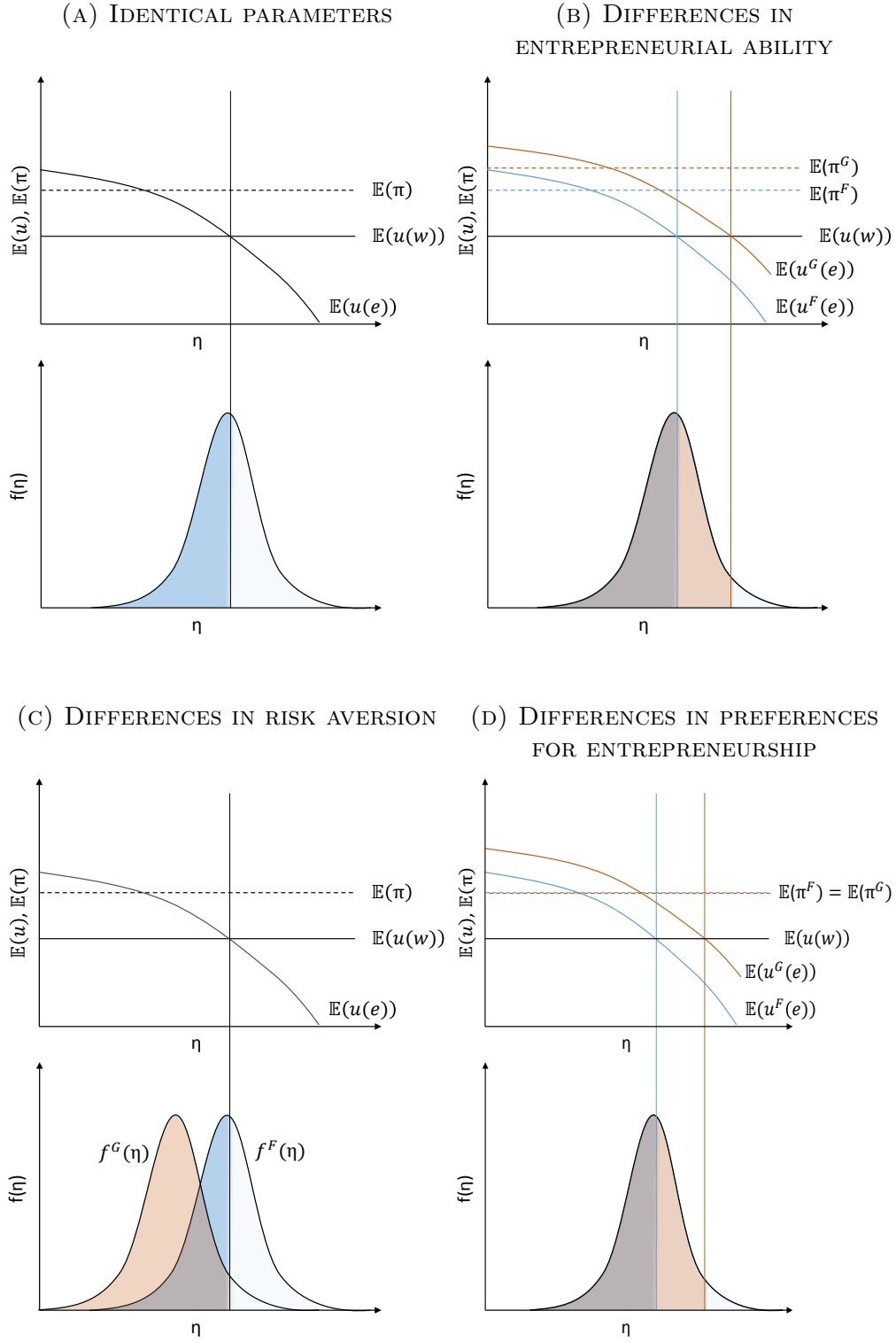
The upper graph in Figure 7 (a) illustrates the trade-off faced by agents with a given level of entrepreneurial ability across different levels of relative risk aversion by plotting their expected utility as a worker and as an entrepreneur in η–space. The expected profits of an entrepreneur's firm are constant across η. The marginal entrepreneur is exactly indifferent between setting up a business and working for a risk-free wage. The lower graph in Figure 7 (a) links the marginal entrepreneur to its relative position in the distribution of relative risk aversion in the population. The share of the population becoming entrepreneurs is defined by the mass to the left of the marginal entrepreneur.

In order to reconcile the patterns highlighted in the empirical section we discuss different distributional assumptions of the parameters across populations with French- and German-speaking cultural origin such that we observe i) a higher rate of entrepreneurship among those with German-speaking origin but ii) identical success rates (average profits) in the set of founded firms. Let us denote any population-specific characteristics by G and F for German- and French-speaking cultural origin, respectively.

We examine three cases. First, consider a different distribution of entrepreneurial abilities in the two populations such that $a^G > a^F$ as is depicted in Figure 7 (b). This implies an upward shift of the expected utility of an entrepreneur with German-speaking roots as well as an upward shift of the expected profits generated by these firms. Assuming the distribution of relative risk aversion and entrepreneurial preferences to be the same in both populations, there should be a higher share of entrepreneurs in the population with German-speaking cultural origin as it is observed in the data. But in contrast to the empirical evidence, the average firm founded by citizens with German-speaking cultural origin should also perform better than the average firm founded by those with French-speaking cultural origin.

Second, consider the distribution of abilities and entrepreneurial preferences to be identical but the distribution of relative risk aversion of the population with German-speaking origin to be first-order stochastically dominated by the distribution of the population with French-speaking origin, as in Figure 7 (c). Hence, the average risk aversion of citizens with German-speaking origin is lower,

FIGURE 7: EQUILIBRIUM SHARE OF ENTREPRENEURS UNDER DIFFERENT PARAMETER DISTRIBUTIONS ACROSS POPULATIONS.

(A) IDENTICAL PARAMETERS

(B) DIFFERENCES IN ENTREPRENEURIAL ABILITY

(C) DIFFERENCES IN RISK AVERSION

(D) DIFFERENCES IN PREFERENCES FOR ENTREPRENEURSHIP

compared to citizens with French-speaking origin. The marginal entrepreneur has the same risk aversion in both populations but the cut-off corresponds to a higher share of entrepreneurs among citizens with German-speaking roots. The expected performance of firms founded by both populations would, however, be identical in this case, as average abilities of firm founders are the same.

Finally, Figure 7 (d) depicts the case where entrepreneurship leads to higher non-pecuniary benefits among citizens with German-speaking roots. As in case (b) the utility schedule shifts up and the marginal entrepreneur among the population with German-speaking roots is more risk averse than the marginal entrepreneur with French-speaking roots. This corresponds to a higher share of the population that becomes an entrepreneur. In contrast to case (b), expected profits of founded firms are not affected.

To sum up, the main empirical results can be reconciled in a stylized model where citizens with French-speaking origin have on average a higher risk aversion (case (c)) or obtain lower non-pecuniary benefits from entrepreneurship (case (d)). There is, however, one important difference: Case (c) implies that the average entrepreneur with French-speaking origin is more risk-averse than the average entrepreneur with German-speaking cultural heritage, while case (d) implies the opposite. This distinction can help us to further narrow down the main channel through which cultural origin affects entrepreneurship.

To do so, we consider three independent data sets that survey the above mentioned individual characteristics for the Swiss population and the subset of Swiss entrepreneurs. All data sets report the language in which the interview was conducted, which we use as a proxy for French-speaking and German-speaking cultural origin, respectively. The respective data sets are (i) a data set compiled by Falk et al. (2017) in order to collect data on the global distribution of preference parameters, (ii) the Global Entrepreneurship Monitor (GEM), and (iii) the European Value Survey (EVS). We control for date fixed effects where this information is available and focus on the subset of men when they can be separately identified.[31] Importantly, the GEM data allows us to identify entrepreneurs, which helps us to assess differences in characteristics across the population of entrepreneurs with a French-speaking origin and a German-speaking origin, respectively.

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[31]Potential control variables provided vary across data. We present the baseline results without controls to ensure comparability of the three separate datasets since no control variables are available for the dataset by Falk et al. (2017). Additional controls such as income, age, and education are available for both GEM and EVS data, their inclusion in the analysis does not change any of the qualitative results.

	Falk et al. (2017)	Global Entrepreneurship Monitor				European Value Survey	
	Risk Taking	Fear of failure		Skill		Important in job:	
	[Range -1.87–2.47]	All	Entrep.	All	Entrep.	Responsibility	Initiative
	OLS (i)	Probit (ii)	Probit (iii)	Probit (iv)	Probit (v)	Probit (vi)	Probit (vii)
French	-0.171**	0.296***	0.555*	-0.087	-0.010	-0.294*	-0.452***
	(0.080)	(0.100)	(0.288)	(0.097)	(0.297)	(0.164)	(0.161)
Constant	-0.018	-0.651***	-1.184***	0.020	0.939***	0.294	0.042
	(0.037)	(0.052)	(0.170)	(0.047)	(0.155)	(0.902)	(0.392)
Only Men		✓	✓	✓	✓	✓	✓
Date of interview FE	✓					✓	✓
Observations	958	911	127	925	126	494	489

***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. Robust standard errors in parentheses. Data sources (i): Falk et al. (2017); (ii)-(v): Global Entrepreneurship Monitor; (vi)-(vii) European Values Survey (2008).

Table 9 presents the results. Both, Falk et al. (2017) and GEM survey risk attitudes. While Falk et al. (2017) reports risk aversion parameters, GEM asks the respondents if fear of failure would prevent respondents from starting a business. Both measures indicate that the French-speaking Swiss population is more risk averse than the German-speaking population. The same holds for the subset of entrepreneurs, which speaks in favor of the risk channel in the model above (case (c)).

Columns (iv) and (v) report the self-assessed entrepreneurial skills of the respondents. Specifically, the GEM survey asks if the respondent has the required skills to start a business. As conjectured based on the theoretical model, the skill level does not vary significantly between French- and German-speaking citizens, neither for the subset of entrepreneurs nor the overall population.

Finally, the EVS survey allows us to assess preferences towards two job characteristics that are typically considered to be relevant for entrepreneurs: 'a responsible job' and 'opportunity to use initiative'. We find that both characteristics are significantly more important to German-speaking citizens, what can be interpreted as a preference for entrepreneurial-like activities. The latter speaks in favor of case (d) in the theoretical model.

In line with the theoretical predictions, correlational evidence confirms that both risk aversion and preferences for entrepreneurial activity might play a role in explaining the differences in entrepreneurial activity across cultural backgrounds, while skill differences seem to be less relevant. Importantly, the fact that even within the subset of entrepreneurs, French-speaking entrepreneurs seem to ex-

hibit stronger risk aversion than German-speaking entrepreneurs, speaks strongly in favor of risk aversion playing the dominant role in explaining the empirical regularities in the setting exploited in this paper.

This is consistent with previous research that has documented the persistence of risk attitudes over generations (Dohmen et al., 2011). In particular, these findings are in line with theoretical work by Doepke and Zilibotti (2014) who explicitly model the cultural transmission of risk aversion over generations in a setting where parents invest in theses values in order to influence the occupational choice of their children. Their model explicitly links the cultural transmission of risk aversion to innovation and growth through entrepreneurship.[32] We will quantify the link between entrepreneurship outcomes and aggregate economic outcomes in the what follows.

7   Aggregate Implications

Previous research has already documented that entrepreneurship rates are an important determinant of aggregate economic developments. In particular, entry affects aggregate productivity growth through its effect on the pace of reallocation of resources across establishments. Since entrants are typically more productive than exiting firms and exhibit different productivity dynamics compared to incumbent firms, aggregate productivity is strongly influenced by the number of entering firms. Using US data, Foster, Haltiwanger and Krizan (2001) find that net entry of plants accounts for 25% of U.S. manufacturing productivity growth. Based on data from Chile and South Korea, Asturias et al. (2017) show that net entry is even more important in times of fast growth with its contribution to aggregate productivity growth rising to 37-58%.

Data on the universe of Swiss establishments from 2011-2015 reveals that entry plays also an important role in the dynamics of the Swiss economy. From 2011 to 2015, around 150,000 new full-time equivalent jobs were created all over Switzerland. Decomposing these numbers, reveals that around 100,000 of these

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[32] Aside from risk aversion, Doepke and Zilibotti (2014) consider patience as a second preference-rooted factor determining entrepreneurship. In the stylized model of this paper risk and time preferences are observationally equivalent. We acknowledge that the role we ascribe to risk aversion cannot be separated from patience and the Falk et al. (2017) survey provides evidence for both channels. This is in line with previous literature that documents a strong correlation between the two channels (e.g. Andersen et al., 2008). Moreover, Herz et al. (2019) provide evidence that patience differs among school children at the Swiss language border.

jobs were created by firms that existed throughout the period, 463,000 by new entrants, whereas 413,000 jobs were lost due to exiting firms.[33]

A simple back-of-the-envelope calculation allows us to approximate the aggregate implications of the differences in entry rates across cultural groups for the Swiss economy.[34] Over the period of investigation (2002-2016) 171,271 firms were founded by men with German-speaking origin and 42,257 by men with French-speaking origin. Of these firms, 127,667 and 30,728 still existed at the end of our sample period, respectively. Based on our estimates, $0.20 \times 127{,}667 \approx 25{,}533$ fewer firms would exist today if the entry rate of Swiss men with German-speaking origin was the same as the entry rate of individuals with French-speaking origin. The average firm founded during the period of investigation in Switzerland has 4.5-5 employees.[35] This implies that the sheer difference in entry rates amounts to 115,000-128,000 additional jobs that have been created over the sample period and still existed at the end of 2016. These numbers amount to 2.5% of all jobs in Switzerland.[36]

8 Conclusion

This paper studies how cultural origin affects economic activity through entrepreneurship. We use a quasi experimental setting that allows for a comparison of the entrepreneurial activities of Swiss citizens with different cultural background from within Switzerland but who live in the same municipality today and are, hence, exposed to the same economic and institutional conditions. Applying a spatial RDD, we find that individuals with cultural origin on the German-speaking side of the language border found 20% more firms than their counterparts with cultural origin on the French-speaking side. At the same time, these newly founded firms are identical in terms of industry composition, legal form, survival rate, and various measures of firm size.

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[33]These numbers are based on the STATENT (Statistik der Unternehmensdemographie) data provided by the Swiss Federal Statistical Office.

[34]Note that summary statistics presented in Tables 12 and 13 in the Appendix suggest that the firms of the regression sample are largely representative for the universe of firms founded by Swiss men in the period of investigation.

[35]According to Bureau van Dijk's ORBIS data, the average firm existing in Switzerland at the beginning of 2016 that was founded in the period 2002-2015, has 5 employees (including the owner). For a subset of the STATENT data that can be merged to data on firm entry in Switzerland for the period 2001-2013, the average employment for a firm aged 12 or less years is 4.5 employees in 2013 which accounts for 3.6 full time equivalents. Note that from 2012 onwards, ORBIS covers the universe of Swiss firms in terms of founding date and employment.

[36]Clearly, this approach abstracts from any general equilibrium considerations. In particular, it does not take into account feedback effects stemming from scarce resources such as labor. However, we believe that this resource constraint is of limited concern as Switzerland is very well integrated with the much larger labor market of the European Union.

Rationalizing these findings in a theoretical model of entrepreneurial choice suggests that the observed differences in entrepreneurship are more likely driven by differences in preferences, rather than by differences in skill. This conjecture is supported by survey evidence on the distribution of individual characteristics across Swiss cultural groups and the subset of Swiss entrepreneurs. Taken together, evidence points to risk aversion playing a dominant role in explaining the observed differences in entrepreneurial choice.

Back-of-the-envelope calculations point to sizable aggregate implications of the cultural differences in entrepreneurial choice. The differences account for around 120,000 additional jobs that have been created by Swiss citizens with cultural origin in the German-speaking region over the period of investigation, amounting to 2.5% of all jobs in Switzerland.

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A   Appendix

[For online publication]

A.1   Historical Migration Patterns

TABLE 10: LINEAR REGRESSION:
DOMESTIC MIGRATION PATTERNS.

|	$log(P_{ij})$
$log(\text{Distance}_{ij})$	-0.567^{***}
	0.010
$\mathbb{1}(F_j \neq F_i)$	-0.262^{***}
	0.021
$\mathbb{1}(F_j \neq F_i) \times F_j$	-0.030
	0.031
$log(\text{Size}_j)$	0.358^{***}
	0.009
Municipality of residence FE	✓
Canton of origin FE	✓
Additional controls (X_j)	✓
R^2	0.40
Observations	$185{,}506$

***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. All standard errors are clustered at the municipality-of-residence level. Controls captured in X_j are a dummy for a protestant majority at the place of origin, share of population in j with primary, secondary or tertiary education (Census 2000), agglomeration, urbanization and municipality-type indicators.

A.2 Balance of Place of Origin Variables at Language Border

We provide evidence that typical (and potentially non-cultural) determinants of entrepreneurship are balanced at the language border in Figures 8 and 9. Figure 8 shows that the status index – a measure by the Swiss statistical office encompassing income, education, and job prestige – as well as the average income do not change discontinuously at the language border.
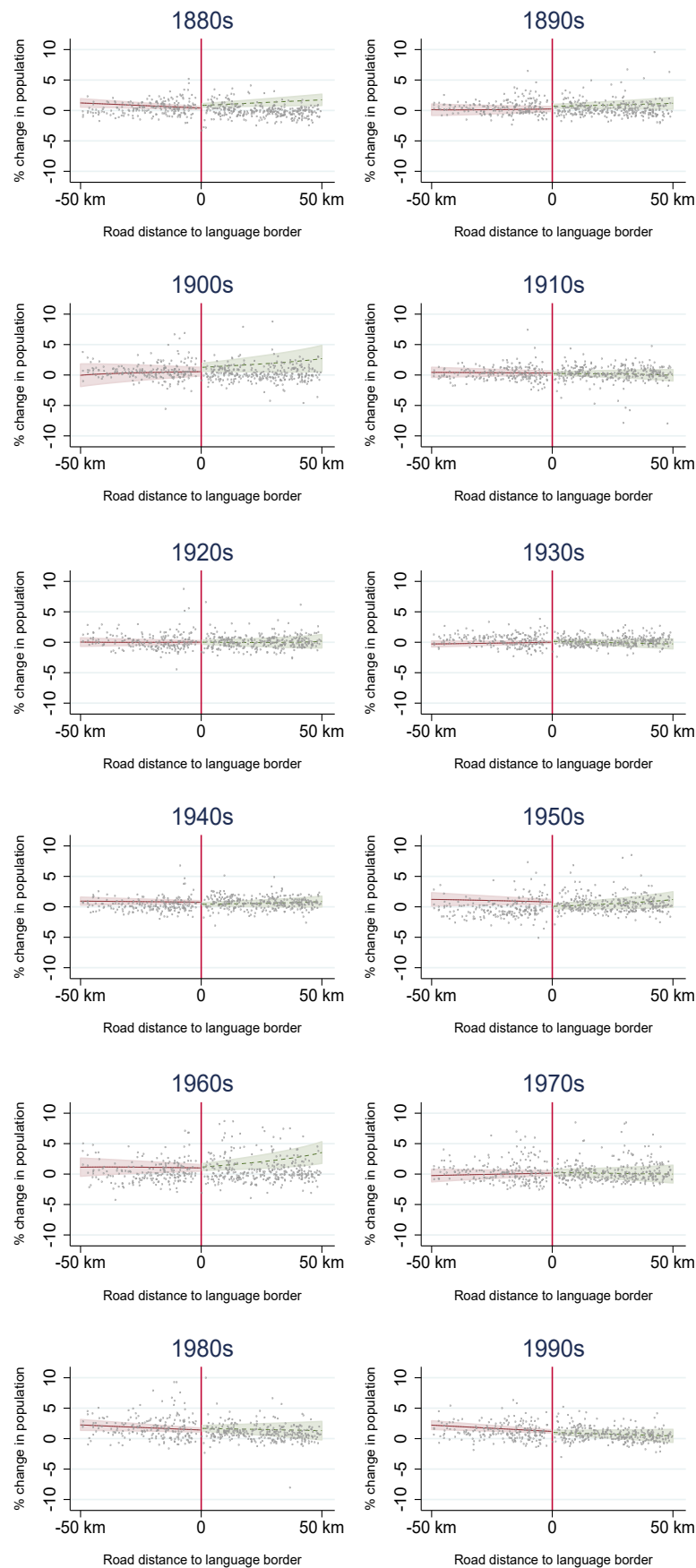
While historical information on these variables is not available at the municipality level, the history of population growth of the municipalities at the language border can tell us more about parallel economic developments at the language border. First, since population growth is strongly affected by economic conditions the continuity of the variable at the language border over time strongly indicates that people with cultural origin from directly to the right or to the left of the language border have their origins not from strikingly different economic environments, especially, considering that domestic migration at this language border has always been unrestricted. Second, there is no indication that migration away from the respective places of origin has taken place at different points in time for individuals with French- or German-speaking origin, respectively.

FIGURE 8: BALANCE OF PLACE OF ORIGIN CHARACTERISTICS AT THE LANGUAGE BORDER.
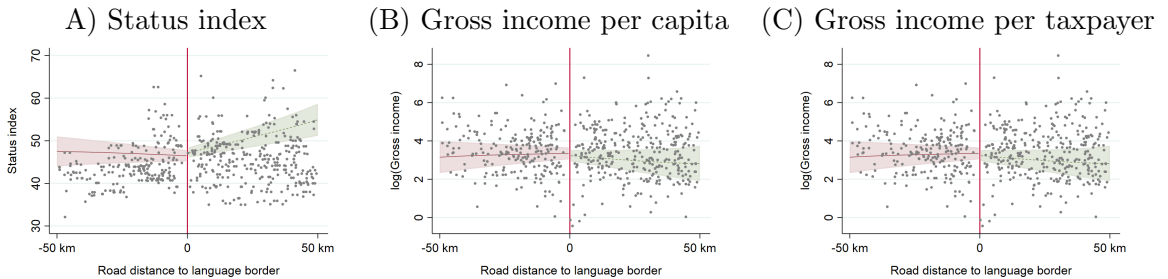
Note: Information provided by the Swiss Statistical Office based on the Census 2000.

FIGURE 9: BALANCE OF POPULATION GROWTH RATES AT THE LANGUAGE BORDER OVER TIME.

Average yearly rates by decades. Scatters omit extreme outliers for better readability.
Information provided by the Swiss Statistical Office based on the Census 2000.

A.3 Additional Robustness

TABLE 11: ADDITIONAL ROBUSTNESS: NUMBER OF FIRMS FOUNDED.

	w/o $\mathbb{1}(F_j \neq F_i)$ (i)	jct–FE (ii)	Control for $\mathbb{1}(i \neq j)$ (iii)	Top 10 muni. of res. (iv)	No top 10 muni. of res. (v)	Alt. definition of language border (vi)	Distance squared (vii)
French$_j$	−0.170***	−0.221***	−0.221***	−0.341***	−0.203***	−0.203***	−0.268***
	(0.054)	(0.056)	(0.056)	(0.119)	(0.060)	(0.052)	(0.076)
$\mathbb{1}(F_j \neq F_i)$		−0.115***	−0.129***	−0.026	−0.132***	−0.116***	−0.116***
		(0.029)	(0.029)	(0.094)	(0.032)	(0.029)	(0.029)
log Population$_{ij}$	0.952***	0.946***	0.924***	0.928***	0.946***	0.946***	0.946***
	(0.006)	(0.007)	(0.010)	(0.050)	(0.007)	(0.007)	(0.007)
Distance$_j \times$ French$_j$	−0.003	−0.002	−0.002	−0.001	−0.003	−0.002	0.000
	(0.002)	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.006)
Distance$_j$	0.001	0.001	0.001	−0.002	0.001	0.001	−0.003
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.004)
Distance$_j^2 \times$ French$_j$							−0.000
							(0.000)
Distance$_j^2$							0.000
							(0.000)
$\mathbb{1}(i \neq j)$			−0.134***				
			(0.043)				
Municipality of residence × time FE	✓		✓	✓	✓	✓	✓
Municipality of residence FE		✓					
Canton of origin FE	✓	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓	✓
Additional controls (X_j)	✓	✓	✓	✓	✓	✓	✓
Observations	2,696,955	1,712,499	2,696,955	66,540	2,630,415	2,696,955	2,696,955
No. cluster	1,927	1,927	1,927	10	1,917	1,927	1,927

***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. All standard errors are clustered at the municipality-of-residence level. The number of observations reported excludes singleton observations emerging from fixed effects. Controls captured in X_j are a dummy for a protestant majority at the place of origin, share of population in j with primary, secondary or tertiary education (Census 2000), size, agglomeration, urbanization and municipality-type indicators.

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A.4 Representativeness of Sample for Switzerland

TABLE 12: SUMMARY STATISTICS OF FIRM REGISTRY DATA FOR FOUNDERS WITH ORIGINS AROUND THE LANGUAGE BORDER AND THE FULL DATASET.

	Sample		Universe	
	Mean	SD	Mean	SD
Business Success				
Deregistration	0.261	0.439	0.256	0.436
Liquid./Closure/Bankruptcy	0.185	0.388	0.174	0.379
Bankruptcy	0.057	0.231	0.056	0.23
Sector Composition				
Accomodation & food service	0.073	0.260	0.061	0.239
Administrative & support service	0.048	0.215	0.050	0.219
Agriculture	0.000	0.000	0.000	0.003
Arts, entertainment & recreation	0.015	0.123	0.016	0.124
Construction	0.114	0.318	0.102	0.303
Education	0.013	0.112	0.014	0.116
Electricity, gas, steam supply	0.003	0.056	0.003	0.051
Financial & insurance	0.078	0.268	0.085	0.279
Human health & social work	0.019	0.136	0.019	0.136
Information & communication	0.059	0.237	0.066	0.249
Manufacturing	0.091	0.288	0.080	0.271
Other services	0.018	0.133	0.017	0.128
Professional, scientific & technical act.	0.177	0.382	0.199	0.399
Public administration & defence	0.001	0.027	0.001	0.027
Real estate	0.059	0.236	0.056	0.230
Transportation & storage	0.026	0.160	0.027	0.162
Water supply, sewerage, waste management	0.003	0.056	0.002	0.049
Wholesale & retail trade	0.190	0.392	0.192	0.394
Industry unknown	0.011	0.105	0.010	0.101
Legal Form				
Corporation	0.283	0.450	0.313	0.464
Individual enterprise	0.350	0.477	0.325	0.468
Cooperative	0.004	0.066	0.005	0.070
LLC	0.332	0.471	0.330	0.470
Limited partnership	0.028	0.165	0.025	0.157
Other	0.002	0.049	0.003	0.053
Observations	40,193		188,234	

TABLE 13: SUMMARY STATISTICS OF THE MERGED ORBIS DATA FOR THE SAMPLE OF FOUNDERS WITH ORIGINS AROUND THE LANGUAGE BORDER AND THE FULL DATASET.

	Sample			Universe		
Variable	Mean	SD	Obs.	Mean	SD	Obs.
log(No of employees)	0.921	1.054	123,864	0.927	1.048	584,177
log(Revenue)	7.436	1.242	92,680	7.468	1.229	425,951