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The Cultural Roots of Firm Entry, Exit, and Growth

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.

JEL-Codes: D220, L260, O120, Z100.

Keywords: culture, entrepreneurship, natural experiment, spatial RDD.

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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. That way, differences in their entrepreneurial activity could be analysed cleanly – as well as aggregate economic implications thereof.

In this paper, we use a novel quasi-experimental setting of that very flavour by exploiting two unique institutional features of Switzerland. The first is the concept of *place of origin* – an institution dating back to the 18^{th} century. Until today it 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

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

border where values and norms diverge.[2,3] 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, 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)

We measure entrepreneurial activity in 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 and with the respective nearest distances of these places of origin to the language border.[4]

In the spirit of the 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.[5] The separation of place of residence and place of origin is the centerpiece of the identification strategy since it allows us to hold constant local conditions at the place of residence. The RDD setting helps us to refine our claim that the identified differences can indeed be attributed to culture by additionally holding constant relevant non-cultural characteristics across places of origin.

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 market-specific explanations as this difference is found independently of the current location

[2]Intriguingly, we show that these cultural differences can also be observed in the contrasting voting behaviour about entrepreneurship.

[3]Unlike Chen (2013) and Herz et al. (2021) 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.

[4]We focus on male firm founders, as past literature has shown strong gender differences between cultures with respect to labour 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.

[5]As shown in Appendix Tables F.1 and F.2 the regression sample is largely representative for the universe of all firms.

of individuals: We find an effect of the same magnitude when considering individuals that live in the French-speaking part of Switzerland only and, vice versa, when considering solely individuals that live in the German-speaking part.

The baseline results suggest persistence of the cultural component since place of origin characteristics subsist at different places of residence. We provide further evidence on this persistence 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 long-settled families, 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.

To further emphasize that the identified effect is truly driven by different cultural origin, and not by an omitted channel that simultaneously changes discontinuously at the language border, we re-estimate the effect for each of the three bilingual cantons in the sample 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. This result together with the general robustness of the effect suggests that the identified effect is deeply rooted and persists across space and time.

Our measure of firm foundations is agnostic about firm types and does not distinguish between snack bars and truly entrepreneurial, highly innovative activities (Glaeser, 2007). In order to tie our baseline results to differences in entrepreneurialism, we consider two types of firm heterogeneities: legal form and industry composition. Levine and Rubinstein (2017) argue that distinguishing incorporated (corporations and limited liability companies) from unincorporated (individual enterprises) firms is a good proxy to separate 'real' entrepreneurs from other business owners. This is because only entrepreneurs conducting large, risky investments are willing to bear the costs of incorporation. Just as different legal forms, different industries require different

investment levels and have different financing opportunities. We find similar cultural differences in firm foundations across all these different firm types and, in particular, also for those types that are typically considered the most entrepreneurial ones.

In order to understand how distinct entrepreneurial cultures can emerge within a given environment, we set up a stylized model of entrepreneurial choice. 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. In this framework, distinct entrepreneurial cultures emerge when individual attributes that affect entrepreneurial choice are distributed differently across cultural groups. We show that differences in preferences as well as differences in abilities cause different firm foundation rates. However, if differences in abilities were pivotal, firms founded by entrepreneurs with German-speaking origin would be *more successful*, while differences in preferences suggest that founded firms would be equally successful across the cultural groups.

With this in mind, we complement the firm registry data with further data on the individual firms' life cycle. We study if firms that are founded by individuals of different cultural origins differ in their success, measured as failure rates and firm size over time. We find that, once founded, firms are identical for founders of both cultural origins across all dimensions. Through the lens of our model, these results suggest that the key difference between cultural groups are preferences rather than skill. This result is reinforced by our heterogeneity analyses that show similar effect sizes across various industries with very different human capital requirements.

Beyond the firm-level data, additional survey evidence across the two cultural areas from both, entrepreneurs and the general population, suggests that it is preferences and not skill that varies across these cultural groups. Importantly, these survey data allow us to further assess what kind of preferences may be pivotal and point towards risk aversion being the dominant factor while differences in preferences for entrepreneurial activity may play an additional, subordinate role.

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 occu-

pational choices of their children. Their model explicitly links the cultural transmission of risk aversion to innovation and growth through entrepreneurship.[6]

In our work, we can quantify that link and find that the cultural component behind entrepreneurial activity is indeed sizeable. Abstracting from general equilibrium considerations, 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.[7] Earlier studies in this field have examined how culturally-driven differences in education, female labour force participation, preferences for redistribution, fertility rates, and living arrangements influence economic outcomes at large (Becker and Woessmann, 2009; Caicedo, 2019; Alesina, Giuliano and Nunn, 2013; Luttmer and Singhal, 2011; Alesina and Giuliano, 2010; Fernandez and Fogli, 2009; Giuliano, 2007).

A widely-used identification strategy in the aforementioned literature relies on differences in the outcomes of second-generation immigrants to the US or Europe (e.g. Giuliano, 2007; Fernandez, 2007; Algan and Cahuc, 2010; Luttmer and Singhal, 2011). While this method credibly holds the environment at the country of residence constant, there might be large unobserved non-cultural differences between the children of immigrants with origins from different countries or regions of the world (Alesina and Giuliano, 2015). Our setting allows for a particularly neat application of this so called epidemiological approach since, apart from the cultural background, the environment of origin is much more 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.

[6] 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).

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

Thus, we can alleviate most concerns regarding the unobserved heterogeneity since we can credibly exclude non-cultural factors such as institutional, climatic, and geographic differences at the place of origin, while at the same time holding the current environment constant.

This paper is not the first to explore the relationship between culture and entrepreneurial activity, but causal evidence has remained scarce. 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. Using Swiss data, 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 differences of a measure for entrepreneurial culture, without establishing a causal link between the two. Grosfeld, Rodnyansky and Zhuravskaya (2013) identify a persistent anti-market culture rooted in pre-World War II anti-Semitism that still affects self-employment 60 years later.

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 foundations 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

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

and Laffont (1979) provide a model of risk-averse agents, where the least risk-averse become the entrepreneurs. We show that our results 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 Background and Data

At the heart of this study are two unique features of Switzerland that allow us to identify an entrepreneurial culture – the Swiss language border and the historic concept of a *place of origin*. This section provides further details on these institutional features and illustrates how we can exploit them in the data. Moreover, the section provides first descriptive evidence on the existence of two distinct entrepreneurial cultures in Switzerland.

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 previously 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 separates the two main language regions of Switzerland which account for 86% of the total population (Swiss Federal Statistical Office, 2014). Second, the Swiss-German/Swiss-French language border largely runs within cantons, thereby providing a very sharp spatial separation of the language regions while institutions and policies, primarily set at the cantonal level, remain the same. 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 in the three bilingual cantons Bern, Fribourg, and Valais in subsequent analyses.

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

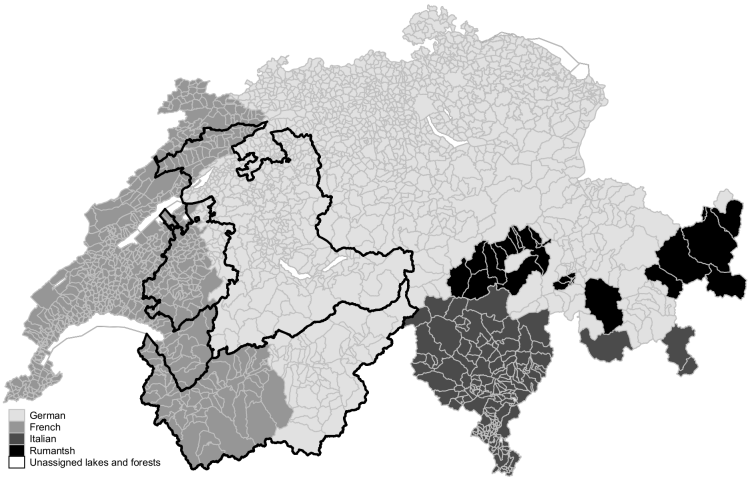
while for municipalities in the German-speaking region road distances are positive.[9] Within just a few kilometers the share of French-speakers drops from more than 90% to below 10% and vice versa for German-speakers.

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 first-hand when they participate in the numerous federal referenda every year whose outcomes frequently diverge at the language border. In the context of this study it is interesting to see that this differential voting pattern also emerges when it comes to attitudes towards entrepreneurship: We analyse 246 federal referenda between 1981 and 2017 for which the leading umbrella 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 that crossing the language border from the French-speaking to the German-speaking region is associated with a discrete 2%-points increase in favour of positions

[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 calculated as the shortest distance between a municipality center and the closest municipality center on the other side of the language border and have been kindly provided by Eugster and Parchet (2019).

[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, labour market, taxes, and environmental issues.

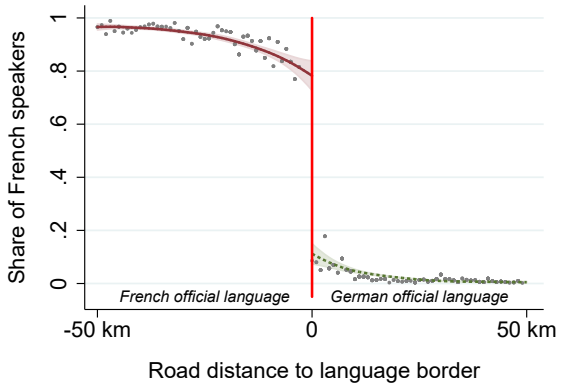
Figure 1: Language Regions in Switzerland.



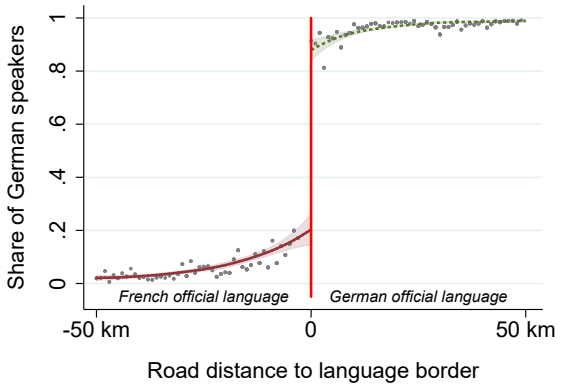
Notes: Municipalities coded by majority language. Borders of bilingual cantons are marked in bold. In these bilingual cantons the language border separates two cultural groups within a homogeneous political and institutional environment. *Data Source:* Federal Statistical Office and Federal Office of Topography.

FIGURE 2: MAIN LANGUAGE AS FUNCTION OF ROAD DISTANCE TO THE LANGUAGE BORDER.

(A) SHARE OF FRENCH SPEAKERS

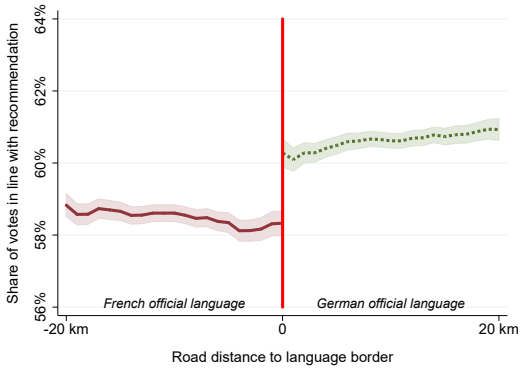


(B) SHARE OF GERMAN SPEAKERS



Notes: 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.

FIGURE 3: STYLIZED FACT – VOTING IN LINE WITH THE *Swiss Federation of Small and Medium Enterprises.*



Notes: 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.

endorsed by the *sgv*. This is first suggestive evidence that German-speaking municipalities may hold more favourable attitudes towards entrepreneurship than French-speaking municipalities.

The cultural differences across these two groups are also documented in the growing literature that exploits this very setting at the Swiss language border to study the role of culture on various 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 favour high taxes and large government involvement, German-speaking voters rather favour low taxes, a slim state, and strong individual responsibilities. Further studies focus on the role of culture on unemployment (Eugster et al., 2017), on households' savings (Guin, 2016), on the demand

for social insurance (Eugster et al., 2011), on financial literacy (Brown, Henchoz and Spycher, 2018), and on eldercare (Gentili, Masiero and Mazzonna, 2017).[11]

The growing literature exploiting differences at the language border illustrates that the cultural differences proxied by the predominately spoken language are many-faceted, calling for a narrow definition of culture. We follow Guiso, Sapienza and Zingales (2006) in defining culture as "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation". The advantage of this definition is that the focus is shifted to components that individuals inherit and cannot easily change. For the researcher this focus implies that they have to exercise great care in tracing the effect of culture through economic channels by shedding light on the components and the mechanisms through which they affect observed outcomes.

In this paper, we closely follow this direction and focus on those cultural components that are long-lasting, individual-level traits which are transmitted fairly unchanged from generation to generation and whose impact on the observed outcome of interest we can explicitly model. We are therefore careful to base our identification strategy on a model that describes how culturally transmitted traits can affect entrepreneurship, to be precise about the economic outcomes we expect to see for specific kinds of traits, to use the institutional setting in Switzerland to identify individual-level and long-lasting traits, and to conduct careful robustness exercises that underline the persistence of the documented traits. Moreover, we provide additional survey evidence that supports the presence of these particular traits in the two cultural groups.

At the same time, we acknowledge that we will not be able to perfectly decompose all components that potentially constitute the differences between the two groups and that the conclusion of our paper can go only as far constituting that we find strong evidence that the manifestations of cultural differences - also identified in many studies exploiting the setting at the Swiss language border - affect entrepreneurial outcomes. We further add to that literature by providing evidence for specific components of culture that differ at the language border, by explicitly modelling how these components can impact entrepreneurship, and by providing evidence for the persistence of the role of cultural origin.

[11] A related strand of the literature has looked at religion as another incarnation of culture in the Swiss context. In particular, Nunziata and Rocco (2016) and Basten and Betz (2013) find differences in entrepreneurship and political preferences between catholic and protestant groups. Note that different from, e.g., Basten and Betz (2013), we compare outcomes within cantons making our setting ill-suited to make a contribution to this literature as there is very little identifying variation regarding religion. Nevertheless, in our econometric specifications we will always control for religion and our results stay the same when focusing on catholic and protestant groups separately (see Appendix E).

Above all, identifying the role of cultural components that are largely unchanged over time and space for a complex economic outcome, such as entrepreneurship, requires us to consider a different research design than the aforementioned studies on the role of cultural differences in Switzerland which compare outcomes observed today in municipalities along the language border. These studies rely on the identifying assumption that everything but culture that changes discontinuously at the language border is observed and can be controlled for (or any other discontinuous change is orthogonal to the outcome of interest). Perfectly controlling for all relevant discontinuous differences at the language border is very challenging, in particular when considering a complex behaviour, such as entrepreneurial activity and taking into account that cultural differences at the language border can also affect the entrepreneurial environment.

This identification challenge calls for a more comprehensive strategy that can account for differences in the economic and social environment of entrepreneurs but at the same time allows for exploiting cultural variation as a driver of entrepreneurship. In the next section, we introduce the concept of *place of origin* and propose a novel identification strategy in Section 4.1 that relies on the separation of cultural origin and place of residence which allows us to examine cultural differences in ancestral location but holds constant the current environment.

2.2 Place of Origin

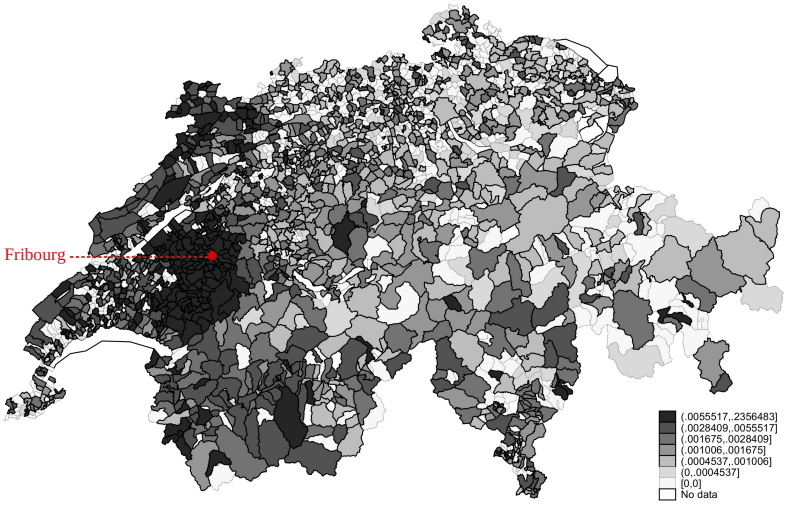
Besides their national citizenship, all Swiss citizens also have a municipal citizenship, formally called *place of origin*. The place of origin is the place where an individual's ancestors are from and is passed on from generation to generation through the paternal line.[12] Married women often have two places of origin: one obtained from their father and one obtained from their husband (Swiss Confederation, 2013).[13]

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 19^{th}

[12] Only since 2013 parents can choose whether the child receives a mother's or father's place of origin.

[13] In principle, 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 one out of 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.

Figure 4: Share of individuals from each place of origin living in the city of Fribourg.



Notes: Share of individuals from each place of origin living in the city of Fribourg. Darker colours indicate higher population shares from a certain place of origin living in Fribourg. Fribourg residents have their place of origin in all parts of the country, but density decreases with distance from the place of origin.

and 20^{th} 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 place of origin in this very municipality (Swiss Federal Statistical Office).

However, the concept of the place of origin remains in place and 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).

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.[14] Figure 4 exemplarily shows the distribution of places of origin for the bilingual city of Fribourg. We see that individuals living in Fribourg 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. This is a

[14]The data contain the historical cantonal affiliations of places of origins as of 1833.

general pattern that holds for all places of residence and is discussed in more detail in Appendix C.

In our setting the place of origin provides a neat 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.

2.3 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, non-profit associations, and foundations.[15] If several founders are listed, we consider the person listed first in official documents as the founder.[16]

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.[17] 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 labour market participation differ across the different cultural regions of Switzerland and we want to avoid wrongly ascribing the effects we identify with different attitudes towards female labour 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 (Fed-

[15]Excluded types account for 2.6% of entries. Including them in the analysis does not affect the results. However, to be precise, we do not want to count founding, e.g., sports clubs as entrepreneurial activity.

[16]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.

[17]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 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

eral Statistical Office, 2000).[18,19] 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.[20] 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.[21]

We use the registry data to 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). 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.

Clearly, this approach results in a large number of zero observations, in particular for pairs of small municipalities. We explicitly account for this by controlling for the size of places of origin and show robustness checks based on zero-inflated Poisson regressions that model the

[18] Majority languages have remained largely unchanged since the middle ages (Lüdi, 2013). The data from 2000 have the advantage that they are collected for the same set of municipalities as the rest of our data. The earliest available documentation of the language distribution at the municipal level that can be mapped to our data is from 1860. Between 1860 and 2000 the majority language flipped in nine places of origin. We exclude those in Column (ix) of Table E.1. The obtained coefficient of interest remains very close to the main effect.

[19] The census provides further village-level controls 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'.

[20] Distances have been calculated as the shortest distance between a municipality center and the closest municipality center on the other side of the language border and have been kindly provided by Eugster and Parchet (2019). Slightly different methods for calculating road distances have been used in the literature. Employing different methods does not affect the results, as is shown in Column (vii) of Table D.1.

[21] As shown in Appendix Tables F.1 and F.2 the regression sample is largely representative for the universe of all firms.

Table 2: Summary Statistics of the Regression Sample.

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		

presence of zeros as a function of the size of place of residence and place of origin. Moreover, we show that considering only small municipalities of origin (those that are considered villages according to the formal definition in Switzerland) does not affect our results (see Column (vi) of Table D.1). Finally, we focus on large municipalities of residence in a separate robustness check to show that the results are not driven by an underrepresentation of small municipalities (see Column (iv) of Table D.1).

2.4 Descriptive Evidence on Entrepreneurial Cultures

We use the separation between place of residence and cultural origin to take a first glance at the entrepreneurial landscape in the two major Swiss cities – Zurich and Geneva – for individuals of different cultural origin.

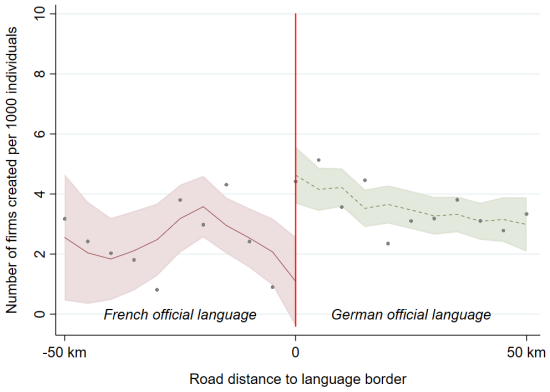
Figure 5 shows new firm foundations by place of origin of the founders. In both municipalities, individuals with place of origin on the German-speaking side of the language border found considerably more firms per capita than their counterparts from the French-speaking side. This pattern is particularly striking since Zurich is located in the German-speaking region while Geneva is located in the French-speaking region, rendering a simple migration story unlikely.

At the same time, the stark differences in firm creation do not seem to lead to differences in the success of the founded firms. As an indicator of success, Figure 6 shows firm bankruptcy in the same context. In Zurich as well as in Geneva, firms founded by individuals with place of origin on either side of the language border go bankrupt equally often.

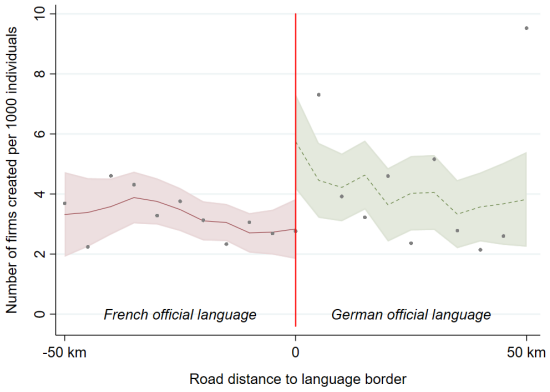
How can this evidence, albeit descriptive, help us understand what exactly constitutes an entrepreneurial culture? To shed light on this question, we introduce a stylized conceptional framework that discusses (potentially culturally-rooted) traits behind entrepreneurial choice and guides our empirical strategy to distinguish between them.

Figure 5: New firm foundations in Zurich and Geneva by place of origin

(a) Zurich residence



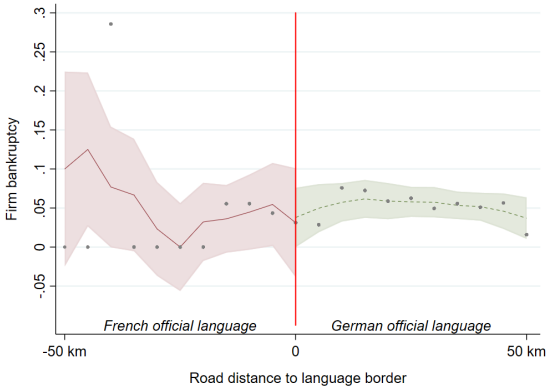
(b) Geneva residence



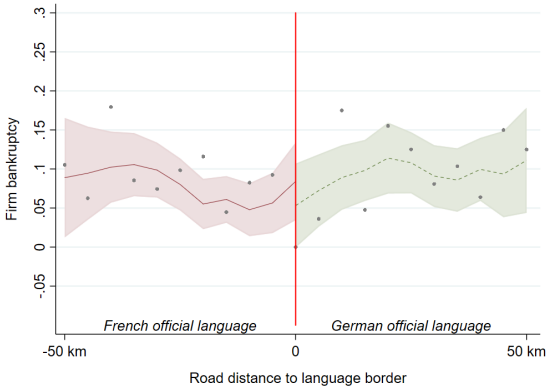
Notes: Yearly number of firms founded per 1000 individuals for populations from each place of origin living in Zurich (a) and Geneva (b) as a function of the nearest road distance from the place of origin to the language border. Loci from local quadratic regressions, along with 95% confidence intervals and scatters representing 5 km bins.

Figure 6: Firm bankruptcies in Zurich and Geneva by place of origin

(a) Zurich residence



(b) Geneva residence



Notes: Incidence of bankruptcy for firms founded from 2002-2016 in Zurich (a) and Geneva (b) by individuals from each place of origin as a function of the nearest road distance from the place of origin to the language border. Loci from local quadratic regressions, along with 95% confidence intervals and scatters representing 5 km bins.

3 Stylized Model of Entrepreneurial Choice

We set up a generic and stylized model of entrepreneurial choice inspired by the historical debate among economists about the nature of entrepreneurs (e.g. Knight, 1921; Schumpeter, 1934; Lucas, 1978; Kihlstrom and Laffont, 1979).[22] Here, we sketch the main intuition of the model while technical details are relegated to Appendix A.

Risk-averse agents, denoted by s, can choose to be hired as employed workers, obtaining a risk-free income w, or to become entrepreneurs, obtaining a risky income $\pi = a(s)x$, where $a(s) \geq 0$ denotes the entrepreneurial ability of individual s, and x is the realization of a random variable with density function $f(x)$ and support $[0, \bar{x}]$. Agents choose to become entrepreneurs if the expected utility from doing so is at least as high as the expected utility from being a worker. 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 η by plotting their expected utility as a worker and as an entrepreneur in $\eta-$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 bottom 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 this stylized framework, distinct entrepreneurial cultures within a given environment can emerge when individual attributes that affect entrepreneurial choice are distributed differently across cultural groups. We illustrate the implications of popular competing hypotheses regarding the distribution of individual attributes in two cultural groups, denoted by G and F.[23]

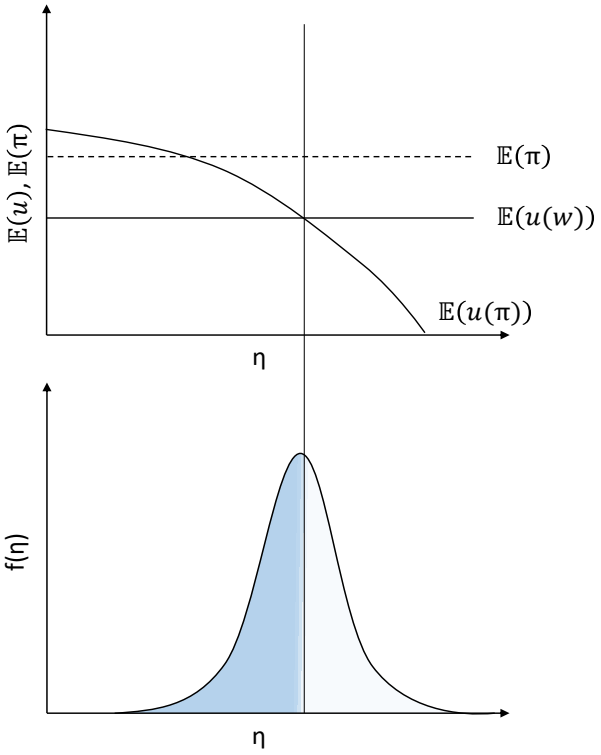
In the spirit of Schumpeter (1934), we first consider a different distribution of entrepreneurial abilities in the two populations. Suppose abilities of population G are better than abilities of population F as is depicted in Figure 7 (B). Since individuals from G set up better firms on average, this implies an upward shift of the expected utility of an entrepreneur from population G as well as an upward shift of the expected profits generated by these firms. Assuming that

[22] 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 abilities 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.

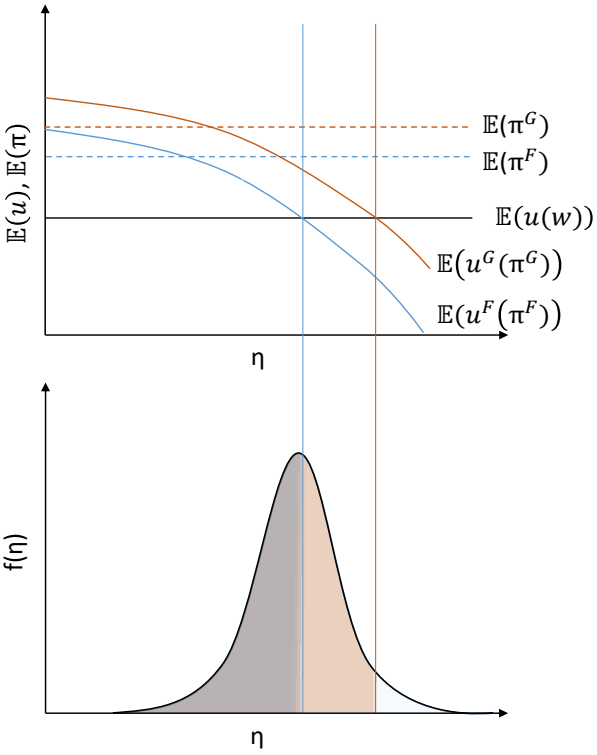
[23] The individual attributes we consider here are not exhaustive, but rather a selection of prominent attributes employed in the literature.

Figure 7: Equilibrium share of entrepreneurs under different parameter distributions across populations.

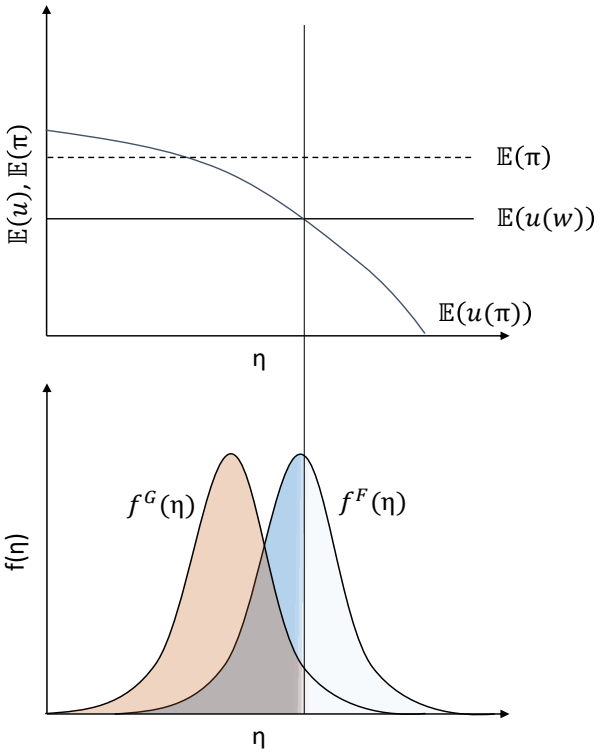
(a) Identical parameters



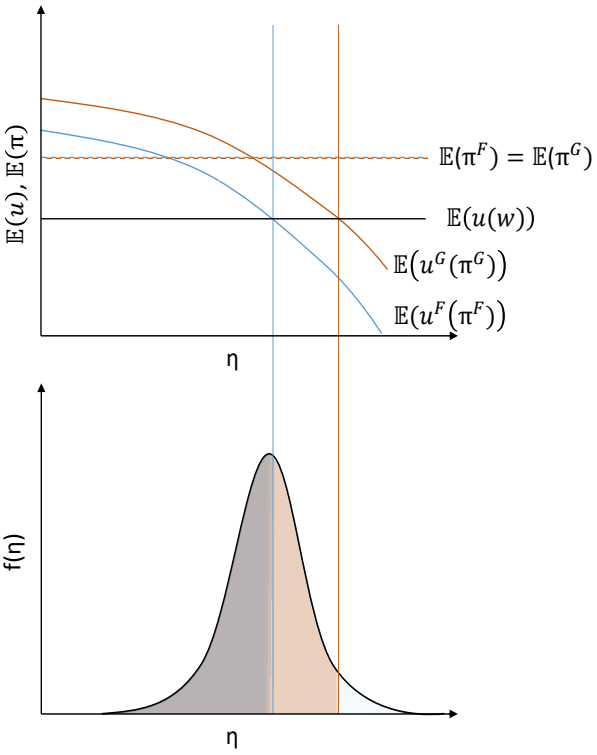
(b) Differences in entrepreneurial ability



(c) Differences in risk aversion



(d) Differences in preferences for entrepreneurship



the distribution of relative risk aversion is the same in both populations, we can conclude that, (i) there should be a higher share of entrepreneurs in population G, (ii) the average firm created by individuals from population G should perform better, and (iii) the marginal firm founder in population G is more risk averse than the average firm founder in population F.

In a second thought experiment, we follow Knight (1921) and keep the distribution of abilities identical but presume the distribution of relative risk aversion in population G to be first-order stochastically dominated by the distribution in population F, as shown in Figure 7 (C). The average risk aversion of individuals from G is lower compared to individuals from F. Since expected profits and expected utility are identical, the marginal entrepreneur has the same risk aversion in both populations. However, due to different overall distributions of risk aversion, (i) the cut-off of the marginal entrepreneur implies a higher share of entrepreneurs among individuals from G, while (ii) the expected performance of firms established by both populations would be identical in expectation, as average abilities of firm founders are the same. Moreover, (iii) the average entrepreneur from G has a lower relative risk aversion than the average entrepreneur from F.

Recent research has started to take into account other dimensions of preferences beyond risk aversion, in particular patience (Doepke and Zilibotti, 2014) and a sheer non-pecuniary utility derived from being an entrepreneur (Hurst and Pugsley, 2015). Patience affects entrepreneurial choice in a similar way as risk aversion: In contrast to regular workers, entrepreneurs face a different consumption profile (across time as opposed to across states of nature). Replacing relative risk aversion with patience and considering discounted instead of expected profits in Figure 7 (C) would result in observationally equivalent outcomes.

Sheer preferences for being an entrepreneur, in contrast, act as a shifter: Given the very same level of (expected or discounted) consumption, individuals choose to be an entrepreneur because they derive extra utility from being an entrepreneur, for instance because they dislike having a boss. Figure 7 (D) depicts this case where entrepreneurship leads to higher non-pecuniary benefits among individuals from G. As the utility schedule for individuals from G shifts up, (i) a higher share of the population becomes entrepreneurs. However, (ii) expected profits of founded firms are not affected and – in contrast to case 7 (C) – (iii) the average entrepreneur from G is more risk averse than the average entrepreneur from F.

Hence, different distributions of *preferences* and *abilities* across cultural groups can potentially explain the existence of distinct entrepreneurial cultures where one group founds more

firms than the other. However, differences in abilities lead to very different predictions than differences in preferences when it comes to firm life cycles: We would expect differences in abilities to lead to differences regarding the success of firms, while differences in preferences suggest identical firm performance across founders from both cultural groups.

In the next two sections we use our data to establish an entrepreneurial culture by comparing firm foundations across cultural groups. Moreover, we distinguish between preferences and abilities using a variety of measures of firm performance over the life cycle. Afterwards, we consider additional survey evidence from the general population and from firm founders to shed more light on the different kinds of preferences that may be pivotal.

4 Cultural Differences in Firm Foundations

We start our empirical investigation with an analysis of the role of cultural origin for firm foundations. The identification strategy outlined in the next subsection shows how we can separate cultural origin from the immediate environment and argues why the remaining variation is likely linked to cultural factors. In order to strengthen our findings, the section considers various robustness checks, subsample analyses, and heterogeneities across firm types.

4.1 Identification Strategy

There are three main identification challenges for our empirical analysis: First, the empirical strategy must be able to separate cultural determinants from the environment individuals live in. This is important because the environment itself is shaped by culture and hence endogenous to the cultural origin of its constituents. Second, as the environment is chosen by individuals, one has to account for the possibility that the subset of a cultural group ending up in an environment is selective and that this selection might be correlated with cultural determinants. Third, the measure of cultural origin might be correlated with other, non-cultural determinants of entrepreneurship.

The centerpiece of our identification strategy is the separation of place of residence and place of origin in our data. This is key to separate cultural variation from the environment people face when they decide about their entrepreneurial activity. In order to attribute the differences between people from different places of origin to different cultures we rely on a spatial RDD. Specifically, we contrast firm foundations of individuals that have their cultural origin just on

different sides of the language border but *within* the same canton – hence controlling not only for current but also historic institutions and non-cultural confounders.[24] Importantly, we also account for the fact that the choice of the place of residence is a function of distance and cultural closeness.

4.1.1 Formal Identification

This section derives our main empirical specification and demonstrates how it tackles the identification challenges. To that end, we classify determinants of entrepreneurship into environmental and individual factors. We subsume the set of environmental determinants of entrepreneurship of individual s as a_s. Think of these determinants as market size, access to education, the tax schedule, or similar. Regarding individual factors, we distinguish non-culturally rooted individual-level determinants, b_s, and culturally rooted individual-level determinants, c_s. The joint distribution of a_s, b_s, and c_s in population m is described by (a_m, b_m, c_m). A population in our data set is characterized by the tuple $m = \{ijct\}$ indicating the municipality of residence, i, the municipality of origin, j, the canton of origin, c, and the respective year, t.

Unconditionally, the distribution of characteristics (a_m, b_m, c_m) in any given population is endogenous due to the possibility of selective migration. Arguably, the distribution of individual characteristics might be quite different in lineages that settled down in a new language region – and those characteristics could be correlated with entrepreneurial outcomes. We account for the possibility that selective migration might lead to a distinct distribution of individual characteristics in any population m with different mainly spoken language at the place of origin and municipality of residence by conditioning on an indicator variable ζ_m that is unity whenever place of origin and place of residence are in different language regions, $F_i \neq F_j$. 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 can test this assumption as we observe migrations patterns in our data and show that this assumption is valid in Appendix C.[25]

[24] See also Becker et al. (2020) for a conceptually related identification strategy and Fernández (2011) for a review of the epidemiological approach more generally.

[25] Another important determinant of migration is distance between place of origin and destination. In our setting, the spatial RDD accounts for this determinant of selective migration.

Our empirical strategy seeks to identify differences in entrepreneurship across populations m. 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 approximate 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

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

It depends on the size of population m, P_m, and on the conditional distribution of individual traits in population m, $(a_m, b_m, c_m|\zeta_m)$.

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 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, and 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

$$\lim_{\epsilon\to 0} \mathbb{E}[a|s \in \{ijct|D_j = 0+\epsilon\}; \zeta_{ij}] - \lim_{\epsilon\to 0} \mathbb{E}[a|s \in \{ij'ct|D_{j'} = 0-\epsilon\}; \zeta_{ij}] = 0 \tag{2}$$

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

$$\lim_{\epsilon\to 0} \mathbb{E}[c|s \in \{ijct|D_j = 0+\epsilon\}; \zeta_{ij}] - \lim_{\epsilon\to 0} \mathbb{E}[c|s \in \{ij'ct|D_{j'} = 0-\epsilon\}; \zeta_{ij}] = \delta. \tag{4}$$

Hence, for identification of the cultural difference δ we require that the composition of *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 ($\lim_{\epsilon\to 0} D_j = 0+\epsilon$). Formally, this implies that we have to ensure that Equations (2) and (3) hold.

Regarding Equation (2), we argue that municipality-specific components, such as taxes and market size that are captured in a_s, are the same for individuals of population m and m' that

actually live in the same municipality i today and, hence, can be accounted for by municipality-of-residence fixed effects. The second assumption stated in Equations (3)-(4) claims that any individual characteristic that changes discontinuously at the intra-cantonal language border is culturally determined.[26]

This claim is crucial to credibly assign differences in entrepreneurship established empirically to cultural determinants and it relies on the spatial RDD at the place of origin within cantons accounting for components of b. We argue that this assumption is credible in the specific institutional context of Switzerland but we can also provide further plausibility checks for various background characteristics that are commonly linked to entrepreneurship. We show in Appendix B that transferable, non-cultural characteristics, such as education, job prestige, or income, are balanced at the language border. Furthermore, using population growth rates as a proxy for the level of economic development over time, we show that this indicator is balanced at the language border at least over the last 140 years (for which data is available). This suggests that also populations that migrated many generations back were unlikely endowed with different levels of wealth. Moreover, the similar population growth rates over time at the language border speak against differences in migration incentives at the language border over the last 140 years.

Compared to an empirical setting that relies solely on the separation of place of origin and place of residence, the spatial RDD adds an important additional layer of control. The obvious advantage of a spatial RDD setting is that it holds exogenous factors related to climate or topography constant. Moreover, there is a more subtle reason why the spatial RDD setting is useful. Together with the canton fixed effects it ensures that the places of origin used for identification are geographically close: In any model of economic geography and trade, distance affects the market access of a given region, its trade and migration costs, the impact of agglomeration effects stemming from neighbouring economic centers (e.g. innovation spillovers), or the access to input factors in production. We hold these factors constant where entrepreneurs live today.

[26]In order to highlight the differences between non-cultural and cultural components, b and c, more clearly, consider the example of education. Schooling has been mandatory and free-of-charge for all children since the mid of the 19^{th} 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 key aspects of the education system (only lower education is partly in control of municipalities, but less relevant for entrepreneurial activity (Bates, 1995; Honig, 1998)). Notably, there is also no difference in preferences regarding public spending on schooling between the two language regions (Eugster and Parchet, 2019). 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 expect education levels to differ between the two groups, but for cultural reasons and hence being captured in c. Note, that results are not sensitive to controlling for average education levels at the place of origin.

But the economic conditions and entrepreneurial choices of the *entrepreneurs' ancestors* were likely affected by these dimensions and can still impact entrepreneurial outcomes today. Beyond purely economic factors, also political and societal influence is related to distance. Finally, relevant policy decisions and institutions are potentially influenced by the distance to other municipalities and evidence suggests that they may be comparable for municipalities close to each other due to municipal competition (see Eugster and Parchet, 2019, for a detailed discussion of this mechanism linked to tax competition).[27]

4.2 Estimation

Analogously to Equation (1), 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}) and estimate the following Poisson regression model,

$$N_{ijct} = \mathbb{E}\left[e^{\theta_i+\kappa_c+\sigma_t+\delta F_j+\gamma \ln(P_{ij})+\zeta D_j+\eta F_j\times D_j+\beta X_j+\lambda Z_{ij}}\right]. \tag{5}$$

δ is the main coefficient of interest, capturing the effect of French-speaking origin (F_j) on the number of firms created. 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 account for the continuous change in composition of the population as we move away from the language border. X_j denotes a vector of control variables at the level of the place of origin[28] and Z_{ij} captures variables that control for the compositional differences of the population from j in i. Further, regressions absorb municipality fixed effects for places of residence (θ_i), canton fixed effects for places of origin (κ_c), and year fixed effects (σ_t).[29] Standard errors are heteroskedasticity-robust and clustered at the municipality of residence.

[27] An alternative empirical strategy that relies on a simple contrast of majority language at the place of origin, rather than a spatial RDD, would require balance of relevant place-of-origin characteristics on the aggregate level, and not only at the language border, in order to identify the effect of culture. It becomes evident that this assumption may be very restrictive when considering the endogenous emergence of infrastructure, institutions, and policies at the community level. While two neighbouring municipalities across the language border have access to the same infrastructure and local competition may align economic conditions, such as tax rates (Eugster and Parchet, 2019), similar arguments cannot be brought forward at the overall level of the two language regions. Nevertheless, we employ this alternative empirical strategy in Column (iv) of Table 4. Generally, all results presented in this paper are robust to excluding distance controls.

[28] These controls absorb further potential heterogeneities like religion, size, human capital, or economic specialization of the municipality and help us to estimate the cultural effect more precisely.

[29] Absorbing municipality of residence × year fixed effects instead leads to virtually identical results. The respective regression in presented in Table D.1 in the Appendix.

4.3 Main Results

We show the main results of estimating Equation (5) 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, 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 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, suggesting a close-to-proportional relationship.[30] The coefficients estimated on the two measures of distance to the language border are small and not statistically significant.

4.4 Persistence and Robustness of the Effect of Cultural Origin

This section aims at assessing the robustness and persistence of the identified effect of cultural origin on entrepreneurship across various contexts. We argue that the persistence of the effect suggests that the impact of cultural origin on entrepreneurship stems from slow-moving components of culture as defined by Guiso, Sapienza and Zingales (2006). While the additional analyses in this section – together with a more detailed treatment in Appendix E – strongly sup-

[30] 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.

Table 3: Poisson regression: Number of firms founded.

	Full sample			Role of assimilation		Effects by canton			Effect across regions	
	(i)	(ii)	(iii)	Long-settled (iv)	Not long-settled (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)		
$\log \text{Population}_{ij}$	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)
$\text{Distance}_j \times \text{French}_j$	-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)
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

The dependent variable is the number of firms founded in year t by individuals with origin in municipality j and canton c who live in municipality i (N_{ijct}) in all columns. ***, **, * 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.

port our results, we conclude this section by a discussion of the limitations of our identification strategy.

A first analysis regarding the persistence of the effect takes into account when families likely left their place of origin. In order to investigate if the results persist also for those entrepreneurs whose families are likely to be already long-settled 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.[31] The estimates on French cultural origin in the two sub-samples of entrepreneurs from long-settled families in Column (iv) of Table 3 and from more recently settled families 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 concern that communication barriers may be driving the results.

Further evidence for the persistence of the identified effect is the fact that we document the effect separately for people living in the French and the German language region in Columns (ix) and (x) of Table 3, respectively. We find that individuals with cultural 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 are within one standard deviation from one another. Taken together, the two analyses indicate that the cultural effect is deeply rooted and not easily changed by the current environment at individuals' places of residence.[32]

[31]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 *long-settled* 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 long-settled* 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.

[32]Moreover, this analysis speaks against discrimination driving our results as it would imply that people of French-speaking cultural origin are discriminated against in their own cultural context. We provide two further pieces of evidence speaking against potential discrimination as explanation as they demonstrate that the results do not differ for firms where the the cultural origin of founders is salient in the company name: First, we show in Appendix Table D.3 that there is no difference in the frequency of including the founder's name in the company name across cultural groups. Secondly, we show that our results hold for both, companies that include the founder's name and those that do not. In fact the estimates presented in Columns (i) and (ii) of Table D.2 is larger for the set of firms where the cultural origin of founders is less salient.

The validity of our identification strategy depends on the credibility of the claim that *unobserved*, non-cultural factors that cannot be accounted for by our empirical strategy do not drive the effect. To validate this claim we first exploit the fact that the French-German language border runs through three very different cantons with the border being geographically not connected. The only obvious similarity between those segments of the language border is the sharp separation between the German-speaking and French-speaking region. It is unlikely that non-cultural determinants change simultaneously and discontinuously at the language border in each of these three cantons. To that end, Columns (vi) - (viii) of Table 3 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.

In a second step, we assess how robust the identified effect is across different institutional environments and show that variations in these institutions that might not be fully accounted for in our empirical setting are not able to explain the identified effect. As we have argued before, the historical context of Switzerland suggests that the analysis should be conducted within cantons – either separately in each canton as in Columns (vi) - (viii) of Table 3 or using canton fixed effects as in the baseline analysis. This is important in order to (i) keep institutions since 1833 constant (which is closest to the year of institutionalization of the place-of-origin), (ii) keep substantial parts of shared history constant, and (iii) constrain the geographical range of places of origin that are compared to each other.

However, the history of Switzerland also suggests that there has been some heterogeneity in terms of institutions within the cantonal affiliations (as of 1833) used in this paper. Either because cantonal affiliations have changed over time or because of differences in ruling authorities or religious affiliations within cantons. We consider different subsets of historical and institutional experiences in Appendix E. Most importantly, we show that changes in cantonal affiliations do not matter (see Column (vii) and (viii) in Table E.1), that accounting for differences in the type of rule does not affect our results (see Column (i) of Table E.1), and that we find a comparable effect among catholic and protestant places of origin (see Column (iii) and (iv) of Table E.1).

All in all, this section demonstrates that the effect of cultural origin on entrepreneurship is persistent and robust across various dimensions. Two conclusions follow from this exercise.

First, we validate our claim that the identified effect is indeed largely attributable to cultural origin. Second, the effect appears to be deeply-rooted and very persistent across time and space.

The persistence of the effect and its robustness across various contexts is supportive for our statement that individual-level, deeply-rooted cultural factors play an important role for entrepreneurial outcomes, but it also reveals a limitation of our study: While we can exclude various potential confounders we have no means of understanding the origins of the differences we document nor can we fully decompose those differences. These aspects are related to the question of what exactly we want to measure, what we want to exclude, and to which aspects of culture one wants to restrict attention. Following Guiso, Sapienza and Zingales (2006) and focusing on the slow-moving components of culture as opposed to the fast-moving components of culture justifies the approach taken in this study, but is still somewhat vague. The differences documented in this study might very well be the outcomes of some optimization or selection process that took place at some point in the past, perhaps during the migration period or even before, and we have no means of shedding light on this question in our setting.

Fortunately, the theoretical model together with additional data allow for a deeper understanding of some of the components contained in the measure of culture. We will focus on this aspect in Section 6.

4.5 Sensitivity Analysis

We conduct a battery of additional tests to assess the sensitivity of our results to model specifications. The main sensitivity checks are reported in Table 4 while further sensitivity checks are relegated to Appendix Tables D.1 and D.2 . We first assess the sensitivity of our estimates to narrowing the window around the language border. Columns (i)-(iii) constrain 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. 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 all distance controls and simply use culture as treatment variable. All coefficients are virtually unchanged compared to the baseline specification. This confirms that the estimated treatment effect is not an artefact of the way we control for distance (see also column (viii) in Appendix Table D.1).

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

TABLE 4: SENSITIVITY ANALYSIS: NUMBER OF FIRMS FOUNDED.

	Role of distance from language border				Functional form			Role of within-country migration		
	Constrain radius to			Baseline	Negative	Poisson w/	Zero-inflated	Exclude bilingual	Residence within 50km of intra-cant.	Residence *not* within 50km of intra-cant.
	20 km	30 km	40 km	w/o distance	binomial	fixed exposure	poisson	cities	language border	language border
	(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^{***}	-0.273^{***}	-0.164^{**}
	(0.093)	(0.068)	(0.061)	(0.041)	(0.056)	(0.057)	(0.056)	(0.058)	(0.078)	(0.082)
$\mathbb{1}(F_j \neq F_i)$	-0.036	-0.056	-0.091^{***}	-0.119^{***}	-0.125^{***}	-0.047^{*}	-0.137^{***}	-0.128^{***}	-0.107^{**}	-0.148^{***}
	(0.041)	(0.036)	(0.032)	(0.029)	(0.028)	(0.028)	(0.029)	(0.030)	(0.047)	(0.040)
$\log \text{Population}_{ij}$	0.943^{***}	0.949^{***}	0.946^{***}	0.946^{***}	0.943^{***}		0.908^{***}	0.946^{***}	0.957^{***}	0.898^{***}
	(0.013)	(0.010)	(0.008)	(0.007)	(0.007)		(0.009)	(0.007)	(0.008)	(0.016)
$\text{Distance}_j \times \text{French}_j$	0.006	-0.002	-0.002		-0.003	-0.003	-0.002	-0.003	-0.002	-0.003
	(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	0.002
	(0.005)	(0.002)	(0.001)		(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(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	838,860	1,858,095
No. cluster	1,416	1,640	1,820	1,927	1,927	1,927	1,927	1,921	482	1,445

The dependent variable is the number of firms founded in year t by individuals with origin in municipality j and canton c who live in municipality i (N_{ijct}) in all columns. ***, **, * 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.

which is a standard alternative to Poisson in count data models. 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 bilingual cantons in Column (ix), and focus on municipalities of residence at least 50 km away from the intra-cantonal language border in Column (x). None of the estimated coefficients of these robustness exercises turns out to be notably different from our baseline coefficient. This confirms again that results *are not* driven by domestic migration patterns (see also Table C.1) since we find the effects in the subset of movers (beyond the 50 km band) as well as stayers (within the 50 km band).

We present further robustness exercises in Table D.1 and Table D.2 in the Appendix. Those results additionally show that the estimates are insensitive to using municipality-of-residence $\times$ 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 considering only those places of origins that are villages according to the official definition ($< 10,000$ inhabitants), to altering the definition of the language border and defining the border $D_j = 0$ at the French municipalities that are closest to the language border[33], and to considering a second-order polynomial of distance. Moreover, following Dell (2010), we consider alternative implementations of a spatial regression discontinuity design based on latitude and longitude. We consider linear two-dimensional geographic controls in Column (iii) of Table D.2 and a cubic polynomial in Column (iv) of Table D.2.

Finally, in Columns (v) and (vi) of Table D.2 we present a placebo exercise where we move the language border 25km into the French-speaking region and the German-speaking region, respectively. As expected, we do not find significant differences in firm foundations at these placebo borders. This shows that the actual language border is indeed salient and differences in firm foundations are not due to a mere West-to-East differential.

[33]Compare Eugster and Parchet (2019).

4.6 Firm Heterogeneities

Since our previous analysis was silent about firm types and does not distinguish between snack bars and truly entrepreneurial, highly innovative activities (Glaeser, 2007), we now consider two types of firm heterogeneities that help us to tie our baseline results to differences in entrepreneurialism: legal form and industry composition.

4.6.1 Legal Form

The legal form of a firm can be used as a proxy for the firm founder's financial exposure in case of bankruptcy: While corporations and limited liability companies cover debt only with firm assets, owners of individual enterprises vouch with their private assets. On the other hand, corporations and limited liability companies require more assets and are more expensive to found and run. Levine and Rubinstein (2017) argue that distinguishing between incorporated (corporations and limited liability companies) and unincorporated (individual enterprises) firms is a good proxy to separate entrepreneurs and other business owners as only entrepreneurs conducting large, risky investments are willing to bear the costs of incorporation.

We re-estimate our baseline Equation (5) with separate dependent variables for each legal form. Table 5 shows the results. The estimated coefficient on French-speaking place of origin is virtually identical in all three columns and coincides with the baseline estimate in Column (i) of Table 3. If anything, the differences are somewhat larger among entrepreneurs than among other business owners, according to a classification à la Levine and Rubinstein (2017).

4.6.2 Industry Composition

Just as different legal forms, different industries require different investment levels and have different financing opportunities. Furthermore, different industries require a different skill set of entrepreneurs. Therefore, in the spirit of our model, it is instructive to see whether there are similar cultural differences also across different industries.

We can match 6-digit industry classifications (NOGA 2008) to 99% of the firms in our sample by using data provided by Bisnode Business Information Group. Figure 8 shows the distribution of eight major industries by cultural origin.[34] The distributions reveal remarkable similarities across all sectors with almost identical ordering for both cultural groups.

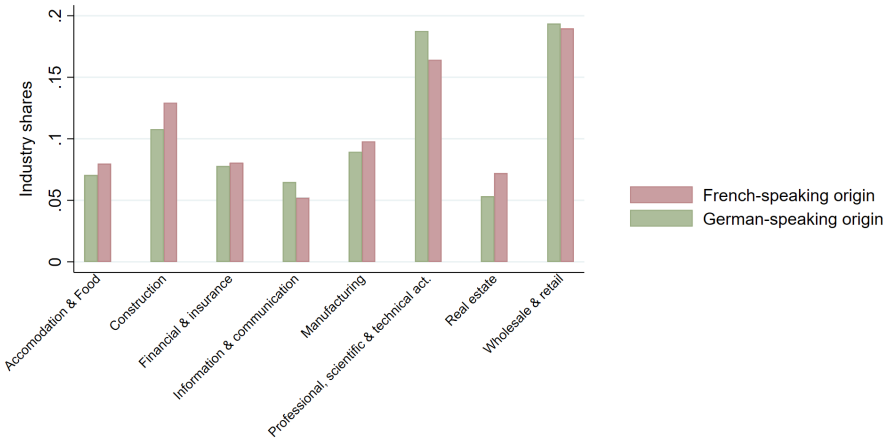
[34]Together, these industries account for more than 85% of newly founded firms in Switzerland.

TABLE 5: POISSON REGRESSION: NUMBER OF FIRMS FOUNDED BY LEGAL FORM.

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

The dependent variable is the number of firms founded in year t by individuals with origin in municipality j and canton c who live in municipality i (N_{ijct}) in all columns. ***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. All standard errors are clustered at the municipality-of-residence level. We focus on the three most common legal forms that make up 97% of all firms founded in Switzerland. 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.

FIGURE 8: INDUSTRY COMPOSITION BY CULTURAL ORIGIN OF FIRM FOUNDERS.



Notes: Industry shares of newly founded firms as a share of overall firm foundations by individuals with cultural origin in the respective language region.

Table 6: 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)
$\text{log Population}_{ij}$	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)
$\text{Distance}_j \times \text{French}_j$	-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

The dependent variable is the number of firms founded in year t by individuals with origin in municipality j and canton c who live in municipality i (N_{ijct}) in all columns. ***, **, * 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.

To quantify cultural differences *within* industry, we re-estimate our baseline specification from Equation (5) separately for each sector. Table 6 shows estimated coefficient on French-speaking place of origin in the range from -0.17 to -0.55, suggesting that the cultural differences in firm foundations, established in Table 3, prevail across all industries. Differences are largest in the 'real estate', the 'financial', and the 'accommodation & food' sectors. But even in the sectors least affected by cultural origin, 'construction' and 'professional/scientific/technical activities', the differences amount to $1 - \exp(-0.17) \approx 16\%$.

Taken together, the heterogeneity analysis is reassuringly consistent with our model and suggests that differences in firm foundations are not driven by selection into different types of firms or adverse industry specialization. Moreover, the fact that we find similar effects across very different industries and legal forms is a strong indication that our estimates indeed capture a general difference in entrepreneurial culture as opposed to unobserved confounders, such as differences in wealth or human capital endowments, since such factors would likely affect entry rates across legal forms and industries differentially.

5 Cultural Differences in Firm Life Cycles

The previous section has established a causal relationship between cultural origin and firm foundations. According to the conceptual framework, we can learn more about the entrepreneurial culture underlying this finding by investigating how successful these firms are over their life cycle. To that end, this section considers various outcomes of firm success.

The identifying assumption is analogous to the one described in Section 4.1: Conditional on our set of fixed effects and controls, any remaining differences between firms created by entrepreneurs of different cultural origin can be attributed to cultural differences. In contrast to the analysis of firm entry, the outcome of interest is not measured at the level of the population as a count but is a firm-specific outcome and a standard linear regression is appropriate. This framework allows for a richer set of controls, such as the legal form or the industry of the firm, and to absorb fixed effects at the level of the municipality where the firm is based.

Consequently, we estimate variants of the following linear regression for firms f founded by individuals with origin in municipality j and canton c founded in municipality i at time t,

$$Y_{ijctf} = \theta_{it} + \kappa_c + \delta F_j + \zeta D_j + \eta F_j \times D_j + \beta X_j + \lambda Z_f + \epsilon_{ijct}, \tag{6}$$

where Y_{ijctf} is the firm-level outcome of interest, 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 (θ_{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.

5.1 Firm Exit

As a first indicator for the success of firms, we look at their probability of exit. We consider three different outcomes, based on the classifications in the commercial registry. The broadest measure covers any deregistration from the commercial registry. While this measure of exit does not necessarily coincide with firm failure and is potentially not suitable to assess the economic success of a firm, the second measure covers only liquidation, closure, and bankruptcies, while the last measure focuses solely on bankruptcies.

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)
$\text{Distance}_j \times \text{French}_j$	−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

The dependent variable is an indicator for failure of firm f founded in municipality i at time t by an individual with origin in municipality j and canton c (Y_{ijctf}). The indicator captures any firm deregistrations in column (i)-(ii), relies on liquidations, closures, and bankruptcies in column (iii)-(iv), and focuses on bankruptcies exclusively in column (v)-(vi). ***, **, * 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.

We report two specifications for each of the three outcomes, one with and one without additional place of origin and firm-level controls and report them in Table 7. Comparing the estimates and their standard errors to the mean of each outcome, we conclude that the estimated effects are very precise zeros in all six specifications. Hence, there is no difference in probability of firm exit or 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.

Thus, based on the probability of exit, the cultural origin of the firm founder does not seem to have any effect on the success of firms. This analysis confirms the descriptive evidence reported earlier for firms founded in Geneva and Zurich. Moreover, according to our model, it is a first hint towards differences in preferences as underlying source of differences in the entrepreneurial culture.

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

5.2 Measures of Firm Size over Time

Apart from sheer survival, the success of firms can be judged by assessing their size over the life cycle. We consider two common measures of firm size, the number of employees and firm revenues. We merge data on employment and revenue from the ORBIS database (Van Dijk, 2018) to our firm sample, relying on the unique commercial register identifier. 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.[35] Summary statistics are provided in Table 8.

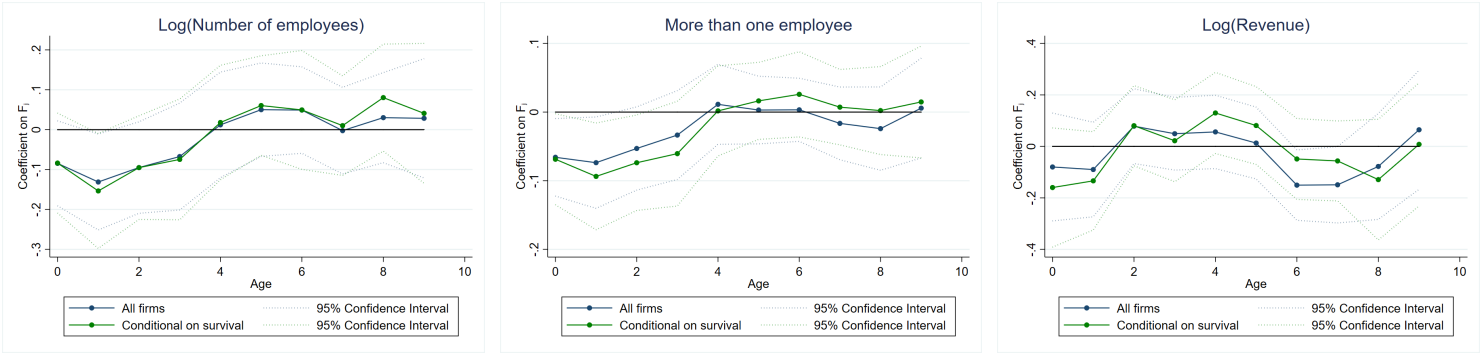
We estimate separate regressions for age groups in order to approximate the role of cultural origin over the life cycle of the firm. The firm-level analysis is analogous to the regression specified in Equation (6).

We report estimated coefficients on the indicator of French-speaking place of origin of the founder by age of the firm in Figure 9. Panel (a) shows the 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. This analysis confirms the conclusion from the

[35] The matching rate is identical across language regions.

Figure 9: Differences in firm size by origin of firm-founders and age of firms.

(a) log(Number of employees) (b) More than one employee (c) log(Revenue)



Notes: Coefficients are obtained estimating Equation (6) 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.

previous analysis of firm exit and suggests that firms that are founded by entrepreneurs with French- and German-speaking cultural origin are remarkably similar. Considering this finding jointly with the sharp cultural differences in firm foundation rates, our theoretical framework suggests that the key difference between the cultural groups are preferences rather than skill since the latter would entail firms from founders with German-speaking origin to be more successful on average.

In the next section, we further investigate the underlying sources of the distinct entrepreneurial cultures in Switzerland and provide survey evidence on the micromechanism behind the observed cultural differences.

6 Cultural Micromechanisms

Revisiting our stylized model of entrepreneurial choice, we conclude that the main empirical results can be reconciled in a model where preferences differ between cultural groups. In particular, we find that the established results align with either a model where citizens with French-speaking origin have on average a higher risk aversion (case (C) in Figure 7) or a model where they obtain lower non-pecuniary benefits from entrepreneurship (case (D) in Figure 7). 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 origin, while case (D) implies the opposite. This distinction can help us to further narrow down the main channel through which culture affects entrepreneurship.

Table 9: Differences in Personal Characteristics between Language Regions.

	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	Probit	Probit	Probit	Probit	Probit	Probit
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(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

The dependent variable measures different individual characteristics of survey respondents obtained from cross sections of different survey data: Data sources (i): Falk et al. (2017); (ii)-(v): Global Entrepreneurship Monitor; (vi)-(vii) European Values Survey (2008). ***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. Robust standard errors in parentheses.

To do so, we consider three independent data sets that survey the above mentioned individual characteristics in the Swiss population and in 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.[36] Importantly, the GEM data allows us to identify entrepreneurs, which helps us to assess differences in characteristics across the population of entrepreneurs with French-speaking and German-speaking origin, respectively.

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 favour 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 busi-

[36]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.

ness. As conjectured based on the theoretical model and our empirical analysis, 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 favour of case (D) in the theoretical model.

Taken together, this additional correlational evidence is in line with our stylized model and the empirical analyses and 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-speakers exhibit stronger risk aversion than German-speakers strongly points towards risk aversion as a dominant factor while differences in preferences for entrepreneurial activity may play an additional, but subordinate, role.

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.[37] We quantify the link between entrepreneurial outcomes and aggregate economic measures in the next section.

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 firms. Since entrants

[37] 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. (2021) provide evidence that patience differs among school children at the Swiss language border.

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 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.[38]

Assuming the local estimate identified in this study is representative for the average difference in entrepreneurial cultures, 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.[39] 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.[40] 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.[41]

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

[39] Note that summary statistics presented in Tables F.1 and F.2 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.

[40] 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.

[41] 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 labour. However, this resource constraint may indeed be of limited concern as Switzerland's labour market is well integrated with the much larger labour market of the European Union. In fact, annual net immigration into Switzerlandduring our sample period amounted to 70,000 with the majority of migrants coming to Switzerland for work. (Federal Statistical Office, 2020; Favre, Föllmi and Zweimüller, 2018)

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.

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 as the dominant factor in explaining the observed differences in entrepreneurial choice while differences in preferences for entrepreneurial activity may play an additional, subordinate role.

Back-of-the-envelope calculations point to sizeable 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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Appendix A A stylized model of entrepreneurial choice

Consider a set of agents on the interval $[0, 1]$ with each agent being denoted by s. Each agent's utility is described by the function $U = u(I, s) + \gamma(s) \times \mathbb{I}(entrepreneur)$, where $I \geq 0$ denotes income and $\gamma(s)$ 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 $\eta(I, s) = -\frac{u''(I,s)}{u'(I,s)}$ is non-decreasing in s.

Agents can choose to be regular workers, obtaining a risk-free income w, or to become entrepreneurs, obtaining a risky income $y = a(s)x$, where $a(s) \geq 0$ 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 s are

$$\mathbb{E}(\pi(s)) = a(s) \int_0^{\bar{x}} x f(x) dx \tag{7}$$

and increasing in entrepreneurial ability. Agents choose to become entrepreneurs if the expected utility from doing so, $\mathbb{E}(u^e(s))$ is at least as high as the expected utility from being a worker, $\mathbb{E}(u^w(s))$: [42]

$$\mathbb{E}(u^e(s)) = \int_0^{\bar{x}} u(a(s)x, s) f(x) dx + \gamma(s) \geq u(w, s) = \mathbb{E}(u^w(s)). \tag{8}$$

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 $\eta-$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.

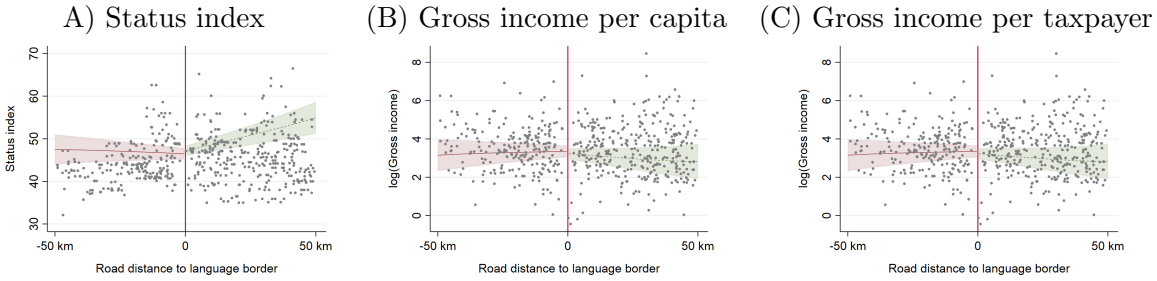
[42] In this stylized model we assume that parameters are independently distributed.

Appendix B Balance of Place of Origin Variables

We provide evidence that typical (and potentially non-cultural) determinants of entrepreneurship are balanced at the language border in Figures B.1 and B.2. Figure B.1 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.

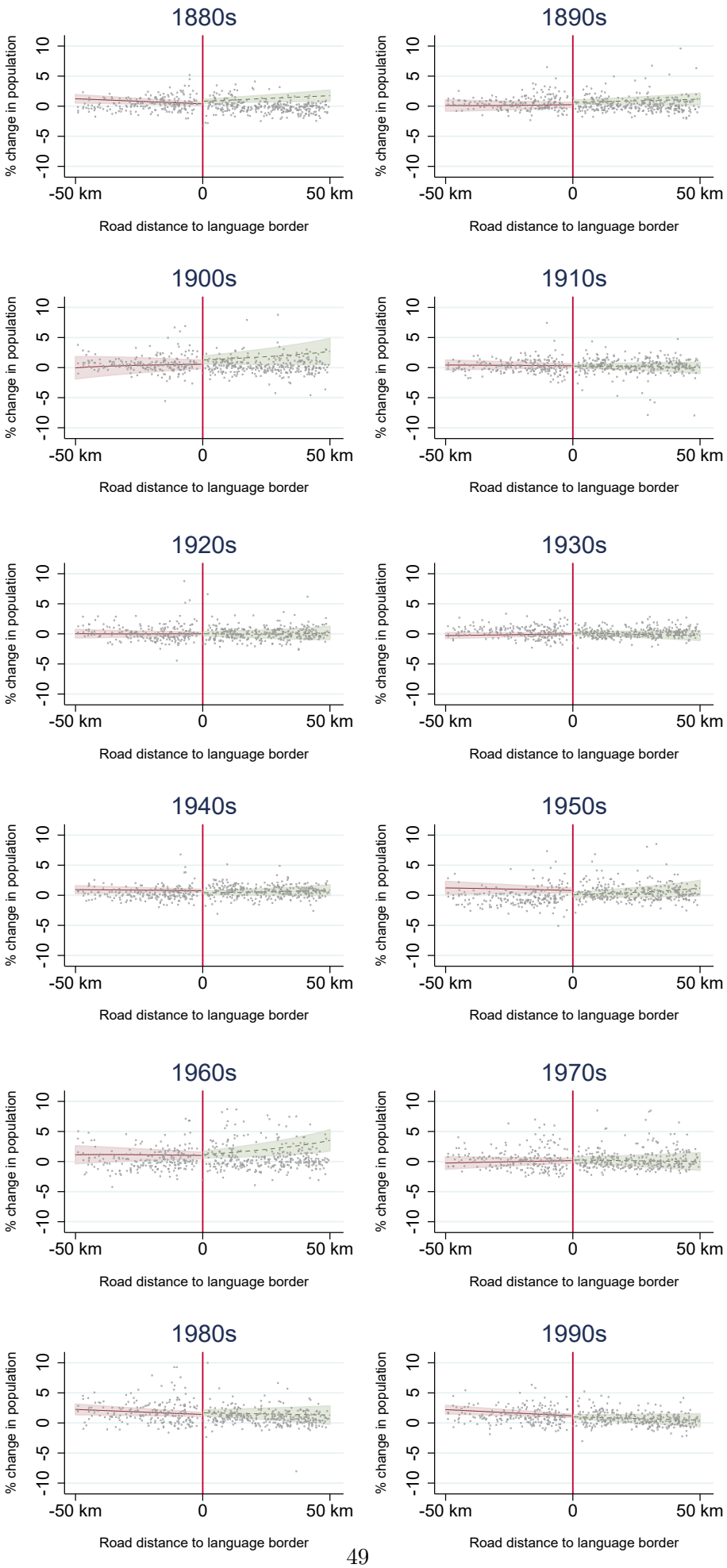
While historical information on these variables is not available at the municipality level, the history of population growth of the municipalities at the language border can tell us more about parallel economic developments at the language border. First, since population growth is strongly affected by 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 B.1: BALANCE OF PLACE OF ORIGIN CHARACTERISTICS AT THE LANGUAGE BORDER.



Notes: The Status index is a measure encompassing income, education, and job prestige. All information is provided by the Swiss Statistical Office based on the Census 2000.

Figure B.2: Balance of population growth rates at the language border over time.



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

Appendix C Symmetry in Migration Patterns

We analyse if migration across the language border is symmetric by looking at the distribution of places of origin across places of residence in Table C.1. While both distance and a different main language spoken affect migration negatively, as shown in Columns (i) and (ii), Column (iii) shows that these estimates are not different for French and German-speaking places of origin, thereby validating our symmetry assumption.

Table C.1: Linear regression: Domestic migration patterns.

Dependent variable: $log(P_{ij})$	(i)	(ii)	(iii)
Distance_{ij}	-0.0081***	-0.0071***	-0.0072***
	(0.0002)	(0.0002)	(0.0002)
$\mathbb{1}(F_j \neq F_i)$		-0.2686***	-0.2598***
		(0.0184)	(0.0349)
$\text{Distance}_{ij} \times F_j$			0.0001
			(0.0003)
$\mathbb{1}(F_j \neq F_i) \times F_j$			-0.0227
			(0.0530)
$\log(\text{Size}_j)$	0.3298***	0.3368***	0.3370***
	(0.0083)	(0.0086)	(0.0082)
Municipality of residence FE	✓	✓	✓
Canton of origin FE	✓	✓	✓
Additional controls (X_j)	✓	✓	✓
R^2	0.34	0.34	0.34
Clusters	2,054	2,054	2,054
Observations	162,202	162,202	162,202

The dependent variable is the natural logarithm of the number of inhabitants in municipality i from place of origin j, $log(P_{ij})$, in all columns. ***, **, * 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.

Table D.1: Additional sensitivity analyses: 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)	Largest 10 muni. of res. (iv)	Exclude largest 10 muni. of res. (v)	Small places of origin ($< 10,000$) (vi)	Alt. definition of language border (vii)	Distance squared (viii)
French$_j$	-0.170^{***}	-0.221^{***}	-0.221^{***}	-0.341^{***}	-0.203^{***}	-0.230^{***}	-0.203^{***}	-0.268^{***}
	(0.054)	(0.056)	(0.056)	(0.119)	(0.060)	(0.058)	(0.052)	(0.076)
$\mathbb{1}(F_j \neq F_i)$		-0.115^{***}	-0.129^{***}	-0.026	-0.132^{***}	-0.120^{***}	-0.116^{***}	-0.116^{***}
		(0.029)	(0.029)	(0.094)	(0.032)	(0.030)	(0.029)	(0.029)
log Population$_{ij}$	0.952^{***}	0.946^{***}	0.924^{***}	0.928^{***}	0.946^{***}	0.947^{***}	0.946^{***}	0.946^{***}
	(0.006)	(0.007)	(0.010)	(0.050)	(0.007)	(0.008)	(0.007)	(0.007)
Distance$_j \times$ French$_j$	-0.003	-0.002	-0.002	-0.001	-0.003	-0.003		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 $\times$ 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	2,484,225	2,696,955	2,696,955
No. cluster	1,927	1,927	1,927	10	1,917	1,860	1,927	1,927

The dependent variable is the number of firms founded in year t by individuals with origin in municipality j and canton c who live in municipality i (N_{ijct}) in all columns. ***, **, * 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 D.2: Additional sensitivity analyses: Number of firms founded.

	No name in company name (i)	Name in company name (ii)	Lon/Lat linear (iii)	Lon/Lat cubic (iv)	Placebo shift 25km west (v)	Placebo shift 25km east (vi)
French_j	-0.260^{***}	-0.196^{***}	-0.168^{***}	-0.157^{***}		
	(0.093)	(0.053)	(0.045)	(0.048)		
$\mathbb{1}(F_j \neq F_i)$	-0.095^{*}	-0.137^{***}	-0.118^{***}	-0.119^{***}	-0.080^{***}	-0.083^{***}
	(0.051)	(0.031)	(0.029)	(0.029)	(0.029)	(0.029)
$\text{log Population}_{ij}$	0.943^{***}	0.948^{***}	0.946^{***}	0.945^{***}	0.946^{***}	0.946^{***}
	(0.011)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
$\text{Distance}_j \times \text{French}_j$	0.000	-0.005^{***}				
	(0.003)	(0.002)				
Distance_j t	-0.001	0.002^{**}				
	(0.002)	(0.001)				
$\text{French}_j^{Placebo}$					0.062	0.018
					(0.062)	(0.037)
$\text{Distance}_j^{Placebo}$					0.003^{***}	0.002
					(0.001)	(0.002)
$\text{Distance}_j^{Placebo} \times \text{French}_j^{Placebo}$					-0.000	0.000
					(0.005)	(0.002)
Municipality of residence FE	✓	✓	✓	✓	✓	✓
Canton of origin FE	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓
Additional controls (X_j)	✓	✓	✓	✓	✓	✓
Linear control for latitude and longitude			✓			
Cubic control for latitude and longitude				✓		
Observations	2,438,085	2,595,345	2,696,955	2,696,955	2,696,955	2,696,955
No. cluster	1,579	1,750	1,927	1,927	1,927	1,927

The dependent variable is the number of firms founded in year t by individuals with origin in municipality j and canton c who live in municipality i (N_{ijct}) in all columns. ***, **, * 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 D.3: Linear probability model: Frequency of founder's name in company name.

	(i)	(ii)	(iii)	(iv)
French$_j$	−0.005	0.001	−0.002	−0.015
	(0.006)	(0.006)	(0.008)	(0.012)
Constant	0.671***	0.658***	1.007***	0.948***
	(0.002)	(0.002)	(0.049)	(0.133)
Place of firm FE	✓			
Place of firm × year FE		✓	✓	✓
Canton of origin FE	✓	✓	✓	✓
Controls for legal form			✓	✓
Controls X_j and Z_f				✓
Observations	39,618	32,970	32,970	32,884
No. cluster	1,783	1,168	1,168	1,167
R^2	0.29	0.47	0.63	0.63

The dependent variable is an indicator if the company name of firm f founded in municipality i at time t by an individual with origin in municipality j and canton c contains the name of the founder (Y_{ijctf}). Column (i) controls for the place of firm as well as the canton of origin. Column (ii) includes industry fixed effects as well as place-of-firm-times-year fixed effects . Column (iii) adds controls for the legal form. Column (iv) employs the full set of controls and fixed effects. ***, **, * 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.

Appendix E Differences in historical institutions at various segments of the language border

A potential concern regarding the use of language as a proxy for assigning places of origin to different cultural origins is the potential correlation of language with other institutional and historical factors. Given the historical and institutional environment of Switzerland, employing a spatial RDD within bilingual cantons and controlling for canton fixed effects addresses these concerns. In what follows, we provide a more detailed discussion of the historical background of our setting and provide additional robustness checks.

By employing canton fixed effects we not only hold institutions constant but also common history at the local level. However, the cantonal affiliations of a few municipalities have changed over time and the choice of affiliation may affect the results. We include several robustness checks that suggest that our results are not driven by this choice of fixed effects. We discuss these robustness checks in three steps: (i) institutional changes in the canton of Bern, (ii) Gemeine Herrschaften (joint rule by Fribourg and Bern), and (iii) general robustness of different choices or omissions of canton fixed effects.

(i) The canton of Bern underwent some changes in its cantonal composition even in recent years. Prior to becoming a canton, Bern was a city state. Beyond the German-speaking parts of today's canton of Bern also parts of today's canton of Aargau (all German-speaking) belonged to Bern from 1415. From 1536 also today's canton of Vaud (all French-speaking) was ruled by Bern. Bern lost these lands in 1798, but obtained larger parts from the bishop-of-Basel ruled lands in 1815. In 1978 parts of these former bishop-of-Basel municipalities formed the new canton of Jura and left the canton of Bern. In 1994, all municipalities in the district of Laufen (also former bishop-of-Basel rule) joined the canton 'Basel-Landschaft'. In 1996, the municipality Vellerat joined the canton of Jura. (Junker et al., 2018; Noirjean et al., 2019)

Our main analysis excludes some municipalities that formerly belonged to the canton of Bern as these municipalities are affiliated with monolingual cantons in our data. An obvious robustness check is to add these additional municipalities – consisting of both German- and French speaking ones – that historically belonged to the canton of Bern to the analysis. Since these municipalities would not contribute to identification in our main specification due to the lack of variation in the presence of canton fixed effects, we include a robustness check in which we include all municipalities within 50 km of the language border irrespective of their cantonal affiliation in our data and abstain from including canton fixed effect in these regressions. These results are presented in Column (v) of Table E.1 and support our main results.

(ii) Some municipalities at the border between Bern and Fribourg were ruled jointly by the canton of Bern and Fribourg pre 1815 (Ramseyer et al., 2017). Hence, using the cantonal affiliation post 1815 as we do in our main analysis could lead to comparing municipalities that did have different institutional pasts. The municipalities in question are the municipalities historically belonging to the Vogtei Murten in today's canton of Fribourg and the municipalities of the district Schwarzenburg in today's canton of Bern. We show that excluding those "hybrid" municipalities from our main regression does not change the results. The results are presented in Column (vi) of Table E.1. Moreover, we include a robustness check in which we include only those municipalities that have always been affiliated with their respective cantons. This regression excludes jointly ruled municipalities as well as municipalities that joined the canton of Bern after 1815. The results can be found in Column (vii) of Table E.1 and are very similar to our main effect.

(iii) Moreover, we provide a robustness check to show that our results do not hinge on the choice of cantonal affiliation as of 1833. In Column (viii) of Table E.1 we present a regression

that uses today's cantonal affiliation and Column (ii) of Table E.1 presents results without any canton fixed effects. Both regressions yield very similar results.

We argue that canton fixed effects are essential in order to account for shared history. But even within cantons not all municipalities had the same status, in particular, the type of rule varied across municipalities. Nevertheless, the types of rule in the three cantons of our analysis are very peculiar and can hardly serve as an explanation of our identified effect as the different types of rules do not coincide with the language border in these cantons.[43] This is also confirmed in a robustness check presented in Column (i) of Table E.1 that explicitly controls for the fact that some places of origins were historically free and some were not. Including this control variable does not affect our main estimate. We consider the very fact that we identify an effect of cultural origin in different subgroups that did experience very different historical rules and institutions reassuring as this speaks to deeply rooted differences in cultural origins that are not easily changed by different historical experiences, can survive for a long period in different contexts and have important consequences until today.

Another important dimension of common institutions is related to the religious affiliation of places of origin. Although this is accounted for by controlling for the religious majority of places of origin, one might be interested in how this dimension of culture interacts with the cultural

[43]Valais: Historically, the canton of Valais consisted of the *Republic of the Seven Tithings* (Goms, Brig, Visp, Raron, Leuk, Siders, and Sion) and further lands that were conquered over time and ruled as subject lands by the Republic. The border between conquered lands and ruling lands was, however, not the language border. The first subject land of the Republic was in fact the German-speaking Kastlanei 'Niedergesteln-Lötschen'. Further subject lands like Monthey, Saint-Maurice or Nendaz-Hérémence were French-speaking (see Siggen-Bruttin, 2015; Truffer et al., 2018). However, the language border is (and – also historically – was) running *within* the ruling lands and *not at* the border between ruling and subject lands. In fact, 29% of municipalities of the historically ruling lands are French-speaking. Bern: The integration of municipalities that used to be under the rule of the Bishop of Basel into the canton of Bern in 1815 changed the language landscape in this canton. However, the borders between the regions that were under the Bishop of Basel rule and the language border are not identical. In particular, all municipalities that belong to the district of Laufenthal were German-speaking (20% of all former Bishop-of-Basel rule municipalities that joined the canton of Bern). Fribourg: The canton of Fribourg did not experience substantial differences of the ruling authority in the German and French speaking parts, respectively. In fact, the city of Fribourg and the canton emerging from this city were bilingual from the beginning. What did change over time was the 'official language' of the canton but these differences did not divide the population into ruling and non-ruling classes. Even though the majority of the population spoke French, the official language became German from 1483 to 1798 probably as a signal to the German-dominated Swiss Confederation that Fribourg joined in 1481. This did, however, not affect the general population. Even among the ruling Patricians French dominated as privately used language and German was used only in office. For instance, few of the female Patricians spoke any German. Also the overwhelming majority of books in the libraries of Fribourg were French (Haas, 2008). With the end of the Old Swiss Confederacy in 1798, French became the administrative language from 1798-1814, from 1814-1856 German was the administrative language again, followed by another term of French as administrative language from 1831-1856. All administrative texts were, however, translated into the respective other language. From 1857-1990 both languages had the status of official languages but the French versions were considered legally binding. Since 1991 both language have the exact same status (Ramseyer et al., 2017). We can show that our results hold even within these three subsets of different rules. Due to a substantial decrease in sample size the respective analysis does not allow for an empirical strategy as rigorous as our main regressions. The respective regressions are available upon request.

origin identified in our setting. Therefore, we consider how in the Swiss context two salient incarnations of culture such as religion and language do coexist. Primarily, today's cantons of Switzerland have their origins in different rulers and regimes during the Late Middle Ages and the early Modern Period. By contrast, the language border was largely determined in the times of Early Middle Ages and the Migration Period. The language regions remained largely untouched by the rulers of the distinct regions. The choice of religion, however, was largely determined within the premises of an entire regime: Bern became a reformed canton, while Fribourg and Valais stayed catholic.[44] Indeed, there is no single municipality with a protestant majority in the canton of Valais. (Uehlinger, 2011; Lüdi, 2013)

There is, however, some variation of religion in Bern and Fribourg. The municipalities in the northeast of today's canton of Fribourg used to be jointly ruled by Bern and Fribourg (so called 'Gemeine Herrschaften'). These municipalities were reformed municipalities through Bern's influence (Ramseyer et al., 2017). The canton of Bern is the legal successor of the City and Republic of Bern. The area belonging to the City and Republic of Bern underwent substantial changes in the course of history and the City and Republic of Bern collapsed in 1798 with the French invasion. The borders of the canton of Bern underlying this study are largely those that were established in 1815.[45] Following the Congress of Vienna, a large part of the former Prince-Bishopric of Basel, today's canton Jura, the Bernese Jura as well as the Laufen district, was given to Bern while it had to refrain from claiming Vaud and Aargau. These new parts were largely – though not completely – french-speaking and added a catholic minority to the hitherto reformed canton of Bern.[46] (Junker et al., 2018)

Hence, while there is some variation of religion within our specification (i.e., within cantons), it is arguably too small to be used for identification of an effect of religion on entrepreneurship. Therefore, we control for religion but abstain from interpreting the coefficient in this setting. A promising avenue for further research aimed at understanding the effect of religion on entrepreneurship would be to follow the setting used in the study of Basten and Betz (2013). In contrast to our setting which identifies cultural variation within canton, they compare two different cantons: the canton of Fribourg and the canton of Vaud which have different religious affiliations. As an additional robustness check, we conduct the main analysis without canton

[44] A notable exception is the Prince-Bishopric of Basel – that largely became a part of the canton of Bern – with its Southern municipalities joining the new faith.

[45] The registry of places of origin by municipality of residence provided by the Swiss Statistical Office uses the cantonal affiliation of municipalities as of 1833.

[46] The southern part of the Prince-Bishopric of Basel was reformed.

fixed effects separately for each religious group. The results are presented in Columns (iii) and (iv) of Table E.1 and yield estimates close to our main effect.

TABLE E.1: ROBUSTNESS ACROSS VARIOUS INSTITUTIONAL SETTINGS: NUMBER OF FIRMS FOUNDED.

	Bilingual cantons				All cantons	Bilingual cantons: constrained sample		Bilingual cantons	
	Include control	No Canton FE				No Gemeine	No change in	Current	1860
	for free mun.		Protestant only	Catholic only	all muni. <50km	Herrschaften	cant. affiliation	cant. affiliation	lang.
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
French_j	-0.222^{***}	-0.218^{***}	-0.182	-0.299^{***}	-0.157^{***}	-0.218^{***}	-0.225^{***}	-0.206^{***}	-0.218^{***}
	(0.056)	(0.053)	(0.151)	(0.083)	(0.047)	(0.061)	(0.061)	(0.058)	(0.054)
Free_j	0.009								
	(0.056)								
$\mathbb{1}(F_j \neq F_i)$	-0.115^{***}	-0.115^{***}	-0.025	-0.052	-0.111^{***}	-0.129^{***}	-0.120^{***}	-0.116^{***}	-0.115^{***}
	(0.029)	(0.029)	(0.065)	(0.045)	(0.026)	(0.032)	(0.032)	(0.029)	(0.029)
$\text{log Population}_{ij}$	0.946^{***}	0.946^{***}	0.924^{***}	0.944^{***}	0.960^{***}	0.940^{***}	0.939^{***}	0.944^{***}	0.946^{***}
	(0.007)	(0.007)	(0.008)	(0.011)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
$\text{Distance}_j \times \text{French}_j$t	-0.002	-0.003	-0.005	0.004	-0.002	-0.002	-0.002	-0.003	-0.003
	(0.002)	(0.002)	(0.012)	(0.004)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Distance_j	0.001	0.001	0.002^{*}	-0.004	0.001	0.000	0.000	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.003)	(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	2,696,955	2,696,955	1,569,435	956,445	4,056,750	2,373,060	2,478,660	2,681,145	2,673,015
No. cluster	1,927	1,927	1,677	1,196	2,065	1,870	1,895	1,927	1,925

The dependent variable is the number of firms founded in year t by individuals with origin in municipality j and canton c who live in municipality i (N_{ijct}) in all columns. ***, **, * 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.

Appendix F Representativeness of Sample for Switzerland

Table F.1: 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 F.2: 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

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