Do Work Attitudes Matter for Job Search? Evidence from the Swiss Language Border*

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Abstract

Unemployment varies a lot across space and time. Can attitudes towards work explain some of these differences? We study job search durations along the Swiss language border, which is geographically very sharp and divides German-speaking from "Latin"-speaking regions. Despite similar local labor markets and identical institutions, job seekers on the "Latin"-speaking side need about seven weeks longer (or 20 percent) to find a new job. To understand the role of work attitudes and worker sorting across regions, we set up a job search model with costly regional mobility. Our model predicts (i) longer unemployment durations and (ii) higher mobility in the region with less strong work attitudes. We provide empirical evidence in line with these predictions. Our most conservative estimates suggest that differences in work attitudes generate differences in unemployment durations that are as important as large changes in unemployment benefits.

JEL classification: J21, J64, Z10

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1 Introduction

Unemployment varies a lot over time and across space in ways that are not explained by laws or markets. OECD (2005) documents strong differences in unemployment across countries even when differences in institutions have been accounted for. Similarly, different regions within the same country often experience large differences in unemployment despite facing the same institutions. The view that unemployment only follows incentives and markets is probably too narrow.

Social scientists and some evolutionary biologists argue that culture – the set of beliefs, norms, and preferences shared across social groups – is an important determinant of behavior. De Tocqueville *et al.* (1966) was fascinated by the differences between the United States of America and France and Britain in terms of the core values that shape the ways democracies work. More recently, Boyd and Richerson (1985) discuss the process of cultural evolution. Also economists have argued that culture might affect employment (Akerlof, 1980; Lindbeck and Nyberg, 2006). Yet little is known whether such cultural differences are quantitatively important for explaining unemployment. This is due to a key empirical challenge. Culture often co-evolves with laws and institutions (Bénabou and Tirole, 2006). Hence isolating the direct effects of culture from its indirect effects via laws and institutions is challenging.

This paper studies the effect of culture on unemployment by comparing job search behavior across language regions in Switzerland. Swiss language areas are associated with specific cultural traits. Language areas are divided by a sharp geographical border: the *Roesti* border. The Roesti border – referring to a popular German-Swiss way of preparing potatoes, *Roesti* – has become a metaphor for the general cultural divide within the country. The direct-democratic political system of Switzerland repeatedly reveals strong differences in political attitudes and preferences in national referenda. These differences are particularly striking in votes relating to work-time regulations: French or Italian (Latin)-speakers are consistently more supportive in votes demanding less weekly working hours, longer vacations, or less restrictive early retirement rules. Differences in values and work preferences become also very clear from survey data. In a 1997 survey, 78 % of people living in the German-speaking part of Switzerland state that "I would work even if I did not need the money", yet only 50 % of French or Italian speaking survey respondents agree with this statement.

To understand how culture might affect unemployment, our empirical analysis studies differences in unemployment durations at the Roesti border. Two features of this border are of particular interest in the present context: *First*, the dominant language spoken in a municipality changes sharply at the Roesti border. Within a geographical distance of 5 kilometers, the fraction of Latin native speakers falls from more than 80 percent to less than 20 percent (and vice versa, for German native speakers). *Second,* important segments of the language border do not coincide with cantonal (state) borders. Therefore, the language-border constrast *within* cantons holds laws and institutions constant, while exploiting differences in culture. The Roesti border represents an empirical design that addresses a key empirical challenge in studying the role of

culture.

Our empirical analysis uses data covering the universe of individuals entering unemployment over the period 1998-2003 in Switzerland. We focus on Swiss men in the age group 25-60 living within 50 kilometers of the language border. This provides us with more than 60,000 unemployment spells. A nice feature of this data set is that is provides information on how a new job was found: (i) through one's own initiative or (ii) through placement via the local labor office. This information is helpful for understanding the relative importance of individual search effort as a determinant of observed unemployment differences at the language border.

Our descriptive analysis of the Roesti border highlights three interesting findings. *First*, there is a robust difference in unemployment durations at the language border. Individuals living in Latin-speaking border communities leave unemployment seven weeks later than individuals living in German-speaking communities. This amounts to a 20-percent gap in the average duration of unemployment. *Second*, attitudes towards work change sharply at the Roesti border. Support for work-time regulations in national referenda is consistently higher among residents on the Latin-speaking side. Differences in voting outcomes are often strikingly large, not only on average, but also at the language border, indicating a strong discontinuity in work norms, values and preferences at the Roesti border. This is further supported by survey evidence suggesting that Latin-speaking individuals are much less likely to think that hard work leads to success, and much more likely to think that external forces shape what happens in your life. *Third*, differences in (i) work-force composition (and municipality characteristics), (ii) labor markets, and (iii) labor market policies cannot account for the gap in unemployment durations. While there are compositional changes at the border, the imbalances are small and controlling for them tends to amplify the gap in unemployment durations. Labor markets are very similar at the language border: Firms in Latin-speaking communities are equally likely as firms in German-speaking ones to employ a worker from the other language region; and the vacancy-employment ratio is slightly higher on the Latin-speaking side, indicating slightly better chances to find job there. With respect to active labor market policies, there are differences in the way regional employment offices implement these policies, but these differences are too small to account for the unemployment gap. We conclude that composition, markets, and policies do not provide first-order explanations for observed differences in unemployment durations at the Roesti border.

While observable characteristics do not explain observed outcomes, the results may still be driven by unobserved heterogeneity. To understand the potential effects of worker sorting, we present a job-search model with costly regional mobility and heterogenous types. Regional differences are captured by differences in the distribution of types (which differ according to their search-efficiency) and by a (fixed) psychic cost of unemployment. The model generates two testable predictions. *First*, individuals born into the region L – the region with (on average) less efficient job searchers and the lower psychic cost of unemployment – are more likely to move to the other region G than individuals born into region G (high-psychic cost region with more efficient job searchers). *Second*, individuals born into region G (L) who stay in region G (L) have shorter (longer) unemployment durations than those who move to region L (G).

To shed light on these empirical predictions, we exploit information on workers' region of residence (= region of job search), region of birth (= workers' native language), and workers' mobility behavior. Consistent with the predictions of the model, we find that workers living (and searching) on the Latin-speaking side of the language border are significantly more mobile than workers living (and searching) on the German-speaking side of the border. Moreover, unemployment durations both by German-speaking and Latin-speaking workers are significantly higher when they live (and search) on the Latin-speaking side of the border. While differences in characteristics, markets, or policies at the language border are too small to account for these outcomes, they are perfectly consistent with an explanation based on differences in culture.

This paper is related to a rapidly expanding literature on the role of culture in various labor market outcomes. Alesina *et al.* (2006) investigate why Americans work so much more than Europeans. They argue that European labor market regulations influenced leisure patterns and created a "leisure culture" through a social multiplier (the returns to leisure are higher when more people take longer vacations). A model based on such complementarities in leisure performs better in explaining US-European differences in working hours than a model based on differences in taxation (Prescott, 2004). Fernández and Fogli (2006) and Fernández and Fogli (2009) find that the country of heritage significantly affects the work (and fertility) behavior of married second-generation immigrant women. This is consistent with the hypothesis that the culture of the country of origin affects current economic outcomes. Fernández (2007) shows that attitudes in the country of ancestry towards women's market work and housework have explanatory power for current labor market participation. Algan and Cahuc (2007) and Alesina and Giuliano (2010) investigate the particular role of "family culture" in labor market outcomes. These studies find that strong family ties reduce labor force participation. Ichino and Maggi (2000) study cultural differences in the propensity to shirk (absenteeism and misconduct) using data from a large Italian bank. A further related strand of the literature has focused on the emergence of and support for labor market institutions such as the unemployment insurance system. Algan and Cahuc (2009) argue that cultural differences can explain why some countries implement different mixes of employment protection and unemployment insurance. Lindbeck *et al.* (2003) and Lindbeck and Nyberg (2006) consider the dynamics of work ethics and how these dynamics interact with the evolution of welfare state provisions.[1]

This paper contributes to the literature in at least three respects. *First*, it uses an interesting and novel empirical design to provide evidence on the role of culture for unemployment outcomes.

[1] Three further strands of the literature are related. First, a theoretical strand considers the transmission of cultural values from parents to children. See, for example, Bisin and Verdier (2000, 2001), and Bisin *et al.* (2004) on marriage and religion, Hauk and Saez-Marti (2002) on corruption, Doepke and Zilibotti (2008) on class-specific preferences and the industrial revolution. Second, other studies have looked at the role of culture in explaining the demand for redistribution (Alesina and Fuchs-Schundeln, 2007), economic performance (Tabellini, 2010), or trade (Guiso *et al.*, 2009), and horizontal spillovers in unemployment outcomes (Clark, 2003; Stutzer and Lalive, 2004; Kolm, 2005). (Eugster *et al.*, 2011) also show that there is a sizeable gap in demand for redistribution at the language border between regions of Switzerland. Eugster and Parchet (2014) study tax setting in the Roesti border context. The third strand argues that economic institutions may shape important elements of a group's culture. See Maystre *et al.* (2014) for a recent study of the effect of trade on cultural diversity and Bowles (1998) for a survey on the effects of markets on preferences.

Limiting the empirical analysis to a narrowly defined geographic area helps separating the cultural component of unemployment from other relevant explanations for differences in unemployment. *Second*, this setting allows us to go beyond the existing state-of-the-art approach that relies on studying second or third generation immigrants in a similar context. This epidemiological approach to studying culture can get at the individual components of culture (beliefs, values) but misses out on the social aspect of culture (social norms, etc.). The language border contrast allows seeing both elements. *Third*, we explore the sorting by heterogenous workers across culturally different regions in a simple theoretical framework. The model generates differences in job search and mobility behavior consistent with empirical evidence.

The outline of the paper is as follows. Section 2 provides the background both on languages spoken in Switzerland and the institutions and policies shaping labor markets. Section 3 discusses the main datasets used in our empirical analysis. Section 4 provides a descriptive analysis of job search, culture, and other determinants of job search at the Roesti border. Section 5 develops the model, and section 6 presents our empirical strategy. Section 7 presents our main results, in particular how unemployment duration and job mobility are driven by culture and other competing explanations. Section 8 concludes.

2 Background

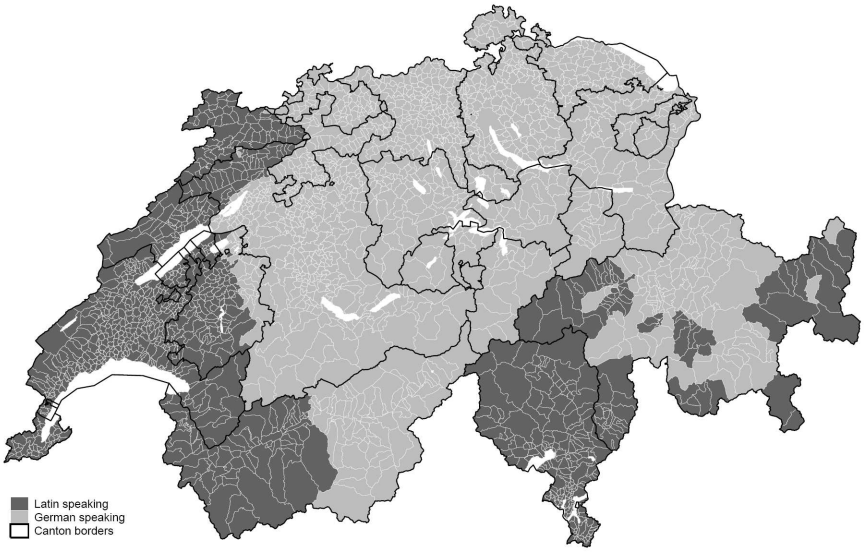
This section discusses language regions and policies affecting unemployment in Switzerland.

2.1 Languages

Switzerland has four official languages. German is spoken by 63.7 percent of the population, French by 20.4 percent, Italian by 6.5 percent, and Romansh by 0.5 percent (Lüdi *et al.*, 2005). Three cantons – Valais, Fribourg, and Berne – are bilingual (French, German); one canton – Graubuenden – is officially trilingual (German, Romansh, Italian). The remaining cantons are unilingual, with seventeen German-speaking and four French-speaking. Multilingual cantons exist for historical reasons. The border of the canton Valais traces the ancient border of the Roman-catholic diocese of Sion. The border of the cantons Fribourg and Berne trace the territories acquired by their capitals in the Middle Ages. The border of the canton Graubuenden traces the borders of the ancient Roman province of Rhaetia.

In what follows, we group the various regions of the country into two main language areas, German-speaking and "Latin"-speaking (French, Italian, Romansh). We discuss below that these two broad regions feature quite strong differences in norms and values, including preferences for and attitudes towards work. Figure 1 displays a map of Switzerland where each of the roughly 2,600 Swiss municipalities is shaded according to the language spoken by a majority of its residents as in the 2000 census. Light-shaded areas indicate a majority of German native speakers in the municipality. Dark-shaded areas indicate a majority of native speakers of French, Italian, or Romansh. Dark lines separate the 26 Swiss cantons. For our analysis it will be crucial that important parts of the language border are *within* (bilingual) cantons. This implies that

Figure 1: Language regions in Switzerland



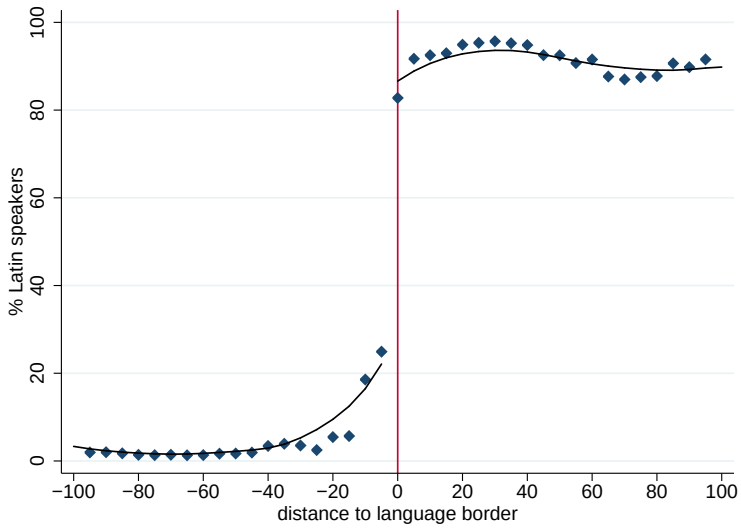
Notes: Dark-shaded areas indicate a majority of Latin-speakers (French in the West, Italian in the South and Romansh in the East). Light-shaded areas indicate a majority of German-speaker. Dark (white) lines indicate canton (municipality) borders. **Source:** Census 2000, Federal Statistical Office (FSO), Neuchâtel.

many individuals are exposed to the same policies and institutions, but live in different language areas and are exposed to different cultures. We also note that, for the most part, the language border is not a geographical barrier. The largest segment of the language border runs from North to South while the main geographical barrier, the Alps, is in East-West direction.

Figure 2 shows the percentage of Latin-speaking Swiss residents by distance to the language border. We define distance to the border as the driving distance in kilometers to get from a municipality to the language border. Distance is defined as zero for municipalities located exactly on the Latin-speaking side of the language border (whose nearest neighboring municipality is German speaking). To reflect both distance and language region, we code the distance measure negatively for municipalities in the German-speaking region and positively for the Latin-speaking region. The figure clearly demonstrates that the Roesti border is a sharp language barrier. At the border, there is a sharp jump from about 22 percent Latin-speakers on the German language area to more than 85 percent on the Latin-dominated side, a change which occurs within a distance of 5 (!) km. We conclude that the language border delineates the two regions very sharply.

Even though Switzerland is a multilingual country, education policy aims to enhance integration. Children learn to speak one of the other official languages as their first foreign language latest from grade 5 or 6 onwards. Children in the German-speaking region learn French as their first foreign language, while children in the French-speaking region learn German as their first foreign language. Children in the Italian region choose between French or German. This translates into good command of the languages spoken in other parts of the country. Around 73 percent of Swiss residents of the French speaking region of Switzerland and 92 percent of Swiss

Figure 2: Percentage Latin-speakers (French, Italian or Romansh), by distance to language border



Notes: negative=German-speaking part; positive=French-/Italian-speaking part. **Source:** Swiss Census 2000, Federal Statistical Office (FSO), Neuchâtel. Distances from search.ch.

residents in the German speaking regions speak a second language of the country (Werlen *et al.*, 2011).

2.2 Policies

The ruling constitution gives cantons considerable discretion in political decision making (i.e. in taxation, education, etc.) leading to a situation where legal rules differ strongly across cantons. However, this is not the case for labor legislation in general and unemployment insurance in particular. These policies are determined at the federal level. Unemployment benefit rules are relatively generous. Maximum benefit duration is 2 years, and the marginal replacement rate is 70 percent or 80 percent of previous earnings, depending on the presence of dependent family members and previous income. Job seekers are entitled to benefits if they had paid unemployment insurance contributions for at least six months in the two years prior to registering at the public employment service (PES) and if they are able to work.[2] Entitlement criteria to unemployment benefits also include compliance with job-search requirements and participation in active labor market programs. Potential job offers stem from the public vacancy information system of the PES, private temporary help firms, or the job seeker's own pool of potential jobs. Non-compliance with any of these obligations is sanctioned by complete withdrawal of benefits for a period that can last up to 30 work days (see Lalive et al. 2005 for details on the Swiss sanction system).

[2] A 2003 reform reduced maximum benefit duration to 1.5 years for job seekers who are younger than 55 years, or job seekers who had contributed less than 12 out of the previous 24 months. Maximum benefit duration was kept unchanged for job seekers who had contributed to unemployment insurance for 12 months and were older than 55 years.

This means that differences in benefit duration and level cannot explain differences in regional unemployment. However, since regions have an important role in implementing counseling and monitoring practices, these can potentially contribute to regional differences in unemployment (Lalive *et al.*, 2005; Gerfin and Lechner, 2002; Frölich and Lechner, 2004).

Education policy is important in shaping labor supply because it determines the level of skill of the work force. While school systems and school curricula vary considerably across cantons, they are homogeneous within cantons. Municipalities have to adopt the cantonal curriculum, they have however significant scope of action in the hiring of teachers as well as in the infrastructure provided. Because municipalities are also responsible for the financing of primary schools, the school quality is likely to depend on municipal budget, which is determined by the level of taxation and the distribution of incomes. Municipal income and wealth tax rates are also likely to influence labor supply directly. First, they influence the net wage received from work. Second, they are a key parameter of residential location for both individuals and firms. Eugster and Parchet (2014) show significant differences in tax rates across language regions, but no discontinuity in tax rates and municipal income distribution at the language border.

3 Data

Our main data source are unemployment register data from the years 1998-2003, collected by the local public employment services. A job seeker is included in this data as soon as she files a claim for unemployment benefits, and the case worker enters this claim into the so-called AVAM/ASAL system of the ministry of labor. This system registers the date the claim starts as well as a wealth of information on the individual. Job seekers then see the caseworker on a regular basis and any new information is updated in the system. A job seeker leaves the database either when she finds a new job or for "unknown reasons" (does not show up any more; has moved to a different region; or has exhausted unemployment benefits).

Our unemployment inflow analysis is based on Swiss men aged 25-60. We exclude women because both differences in work culture and family culture may affect female labor supply (Steinhauer, 2013). The lower age bound ensures that an unemployed worker in our sample has (mostly) finished education. The upper bound excludes unemployment spells that flow directly into early retirement. We also restrict attention to people who are registered as full-time unemployed and who are entitled to unemployment benefits. This selection does not critically lower the number of unemployment spells but ensures a homogeneous sample. We limit the data to individuals living within a 50 km distance to the language border.

The data contain information on job seekers' socio-economic background as well as information on the municipality of residence. We supplement these data with information on the socio-demographic structure of the municipality of residence, labor demand variables, and variables describing local labor market policies. *Individual controls* include socio-economic characteristics as reported in the AVAM/ASAL data base as well as information on previous employment: age, marital status, number of dependent family members, willingness to commute or move, educa-

tion, qualification, the sector of previous employment (agriculture, manufacturing, construction, services, tourism, other), previous insured earnings, and the assessment of the caseworker w.r.t. the ease of finding a suitable job. *Municipality controls* are taken from the Swiss population census 2000 and include the structure of population/employment by 5-year age groups, five education groups, and three sectors as well as the percentage of men and immigrants living in the respective municipality, the total number of inhabitants, and whether the municipality belongs to an agglomeration area or not. *Labor demand controls* are measured at the municipality level and include the number of vacancies posted from January to June 2000 per employed resident in the working age population, the 1998 number of jobs, the 1998-2001 changes in both the number of jobs and the number of firms, and the median wage of each municipality. This information is based on the Swiss firm censuses 1998 and 2001 and on the Swiss Labor Force Surveys 1991–2008.

4 The Roesti border: unemployment and cultural differences

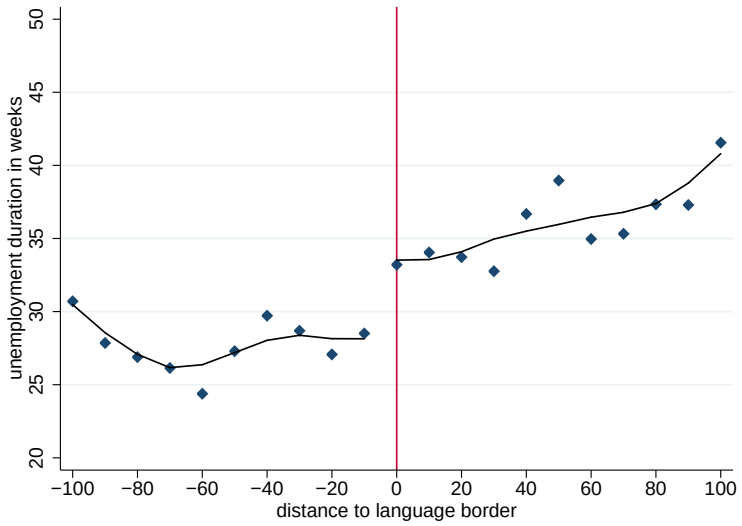
We proceed by providing first descriptive evidence on differences in unemployment durations at the Roesti border. We then show that the Roesti border is a cultural border that is particularly striking with respect to norms, values and attitudes towards work (and work regualtions). We also discuss whether the Roesti border is associated with a change in other dimensions that are potentially important in explaining unemployment durations, such as the characteristics of residents (and municipalities), indicators of labor markets, and the implementation of labor market policies.

4.1 Unemployment durations

Let us take a first look on how average durations of unemployment change at the language border. Figure 3 plots average weeks of unemployment experienced by residents located at different distances from this border. Just like before, positive (negative) distances indicate locations on the Latin- (German-) speaking side. The Figure reveals a very clear discontinuity in average unemployment durations at the language border. This difference is quantitatively large: the average duration of unemployment on the German-speaking side is about 28 weeks and the corresponding value on the Latin-speaking side is about 34 weeks. Note that all data points displayed on the Latin-speaking side are above the highest data point on the German-speaking side. Moreover, there is no strong trend by distance from the border in the German-speaking regions, but durations increase with distance to border on the Latin-speaking side.

Figure 3 provides some first descriptive evidence that Latin-side residents of the Roesti border take much longer to leave unemployment than German-side residents of the border. There are at least two different explanations for this finding. One explanation holds that this differential is due to different work attitudes among Latin-speaking compared to German-speaking job seekers. Alternatively, this difference could be due to different composition of the job seeker pool or differences in labor demand. We investigate the relevance of these alternative explanations below.

Figure 3: Average durations of unemployment, by distance to language border



Notes: negative=German-speaking part; positive=French-/Italian-speaking part. Points show 10km averages in unemployment duration. Lines are locally weighted regression estimates (bandwidth = 0.8). **Source:** Unemployment Register 1998-2003, Federal Statistical Office (FSO), Neuchâtel. Distances from search.ch.

4.2 The Roesti border as a cultural divide

The Roesti border is not merely a language border, but it has become a metaphor for the general cultural divide within Switzerland. Interesting evidence comes from survey data (ISSP). When asked whether one agrees to the statement "I would enjoy a paid job even if I did not need the money", striking differences are revealed between language groups.[3] Table 1 shows that German-speaking respondents indicate much stronger support for this statement than Latin-speaking respondents and the differences are substantially higher in 1997 (a recession year) than in 2005 (a boom).

Table 1: Importance of Work across Language Groups

	Year	Latin	German	Difference
Enjoy a paid job even if I did not need the money[a]	1997	3.26	2.60	0.65***
Enjoy a paid job even if I did not need the money[a]	2005	2.58	2.26	0.32***

Notes: [a] 1=strongly agree, 2="agree", 3="indifferent", 4="disagree", 5="strongly disagree". This table reports the average disagreement with the statement "I would enjoy a paid job even if I did not need the money" by interview language. **Source:** ISSP 1997 and 2005, own calculations.

The Swiss political system of direct democracy provides another way to extract information on how attitudes towards work differ across language regions. In national referenda, the population

[3]The Swiss module of the International Social Survey Programme provides information on the importance of work (ISSP 1997 and 2005).

Figure 4: Voting results on six referenda, by distance to language border

Notes: negative distance=German-speaking part; positive distance=French-/Italian-speaking part. This figure reports percentage of yes votes in national referenda or voter initiatives on work time regulations. Lines are locally weighted regressions (bandwidth = 0.8). **Source:** data from Federal Statistical Office (FSO), Neuchâtel. Distances from search.ch.

votes regularly about all kinds of issues.[4] Here we focus on referenda where voters revealed their preferences in votes concerning work-time regulations. Since 1980, three referenda on laws regulating weekly or yearly working time were held at the national level. In 1985, Swiss citizens voted on a proposal whether to guarantee at least 4 weeks of paid vacation to everyone, and 5 weeks to anyone aged 40 years or older; in 1988 whether to reduce regular weekly working time to 40 hours; and in 2002 whether to reduce weekly working time to 36 hours. Moreover, there were three referenda related to lifetime work: in 1988, the population voted on whether to reduce the statutory retirement age from 65 to 62 for men and from 62 to 60 for women; in 2000 whether to make early retirement more attractive to all workers; and in 2000 whether to leave the statutory retirement age for women at age 62 (rather than increasing it to age 65).

Figure 4 uses information on voting results at the municipality level by distance to the language border. Panel a)-c) shows the proportion favoring the working-time regulations for the "intensive margin". These graphs tell a consistent story: voters on the Latin-speaking side of the language border are consistently more in favor of work-time reductions than voters on the German-speaking side and there is a large discontinuity at the border. The picture is very similar

[4] Voter initiatives are a crucial part of the Swiss political system. Voter initiatives are proposals to modify the constitution. Voters are called to vote on an initiative once 100,000 Swiss citizens sign a document asking that the proposal be decided in a voter initiative. Municipal data on voter initiatives are available in electronic form since 1980.

Table 2: Cultural Determinants of Job Search

	(1) Question	(2) Number of observations	(3) Mean answer † Latin	(4) German	(5) Difference	(6) Coefficient on Latin‡
A. Social and Family Networks						
(1)	Number of weak ties (neighbors and colleagues)[a]: SHP 1999-2008					
		16,486	9.553	11.638	−2.085***	−1.768***
			(0.149)	(0.167)	(0.223)	(0.605)
(2)	Family ties (values from 3-8, higher values mean weaker ties)[b]: WVS 1996					
		1,012	3.596	3.988	−0.392***	−0.366***
			(0.038)	(0.045)	(0.059)	(0.067)
B. Beliefs						
(1)	Freedom of choice and control over the way your life turns out (values from 1-10, higher values mean more freedom of choice): WVS 1996					
		1,190	6.833	7.475	−0.642***	−0.627***
			(0.087)	(0.076)	(0.116)	(0.130)
(2)	Success is due to hard work (1) vs a matter of luck and connections (10): WVS 1996					
		1,150	5.028	3.898	1.130***	1.131***
			(0.126)	(0.105)	(0.164)	(0.181)
C. Religion						
(1)	Religion (percentage Catholics in municipality): Swiss Census 2000					
		1,260	53.007	34.659	18.348***	10.416***
			(31.195)	(30.051)	(1.734)	(2.864)

Notes: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. † Table entries are the mean response in the scale from 1 to 10 for items (4) and (5). ‡ Estimate on Latin coefficient in regression of response to survey item on age, sex, education (low, medium, high) for VWS items. Separation into language regions by ethnicity, German = Swiss German, Latin = Swiss French/Italian. Only data within 50km from the language border used. [a]See Eugster et. al. (2011) for details on the construction of the number of weak ties. [b]See Alesina and Guiliano (2010) for details on the construction of family ties. **Source:** Swiss Household Panel (SHP) carried out in 1999-2008 (individuals are surveyed repeatedly). Swiss Census carried out in 2000. World Values Survey (WVS) carried out in 1996. Distances from search.ch.

when we look at voting results concerning lifetime-work regulations in panels d)-f).[5] In sum, the language border shows a clear and very consistent gap in political support for work-time regulations.

Cultural differences may affect unemployment differences not only through attitudes towards work but also via other channels such as the role of the family and an individual's network. By insuring the individual better against economic shocks, strong ties to the family may prolong the duration of unemployment. In contrast, "weak ties" (acquaintances other than close friends and family members) may speed up job finding, because they provide access to information from more distant parts of the social system (Granovetter, 1995). Survey data from the Swiss Household Panel Survey and the World Value Survey suggest that Latin-speaking Swiss individuals have fewer weak ties and stronger family ties. The data set reports how many colleagues and friends an individual meets on a regular basis, which we take as a proxy for an individual's weak ties.[6]

Table 2 Panel A shows that German-speaking individuals have, on average, 11.6 neighbors and colleagues (column 4), the corresponding number for Latin-speaking individuals is only 9.5 (column 3). The gap reduces to 1.7 within bilingual cantons (column 6), but it remains

[5]Eugster *et al.* (2011) also analyse the three votes regarding the retirement age.

[6]See Voorpostel *et al.* (2012) for a description of the Swiss Household Panel Survey.

significantly different from zero.[7] The second item in Panel A Table 2 looks at differences in the strength of family ties among Latin- and German-speaking individuals in Switzerland using data from the World Value Survey 1996. The indicator of the strength of family ties is based on three items that capture the strength of family ties in the World Values Survey. We follow Alesina and Giuliano (2010) in constructing a composite index by summing up the responses on this item. The composite indicator takes on values between 3 and 8, with 3 indicating the strongest family ties, and 8 indicating weak family ties.

Panel B of Table 2 provides complementary evidence for Switzerland from the World Value Survey on values and beliefs concerning freedom of choice, control over life, and the sources of economic success. It turns out that Latin-speakers perceive that they have less freedom of choice and less control over their lives and they believe much less in the idea of hard work being the main source of economic success. Taken together, the evidence suggests strong differences in beliefs and values concerning issues that are of high importance for the motivation to search hard for a new job.[8] Panel C of Table 2 discusses the role of religion. As religion is unlikely to change over an individual's lifetime, recent work on the role of culture has used religion as an instrumental variable (Guiso *et al.*, 2006). According to Max Weber, "protestant ethics" – the pursuit of economic success as a duty – a higher (lower) prevalence of individuals with Protestant (Catholic) confession may determine attitudes towards work and higher efforts when searching for a new job. The evidence in Table 2, based on data from the Swiss Census 2000, indeed indicates a significantly higher fraction of Catholics in the municipalities in Latin-speaking regions.

The above discussion provides a consistent picture. Both survey evidence and evidence on voting results support the idea of substantial differences in attitudes towards work between Latin- and German-speaking individuals. Moreover, voting results strongly suggest that there is an abrupt change in these attitudes at the Roesti border. We conclude that the Roesti border separates two cultures that differ substantially in ways that are potentially important to explain unemployment durations.

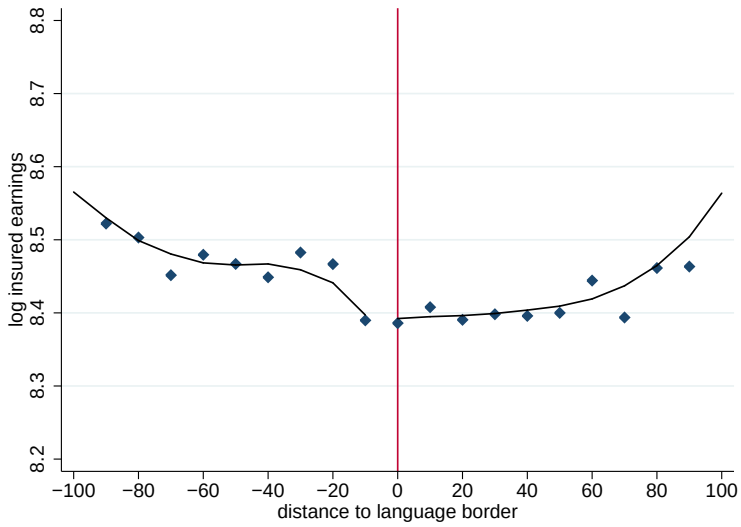
4.3 Other discontinuities at the Roesti border?

The above discussion suggests that culture changes in a significant way at the language border. However, this does not necessarily mean that norms, preferences, and attitudes towards work drive the discontinuities in unemployment durations at the language border. There may be other factors varying at the border, thus contributing to the gap in unemployment durations. We first discuss whether there are differences in characteristics among workers in the unemployment pool. Figure 5 shows that job seekers' pre-unemployment earnings do not show a discontinuity at the language border. While earnings decrease somewhat when approaching the border from the

[7] The gap is even more pronounced among the unemployed. The German-speaking unemployed have 11.3 neighbors or former colleagues, while the Latin-speaking unemployed have on average have 8.3 neighbors or former colleagues.

[8] For instance, Caliendo *et al.* (2010) show that people who have an internal locus of control – with a strong belief in freedom of choice and control over their lives – search for jobs more intensively than individuals with an external locus of control.

Figure 5: Are pre-unemployment earnings balanced?



Notes: negative=German-speaking part; positive=French-/Italian-speaking part. Figure shows the mean of insured pre-unemployment earnings (logarithm). Lines are locally weighted regression estimates (bandwidth = 0.8). **Source:** Unemployment Register 1998-2003, Swiss Census 2000, Federal Statistical Office (FSO), Neuchâtel. Distances from search.ch.

German-speaking side, we do not see any jump at the border.

Table 3 provides a discontinuity analysis for a large number of background characteristics. For each variable, Table 3 reports the sample average of a particular characteristic (column 1), the mean for Latin-speaking workers (column 2), the mean for German-speaking workers (column 3), and the difference between the two (column 4). In column (5) we report whether the mean of a characteristic differs *at the language border* and column (6) provides the corresponding analysis for the language-border difference within the three bilingual cantons (Berne, Fribourg, Valais). Table 3, Panel A cautions against interpreting the gap in unemployment durations being driven solely by culture. Many of the individual characteristics we observe are not perfectly balanced at the Roesti border. Compositional differences might also be important at the municipality level. Panel B provides measures of municipalities. While sectoral and gender composition of municipalities does not change at the Roesti border, there are slight imbalances in terms of the municipality-population's education- and age structure.

The second reason why we see differences in unemployment durations at the language border may be a sudden change in labor demand due to limited labor market integration of the two regions. If labor demand is lower on the Latin side the language border and labor markets are not integrated, we would expect longer job search durations there. Figure 6a displays a measure of labor market tightness, the ratio of vacancies divided by the number of employed individuals at the municipality level (during the first semester of the year 2000).[9] Figure 6a

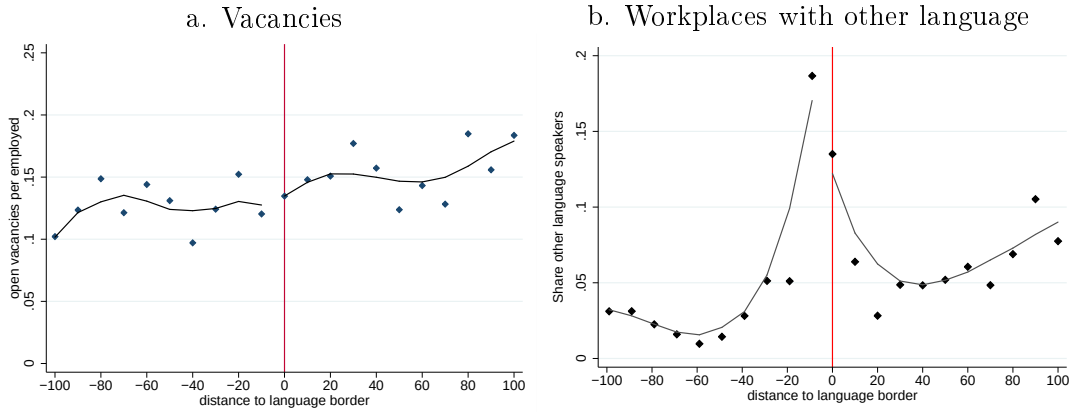
[9]We prefer the vacancy employment ratio to the vacancy unemployment ratio because unemployment is endogenous to culture. Employment is endogenous as well but will be less affected quantitatively.

Table 3: Summary statistics

	(1) All	(2) Latin	(3) German	(4) Difference	(5) Difference at border All	(6) Difference at border Bilingual cantons
A. Individual characteristics						
Qualification						
% low qualification	.10	.11	.09	.02***	.02	.00
% medium qualification	.11	.11	.10	.01***	-.05***	-.04***
% high qualification	.80	.78	.80	-.02***	.03	.04*
Sector of last job						
% agrar	.03	.04	.03	.02***	.02***	.02***
% construction	.13	.15	.12	.03***	-.02	-.02
% manufacturing	.18	.20	.18	0.03***	.04**	.06***
% services	.46	.42	.48	-.07***	.03	.02
% tourism	.06	.06	.06	-.00	-.00	.01
% other sector	.08	.09	.08	.01***	.01	.02
Difficulty of placement (caseworker assessment)						
% easy to place	.16	.24	.12	.11***	.07***	.06***
% medium to place	.64	.63	.64	-.01**	.00	.04*
% hard to place	.18	.11	.22	-.11***	-.09***	-.10***
Mobility						
% no mobility	.00	.00	.00	.00**	-.00	-.00
% daily mobility	.90	.85	.93	-.08***	-.06***	-.07***
% mobility: parts of CH	.05	.08	.03	.05***	.03***	.04***
% mobility: whole CH	.04	.04	.03	.01***	.02**	.02**
% mobility: abroad	.01	.02	.01	.01***	.01	.01**
Age and Earnings						
Age	38.31	37.99	38.48	-.49***	-.10	-.01
Log insured earnings	8.43	8.39	8.45	-.06***	-.03	-.03
Family characteristics						
No. of dependents	.98	1.09	.92	.17***	.03	.08
% single	.51	.48	.53	-.05***	-.00	-.02
% married	.38	.42	.36	.06***	.00	.01
% divorced	.11	.10	.11	-.01***	.00	.01
% widowed	.00	.00	.00	.00	-.00	.00
B. Municipality characteristics						
Education						
% primary education	.17	.15	.17	-.02***	.02*	.03*
% secondary education	.74	.74	.74	-.00	-.02*	-.03**
% other education	.02	.02	.02	.00	-.01***	-.00**
Sector						
% sector 1	.02	.03	.02	.01***	.00	-.00
% sector 2	.13	.13	.13	-.00***	-.02	-.02
% sector 3	.37	.35	.38	-.04***	-.00	-.00
Age structure						
% age 25-29	.07	.08	.07	.00***	-.00	-.00
% age 30-34	.09	.09	.09	-.00***	-.01***	-.01***
% age 35-39	.10	.09	.10	-.00***	-.01***	-.01***
% age 40-44	.09	.09	.09	-.00***	-.00	-.00
% age 45-49	.09	.09	.09	.00***	.00	.00
% age 50-54	.08	.09	.09	.00***	.00*	.00
% age 55-59	.08	.08	.08	.00**	.01***	.01***
Other						
% men	.46	.46	.47	-.00***	.00	-.00
% other language	.01	.01	.01	-.00***	.00	-.00
Log no. of inhabitants	8.63	7.96	8.98	-1.02***	-.49	-.46
% agglomeration	.46	.20	.60	-.40***	-.13	-.24**
C. Active labor market policies						
% days in sanction	.06	.04	.07	-.02***	-.01**	-.01
% days in training program	.12	.13	.11	.01***	.03***	.03***
% days in employment program	.01	.01	.01	-.00***	-.00	-.00
% days in subsidized employment	.11	.11	.11	.00	-.00	-.01

Notes: Latin = majority in community speaks French, Italian or Romansh. Difference at the border is estimated using linear specifications. **Source:** Data from Unemployment Register 1998-2003, Swiss Census 2000, Federal Statistical Office (FSO), CH-2010 Neuchatel. Distances from search.ch.

Figure 6: Labor demand and labor market integration



Notes: negative=German-speaking part; positive=French-/Italian-speaking part. Figure (a) shows the number of vacancies posted between January and June 2000 by all firms of a given municipality, divided by the number of employed individuals in the working age population (16-64 years) living in that municipality. Figure (b) shows the share of workers being native speakers of the language of the other language border (French/Italian in German-speaking region, German in Latin-region region). Regression lines are locally weighted estimates (bandwidth = 0.8). **Source:** Unemployment Register 1998-2003, Swiss Census 2000, Federal Statistical Office (FSO), Neuchâtel. Distances from search.ch.

indicates no important border-discontinuity in this measure. If at all, we would expect a slightly better situation on the Latin-speaking side of the the language border. A second way to check the concern that the Roesti border may separate labor markets is to analyze labor market integration in terms of commuting. Figure 6b reports the share of workers living in the German region and working in the Latin region (and vice versa) as fraction of employment in the particular location.[10] This graph clearly shows that labor markets are integrated. Many firms located close to the language border hire workers from the other side of the language border, up to 20 percent of their workforce at the border. There is an important conclusion to be drawn from Figure 6b. The fact that many workers cross the language border when going to work suggest that this border is permeable and this cross-hiring pattern is quite symmetric on both sides of the border. This suggests there is high integration of labor markets. Hence it is very unlikely that border differences in labor market outcomes are driven by differences in labor market conditions.

Differences in the implementation of labor market policies at the local level could also rationalize differences in job finding at the language border. Unemployment insurance regulations are set at the national level but there is a fair amount of leeway in how these regulations are implemented. Local labor market offices have discretion in the extent to which the various labor market policy instruments (sanctions, assignments to ALMPs, etc.) are used. Table 3, Panel C reports four key elements of active labor market policy: sanctions, training programs, employment programs, and job subsidies. Latin-speaking workers indeed face a lower sanction rate and a higher assignment rate to training programs. This suggests there are some differences at the Roesti border at the policy-implementation dimension. In our regression analysis below, we will

[10] This is the share speaking a Latin language for firms located in the German speaking area and the share of German speakers for firms located on the Latin speaking areas.

control for active labor market policies to account for differences in job finding rates along this dimension.

5 A simple model of search and regional mobility

In this section we develop a simple theoretical framework to study how attitudes towards work and unemployment may affect job search activities.[11] This model is not only useful to predict how attitudes affect job search behavior but also to study possible sorting of heterogeneous workers across regions. Sorting could be relevant as the language border contrast may partly be driven by unobserved factors that induce certain workers to move to the other region.

Consider workers who are either employed or unemployed. Employed workers earn a wage w and lose their job with rate δ. Unemployed workers get an unemployment benefit b and suffer from a (flow) cost $\gamma s^2/2 + z$ during their unemployment spell, where s is the worker's (endogenously chosen) search intensity; $\gamma > 0$ is an exogenous parameter (that varies across individuals); and z is a fixed "psychic" cost of unemployment (that varies across regions but is the same for individuals within a region). A worker who searches with intensity s, gets a job offer at rate $s\lambda$, where λ is the job finding rate per unit of search. A job offer is from the same region with probability π and from the other region with probability $1-\pi$, hence job offers from the same and the other region arrive at rates $\pi s\lambda$ and $(1-\pi)s\lambda$, respectively. We assume that taking up a new job in the other region is associated with a mobility cost x, while accepting a job in the same region is costless.

Search and mobility choices. Denote by r the discount rate, and by U and E the present value of income of an unemployed and an employed worker, respectively. In steady state, the value of employment is $rE = w - \delta(E-U)$ and the value of unemployment is $rU = b - z - \gamma c(s) + s\lambda\left[W - U\right]$, where $W \equiv \pi E + (1-\pi)\max\left(U, E_- - x\right)$ is the expected value of a job offer. (E denotes the value of a new job in the same region and E_- denotes the value of a job in the other region.) The problem of an unemployed worker is to choose search intensity s so as to maximize rU. This yields the first-order condition

$$\gamma s(\gamma) = \lambda(W - U), \tag{1}$$

where $s(\gamma)$ is the worker's optimal search intensity.

Suppose that workers differ in the search cost parameter γ but are identical in all other dimensions. High-γ workers are less efficient searchers: to achieve a given job arrival rate λs they have to incur higher search costs. A higher γ may be due to higher individual disutility (i.e. lower motivation) during times of job search; worse networks (fewer weak ties); more limited access to alternative search channels (in addition to those provided by public employment offices);

[11] Other theoretical work has highlighted the role of impatience in job search. DellaVigna and Paserman (2005) discuss empirical evidence and Paserman (2008) provides structural estimation of models of job search with impatience (or hyperbolic discounting).

or some combination of these factors. This yields

Result 1: Optimal search and mobility.

a) $s(\gamma)$ decreases in γ and increases in z. b) There is a $\hat{\gamma}$, such that a worker with $\gamma > \hat{\gamma}$ accepts a job offer from the other region, while a worker with $\gamma \leq \hat{\gamma}$ does not. c) $\hat{\gamma}$ is decreasing in z.

Proof. See Appendix.

The intuition for part a) of this result is straightforward. A worker with a high γ faces a high (marginal) cost of search, inducing a low s. A higher z is equivalent to a lower unemployment benefit, resulting in a higher s. Part b) of the Result says that high-γ workers are more mobile than low-γ workers. The intuition is that high-γ workers suffer more during unemployment, hence they gain more when moving from unemployment to employment. In other words, the difference $W - U$ is higher for high-γ workers. Hence workers with a higher γ are more likely willing to bear the mobility cost.

Regional differences Regions differ in two dimensions. *First*, there are differences in the distribution of γ-types. For simplicity, assume a discrete distribution with three types $i = 0, 1, 2$ such that $\gamma_0 < \gamma_1 < \gamma_2$. We normalize population size in each region to unity and denote by f_{ij} the share of worker of type i *born* in region j and therefore sharing the "culture" of region j. (Some of these workers may eventually end up in region $-j$.) We consider the case where low-γ types are less prevalent in region L and assume $f_{0L} < f_{0G}$ and $f_{2L} > f_{2G}$.

Second, we assume that that the psychic cost of unemployment is smaller in region L, $z_L \leq z_G$. Ceteris paribus, being unemployed is less costly in region L than in region G. According to Result 1, this induces a worker with a given γ to search less hard in region L.

Steady-state mobility and job search behavior We are now ready to discuss the issue of particular interest: Which types will end up unemployed in which region? We first note that regional differences in z lead to regional differences in mobility behavior. According to Result 1c), the assumption $z_L \leq z_G$ implies $\hat{\gamma}_L > \hat{\gamma}_G$. This means an unemployed worker searching in region L accepts a job offer from region G when $\gamma > \hat{\gamma}_L$, while she declines when $\gamma \leq \hat{\gamma}_L$. Similarly, a searcher in G accepts an offer from L when $\gamma > \hat{\gamma}_G$, and declines when $\gamma \leq \hat{\gamma}_G$. We assume that $\gamma_0 < \hat{\gamma}_G < \gamma_1 < \hat{\gamma}_L < \gamma_2$: Workers with $\gamma = \gamma_0$ are not willing to move and will stay in their region of birth. Workers with $\gamma = \gamma_1$ are willing to move when searching in region G but not willing to move when searching in region L. (This implies that, in steady state, all workers with γ_1 will eventually end up in region L, irrespective of their region of birth.) Finally, workers with $\gamma = \gamma_2$ are willing to move to the other region. We show in the Appendix that an endogenous fraction $\phi > 1/2$ of γ_2-workers will end up in region L (irrespective of their region of birth), while a fraction $1 - \phi$ will end up in region G.

Empirically, we cannot observe an individual worker's type, but we can observe both her region of residence/search and her native language (= region of birth). Let us consider the

model's predictions on the type composition of the unemployment pool by region of residence and region of birth. Denote by u_{ij} the steady-state unemployment rate of type i in region j. In region L, there are $f_{0L}u_{0L}$ unemployed workers of type 0; $(f_{1L}+f_{1G})u_{1L}$ workers of type 1; and $\phi(f_{2L}+f_{2G})u_{2L}$ workers of type 2. In region G, there are $f_{0G}u_{0G}$ unemployed workers of type 0; no unemployment workers of type 1; and $(1-\phi)(f_{2G}+f_{2L})u_{2G}$ workers of type 2. Denote by d_{ij} the expected duration of unemployment of type i in region j. We have $d_{ij}=1/(\lambda\pi s_{ij})$ for types $i=0,1$ and $d_{2j}=1/(\lambda s_{2j})$. Let $d_{jj'}$ be the average unemployment duration of workers born in region j and searching in j'.

Result 2: Regional differences in mobility and unemployment durations.

a) Regional mobility is higher among workers born in L than among workers born in G. b) When f_{0L} and f_{2G} are sufficiently small and $z_G \gg z_L$, we have $d_{GG}<d_{LG}<d_{GL}<d_{LL}$.

Proof. See Appendix.

Discussion and alternative explanations. The model captures the idea that regional differences in the type-distribution and psychic costs of unemployment drive mobility and unemployment duration patterns. Our empirical analysis below documents that workers born in L are indeed more mobile and that duration patterns by region of birth and search are as in part b) of Result 2. Result 2 states that regional differences along these two dimensions suffice to reproduce mobility and unemployment duration patterns observed in the data.[12]

Clearly, observed outcomes may be due to regional differences in other dimensions and unrelated to regional differences in work attitudes. There are two obvious competing explanations: (i) a weaker labor market in region L and (ii) employer-discrimination against workers born in L. Regional labor market differences are captured by $w_G>w_L$ and/or $\lambda_G>\lambda_L$. In the model, differences in w and/or λ lead to qualitatively similar predictions as $z_G>z_L$. A model based on regional differences in labor market conditions can also capture some of the patterns observed in the data, although we always get $d_{GL}>d_{LL}$.[13] With employer discrimination against workers born in L, it is difficult to rationalize $d_{GL}>d_{LG}$. Moreover, a model based on an identical distribution of types is unable to generate asymmetric mobility patterns by region of birth.

In sum, our simple model can generate mobility and unemployment duration patterns as observed in the data, while this is more difficult with alternative explanations based on identical type-distributions. Clearly, this does not mean that these alternative explanations are not relevant empirically. Below we explore in more detail the relevance of these alternative mechanisms to rationalize the differences in unemployment durations across regions (of birth and/or

[12]Notice that the psychic cost of unemployment may actually derive from the γ-distribution within a region, as the psychic cost z may be the endogenous outcome of social interaction: when there are more high-γ types around you, you experience a lower psychic cost z, which induces you to search less hard. Hence the primitives of the model boil down to differences in the distribution of types by cultural background (= region of birth). In this sense, our model does not rely on more exogenous parameters than other models to describe cultural differences.

[13]In steady state region L attracts a fraction ϕ of type-2, both of workers born in L and born in G; all type-1 workers from both regions; and all type-0 worker born in region L but no type-0 workers born in region G. The relative size of type-2 and type-1 is the same among workers born in L and G, there are also type 0 workers in the LL pool but not in the GL pool. It follows that $d_{GL}>d_{LL}$.

residence).

6 Empirical Strategy

This section discusses our empirical strategy. We start with a simple reduced-form equation to explain unemployment durations. (Similarly, for regional mobility choices). Let y_{icg} denote the number of weeks job seeker i remains unemployed in municipality c which belongs to society g where g takes on two values, L and G.

$$y_{icg} = \tau_i'\alpha + z_g'\beta + x_i'\gamma + w_c'\delta + \theta_i + \psi_c + \nu_{icg} \tag{2}$$

The vector τ refers to culturally shaped determinants of y (related to cost and efficiency of job search, the number of weak ties, etc.) that vary at the individual level. The vector z_g refers to culturally shaped determinants of y that vary at the level of the cultural group g. These factors include social norms, social sanctions, importance of work, etc. The vectors x_i and w_c refer to observable characteristics that influence the duration of unemployment that vary at the individual, or municipality level. The terms θ_i and ψ_c refer to unobserved determinants of y that vary at the individual or municipality level. Finally, ν_{icg} is a classical regression error term.

Our main objective is to assess whether α and/or β contain non-zero elements. Simply estimating equation (2) will not be helpful in this endeavor because elements of τ and z could be correlated with unobserved individual or group level heterogeneity. Controlling for θ_i in a panel setting is challenging since the duration of a spell at $t-1$ affects the likelihood of observing a spell at t. Controlling for ψ_c in a panel setting could potentially work but only for job seekers who move between municipalities.

We analyze the role of culture by contrasting unemployment durations (and mobility choices) at the *Roesti* border, to which we refer as the "Language Border Contrast" (LBC) in what follows. Let s_c be the driving distance in kilometers to get from municipality c to the border between language regions. We define distance to border to be zero for municipalities located exactly on the Latin speaking side of the language border (whose nearest neighboring municipality is German speaking). Distance is positive for any other municipality in Switzerland. To reflect both distance and language region, we code the distance measure negatively for communities in the German-speaking regions and positively for the Latin-speaking regions, so $s_c \geq 0$ identifies a municipality in the Latin speaking part and $s_c < 0$ is a municipality on the German speaking side of the language border.[14] Let $E_F(y)$ denote the limit of the expectation of y on the French side of the language border, i.e. $E_L(y) \equiv \lim_{\epsilon \to 0} E(Y|s_c = 0 + \epsilon)$, and $E_G(y) \equiv \lim_{\epsilon \to 0} E(Y|s_c = 0 - \epsilon)$

[14]For instance, Geneva – the Westernmost city – is located +129 km away from the barrier, St. Gallen, the largest city in the East is –132 km away from the border. Zurich is – 100 km away and Lausanne is +52 km away from the language barrier. The city of Fribourg (capital of the bilingual canton Fribourg) is located exactly on the language barrier. In the job seeker data, the average distance to the language border is 63.9 kilometers for job seekers in French or Italian or Romansh speaking areas, and 77.3 kilometers for job seekers who live in German speaking areas. Focusing on job seekers who live in bilingual cantons (Berne, Fribourg and Valais) reduces average distance to border to 25.4 kilometers on the French or Italian speaking side, and to 35.2 kilometers on the German speaking side.

denotes the corresponding expectation when approaching the language border from the German side. The border contrast in unemployment duration is

$$\begin{aligned} E_L[y_{icg}] - E_G[y_{icg}] &= [E_L(\tau_i) - E_G(\tau_i)]'\alpha + [z_L - z_G]'\beta \\ &+ [E_L(x_i) - E_G(x_i)]'\gamma + [E_L(w_c) - E_G(w_c)]'\delta \\ &+ E_L(\theta_i) - E_G(\theta_i) + E_L(\psi_c) - E_G(\psi_c) \end{aligned} \tag{3}$$

The first line of the LBC informs on the joint role of individual and group level components of culture if the language border is a cultural border, i.e. the distribution of τ_i and/or the elements in z_g differ across the two language regions. The second line shows that the contrast will also be driven by observable compositional differences (the x difference) or by group level observed factors (the w difference). The final line of the LBC shows the key identification challenge. Any unobserved individual or group level factor that varies across social groups at the border will confounded estimates of the importance of cultural factors (first line). In sum, the LBC will provide point identification if the cultural determinants τ and z are discontinuous at the border whereas the unobserved compositional differences θ_i and unobserved municipality level determinants ψ_c are continuous.

Note that the LBC is related, but not identical, to the spatial regression discontinuity design (S-RDD). The key difference between the LBC and an S-RDD is that distance to border can and will be manipulated by individuals. Indeed, the framework we discussed earlier predicts that job seekers will move to the region that maximizes their discounted future utility. This makes point identification of the cultural determinants of job search outcomes impossible. Nonetheless, the LBC can be used to approximate the order of magnitude of cultural determinants if unobserved composition and group level effects vary at a lower order of magnitude than cultural determinants. Moreover, the model places restrictions on the way that characteristics should differ at the language border. Based on the arguments put forth by the theoretical model, we expect job seekers on the Latin-side of the border to have more favorable characteristics than job seekers on the German-side of the border. Indeed, Table 3 shows that job seekers on the French side of the language border are better qualified and more easy to place than job seekers who live on the German side of the language border. This suggests that the raw LBC provides a lower bound on the role of purely cultural factors affecting unemployment.

The term in equation (3) can be measured in the context of the following regression, which resembles the spatial discontinuity regression (Lee and Lemieux (2010)). Let $L_c = 1$ if municipality c is located in the Swiss Latin region, and $L_c = 0$ if municipality c is located in the Swiss German region. Consider the following linear regression

$$y_{icg} = \pi_0 + \pi_1 L_c + \pi_2 S_c + \pi_3 L_c S_c + \tilde{\nu}_{ic} \tag{4}$$

where the terms in S_c and $L_c S_c$ capture a two sided linear trend between unemployment duration

and distance to language border. The parameter estimate for π_1 is a consistent estimate of $[E_+(\tau_i)-E_-(\tau_i)]'\alpha+[z_F-z_G]'\beta$, the key cultural component of (3), provided that the specification captures differences in unemployment duration across regions appropriately. This is a restrictive assumption as our discussion in section 4 shows. We probe the sensitivity of our results by including observed determinants of unemployment duration in our regressions below.

7 Does culture matter for unemployment?

This section presents the main results of the econometric analysis. We start by estimating the LBC in unemployment durations. We then test the additional prediction that job mobility is systematically affected by cultural background. The section closes with a discussion of two important competing explanations: language skills and discrimination.

7.1 The language-border contrast for unemployment durations

Table 4 presents estimates of the unemployment duration gap at the language border based on equation (4). The dependent variable is log unemployment duration.[15] All regressions in Table 4 focus on job seekers living no farther than 50 kilometers from the language border. Regressions control for canton (=state) dummies, for inflow year and quarter, and a set of dummies for large cities. Introducing canton dummies is of particular importance in the present context because cantonal borders are also institutional borders and because cantons might differ in terms of labor market conditions. Moreover, controlling for large urban centers is important because they may drive the distance-to-border effects in the regressions. Standard errors account for clustering at the level of each municipality.[16]

Column (1) of Table 4 provides a first estimate for the LBC in unemployment durations. Estimates indicate that unemployment durations are, on average, 0.183 log points longer on the Latin-speaking side of the language border. This estimate is both quantitatively important and statistically highly significant. Column (2) adds individual characteristics to the regression. Controlling for these characteristics, the difference in unemployment durations increases to .226 log points. The remaining two columns of Table 4 introduce additional controls. Column (3) of Table 4 controls for municipality characteristics. Although most of these variables (in particular, age structure, education levels, and municipality size) have a statistically significant impact on unemployment durations, introducing these additional controls does not change the magnitude of the estimated LBC. The point estimate decreases slightly to .202.

Column (4) in Table 4 checks for labor demand conditions within cantons by introducing detailed municipality indicators to capture local differences in labor demand.[17] These indica-

[15] Right censored spells are kept in the sample but note that only 5.2 % of all spells are right censored. Moreover, Table 8 presents estimates of the cumulative distribution of spells which are not affected by right censoring. Results in Table 8 are consistent with the main results in Table 4.

[16] Card and Lee (2008) argue that errors need to be clustered with respect to the running variable if the running variable is not measured on a continuous scale. Note that this type of clustering is not needed in our context since distance to border is measured on a continuous scale.

[17] See Table A.1 in the Appendix for descriptive statistics of labor demand.

Table 4: Culture and unemployment: LBC

Dependent variable: log unemployment duration

	(1)	(2)	(3)	(4) Baseline	(5)
Latin	0.183***	0.226***	0.202***	0.196***	0.174***
	(0.045)	(0.045)	(0.037)	(0.037)	(0.037)
Distance (100km)	-0.104	-0.190**	-0.115	-0.087	-0.067
	(0.081)	(0.086)	(0.080)	(0.078)	(0.068)
Distance · Latin	0.241*	0.328***	0.257**	0.222*	0.136
	(0.124)	(0.126)	(0.117)	(0.115)	(0.102)
Constant	4.454***	2.644***	2.252***	2.267***	2.389***
	(0.0532)	(0.140)	(0.309)	(0.317)	(0.321)
Fixed effects	Yes	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes	Yes
Municipality characteristics	No	No	Yes	Yes	Yes
Labor demand	No	No	No	Yes	Yes
Labor market policy	No	No	No	No	Yes
Observations	60,713	60,713	60,713	60,713	60,713
R-squared	0.044	0.096	0.101	0.101	0.102

Notes: Standard errors robust and clustered on municipality level. *** p<0.01, ** p<0.05, * p<0.1. Latin = majority in municipality speaks French or Italian. Distance = distance to language border (in 100 kilometers road distance.) Latin language border municipalities have distance = 0km. All regressions are limited to municipalities within 50km from the language border. Fixed effects include canton (state) and year and quarter FE, as well as FE for large cities. Individual controls include skills, sector of last job, employment prospects assessed by the caseworker, previous earnings, family background, willingness to move to another region. Municipality characteristics include municipality education levels, demographic structure, municipality size, agglomeration. Labor demand includes the number of available jobs in the munipality in the year 2001, the increase in the number of jobs and firms between 1998-2001, number of vacancies between January and June 2000 per employed resident. Labor market policy includes the probability to get assigned to each of the following measures: sanctions, training programs, employment programs, subsidized employment. **Source:** Data from Unemployment Register 1998-2003, Swiss Census 2000, Federal Statistical Office (FSO), CH-2010 Neuchâtel. Distances from search.ch.

tors control for labor demand conditions in addition to persistent differences in labor market conditions across cantons (recall that all regressions control for cantonal dummies). Introducing these municipality indicators has no effect on the estimated LBC in unemployment durations. It appears that cantonal dummies capture differences in labor market conditions well. Our baseline estimate indicates that unemployment duration lasts for .196 log points longer on the Swiss Latin side of the border than would be expected from the Swiss German side. Evaluated at the sample mean unemployment duration of 31 weeks, this translates into an effect of 7 additional weeks of unemployment ($= 31 \times (exp(.196) - 1)$).

Column (5) in Table 4 additionally controls for measures of active labor market policy. Information on the number of days in sanctions, training programs, employment programs, and subsidized employment is aggregated on the municipal level and divided by the aggregated number of days in unemployment. This yields a measure for the probability of being exposed to one of these active labor market policy measures. Remember that active labor market policy

is determined on the local level and thus varies across language regions (see Table 5 above). However, it turns out that differences in active labor market policies do not have a major impact on the estimated difference in unemployment durations at the language border.

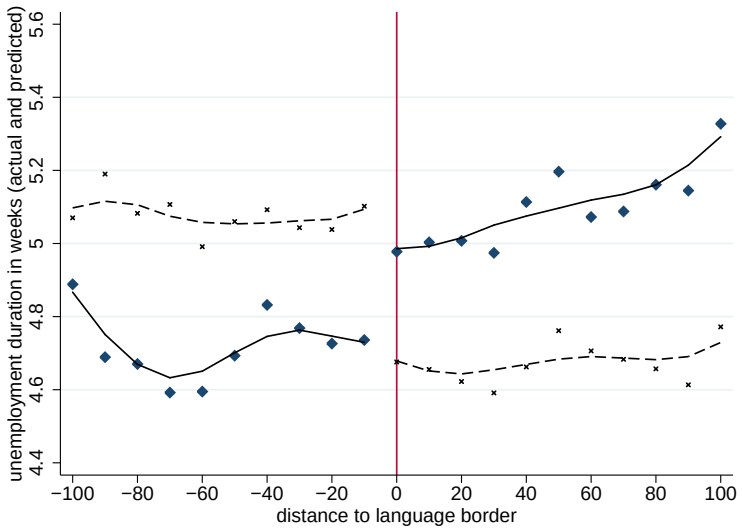
In sum, Table 4 shows that the LBC in unemployment durations is not particularly sensitive to adding controls. In section 4.3 we have seen that, among individuals living close to the language border, the imbalances in characteristics across language regions are considerably reduced. Nevertheless, a number of background characteristics remain unbalanced in ways that favor job seekers on the Latin-speaking side. For instance, Latin-speaking job seekers are slightly better qualified, easier to place, and more mobile. To shed further light on this issue we regress individual, municipality, and labor demand on log unemployment durations based on observations of individuals living in the German-speaking region. We then predict unemployment durations of individuals living in the Latin-speaking region (using parameters obtained from the German-region regression and characteristics from the Latin-region sample) – and vice versa for the German-speaking region.[18] This allows assessing the overall contribution of imbalances in background characteristics to the language border unemployment differential.

Figure 7 shows average actual log unemployment duration (solid lines) as well as average predicted log unemployment duration (dashed lines) for both language regions. While there are some differences in terms of the composition of the job seeker pool at the language border, these differences are not very large. The top dashed line is substantially higher than the top solid line at the language border, suggesting that residents of German Swiss border towns have characteristics that would lead them to be unemployed longer than their neighbors on the Latin side of the language border. Conversely, the bottom solid line for Swiss Germans is a bit higher than the bottom dashed line. Taken together, this indicates that compositional differences in the unemployment pool disadvantage Swiss German job seekers compared to Swiss Latin job seekers. This explains why the LBC in unemployment durations is somewhat higher when background characteristics are controlled for. Provided that unobserved characteristics of job seekers follow the same pattern of imbalance as observed ones, our results identify a lower bound of the true LBC in unemployment durations.

Interestingly, this pattern of results is in line with the predictions of the theoretical framework. According to the above model, the average duration of unemployment in the Latin-speaking region (with a larger fraction of inefficient job searchers) is shorter with regional mobility than in the absence of regional mobility. A relatively large fraction of inefficient job seekers leave the Latin-speaking region, while the fraction of individuals that leave the German-speaking region is smaller. Once we condition on important proxies of job market chances in the empirical analysis, the differential gets indeed wider. This again implies that our estimates probably identify a lower

[18] Specifically, we discuss composition effects as follows. We first run regressions with separate parameters in each language region, i.e. $y_{ij} = x'_{ij}\beta_j + \epsilon_{ij}$ where $j \in \{G, L\}$. We then calculate expected duration of unemployment of Swiss German residents as predicted with the Swiss Latin parameters, i.e. $\bar{x}_G\hat{\beta}_L$, and expected duration of unemployment of Swiss Latin residents as predicted with Swiss German parameters, i.e. $\bar{x}_L\hat{\beta}_G$. Figure 7 reports these counterfactual predictions using dashed lines. Contrasting the dashed line on one side of the border with the corresponding solid line on the other side of the border informs on the extent of imbalance in terms of observed characteristics at the border.

Figure 7: Predicted and actual log unemployment duration



Notes: negative=German-speaking part; positive=French-/Italian-speaking part. Solid lines show actual log unemployment duration. Dashed lines show predicted unemployment duration using data from the German speaking part of Switzerland to predict duration in the Latin speaking part and vice versa (only data within 50km from the language border used for prediction). Linear prediction. Lines are locally weighted regressions (bandwidth = 0.8). **Source:** Unemployment Register 1998-2003 and Swiss Census 2000, Federal Statistical Office (FSO), Neuchâtel. Distances from search.ch.

bound on the effect of cultural background on unemployment durations.

In a next step, we assess the robustness of the estimated effect by looking at different segments of the language border (Table 5). Column 1 repeats the estimate of column 4 in Table 4 for ease of comparison. Results in columns 2 and 3 discuss sensitivity of the main result to functional form of the distance to language border trends. Column 2 limits the sample to job seekers living no farther than 25 km from the border. This can be understood as a local linear estimate of the unemployment border differential. Local linear estimates indicate that the difference in log duration is .162 log points. This estimate is slightly but insignificantly smaller than the baseline estimate. Row 3 presents estimates that add squared terms in distance adopting a polynomial approximation to the underlying distance to border function. Again, adding higher order terms allows assessing sensitivity to functional form. Estimates that are based on a two-sided quadratic estimate of distance to language border are very much in line with the baseline estimates. We conclude from evidence in columns 2 and 3 that sensitivity to functional form is not an issue.

Bilingual cantons are essential in the identification of the LBC. Column 4 in table 5 reports estimates that focus on job seekers who live in one of the three bilingual cantons: Berne, Fribourg, and Valais. Bilingual canton estimates are very much in line with baseline estimates. This suggests that mis-specification of the model outside the bilingual cantons is not an issue. Column 5 reports estimates based on the segment between the German and the Latin speaking parts of

Table 5: Language barrier effect in unemployment durations

	Dependent variable: log unemployment duration				
	(1) Baseline	(2)	(3)	(4) Bilingual cantons	(5) French-German border
	linear 50km	linear 25km	quadratic 50km	linear 50km	linear 50km
Latin	0.196***	0.162***	0.195***	0.211***	0.194***
	(0.037)	(0.048)	(0.037)	(0.046)	(0.037)
Distance (100km)	-0.087	0.225	-0.112	-0.136	-0.146*
	(0.078)	(0.268)	(0.095)	(0.102)	(0.081)
Distance · Latin	0.222*	0.350	0.418***	0.287*	0.254**
	(0.115)	(0.339)	(0.147)	(0.155)	(0.116)
Constant	2.267***	1.423**	2.202***	1.406***	2.331***
	(0.317)	(0.720)	(0.320)	(0.484)	(0.331)
Observations	60,713	22,996	60,713	27,258	55,935
Identifying observations	30,216	13,426	30,216	27,258	27,258
R-squared	0.101	0.105	0.101	0.104	0.102

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Latin = majority in community speaks French, Italian or Romansh. Distance = distance to language border (in 100 kilometers road distance). Squared Distance = regression includes a squared term in distance and an interaction term Latin · distance squared. Bilingual cantons = canton of Berne, Valais, Fribourg (German / French cantons). French (Italian) border: German speaking municipalities that have as nearest Latin neighbor a French (Italian) speaking municipality and French (Italian) speaking municipalities. Observations from column (5) and (6) do not add up to column (1) because of Romansh speaking municipalities and their nearest neighbours. All controls as in table 3. Identifying observations are within canton observations (cantons of BE, FR, VS, GR). **Source:** Data from Unemployment Register 1998-2003, Swiss Census 2000, Federal Statistical Office (FSO), CH-2010 Neuchâtel. Distances from search.ch.

Switzerland. Results indicate that the unemployment differential is on the order of .194 log points, i.e. very similar to the baseline estimate.[19]

7.2 Mobility

As emphasized above, unemployment differentials at the language border are partly the outcome of mobility of job seekers across language regions. This means that our empirical strategy is not identical to a spatial RDD. This provided the motivation for our theoretical framework. In this framework, job seekers from the region with the larger fraction of inefficient job-seekers will be more likely to move to the other region. This framework also yields predictions on unemployment duration patterns of movers and stayers, by region of birth (i.e. cultural background) which we can test empirically.

[19] We also contrast the Italian and German speaking parts of the country (results are not shown). For the Italian-German language border, the point estimate is somewhat larger than the baseline estimate, but not statistically significant. Notice, however, that the high standard error is due to the low within canton variance that can be used to identify the effect. Identification is based on a few communities with a majority of the Italian-speaking residents in the canton Graubünden.The only cantons where there are Italian-speaking communities are the canton Ticino and the canton Graubünden, located in the South and the South-East, respectively. The canton Ticino consists entirely of Italian speaking communities. In Graubünden, some communities are Italian, but the vast majority speaks Swiss German.

Table 6: Regional Mobility and Unemployment Duration

	(1) mover	(2) mover with controls	(3) log duration	(4) log duration with controls
Latin speaker	0.0634***	0.148***		
	(0.0212)	(0.0572)		
Latin stayer			0.257***	0.215***
			(0.0229)	(0.0268)
Moved Latin to German			0.107***	0.112***
			(0.0283)	(0.0326)
Moved German to Latin			0.296***	0.156***
			(0.0415)	(0.0401)
Constant	0.0247***	0.0265***	4.766***	4.766***
	(0.00366)	(0.00423)	(0.0132)	(0.00785)
Observations	60,713	60,713	60,713	60,713
R-squared	0.020	0.084	0.011	0.101
Mean dependent variable	0.0478	0.0478	4.860	4.860

Notes: Standard errors robust and clustered on municipality level. *** p<0.01, ** p<0.05, * p<0.1. Latin = majority in municipality speaks French or Italian. Distance = distance to language border (in 100 kilometers road distance.) Latin speaker = 1 if individual has French, Italian, or Romansh native language, and =0 otherwise. Latin stayer = 1 for Latin speaker who lives in Latin speaking region, and = 0 otherwise. Moved Latin to German = 1 for Latin speaker who lives in Latin region, and = 0 otherwise. Moved German to Latin = 1 for German speaker who lives in Latin region, and = 0 otherwise. Fixed effects include canton (state) and year and quarter FE, as well as FE for large cities. Controls include skills, sector of last job, employment prospects assessed by the caseworker, previous earnings, family background, willingness to move to another region, municipality education levels, demographic structure, municipality size, agglomeration, number of available jobs in the municipality in the year 2001, the increase in the number of jobs and firms between 1998-2001, number of vacancies between January and June 2000 per employed resident. **Source:** Data from Unemployment Register 1998-2003, Swiss Census 2000, Federal Statistical Office (FSO), CH-2010 Neuchatel. Distances from search.ch.

Table 6 reports results for mobility and duration conditional on moving. Columns (1) and (2) discuss regional mobility, a binary indicator that takes the value 1 if the individual lives in a region that does not speak his native language, and it takes the value 0 otherwise. Column (1) shows that Latin speakers are 6.3 percentage points more likely to move across the language border than German speakers. Column (2) adds all the control variables we use in our main analysis of unemployment duration and shows that actual mobility is 15 percentage points higher among Latin speakers compared to German speakers. This result is consistent with our theoretical framework.

Columns (3) and (4) provide results on average duration of unemployment by past mobility status. Job-seekers born and searching in the Latin region ("Latin stayers") have the longest unemployment durations, while job-seekers born and searching in the German-speaking region ("German stayers"), the reference group, have the shortest duration. Job-seekers born in the German-speaking but searching in the Latin-speaking region ("German movers") have somewhat shorter durations than job seekers born in the Latin-speaking region (both movers and stayers). Notice that the results in column (4) are consistent with Result 2 b) of our theoretical framework.

When there are (i) many inefficient (efficient) job seekers among individuals born in the Latin- (German-) speaking region, and (ii) higher region-specific costs of unemployment, the model predicts precisely the outcome observed in column (4) of Table 6.

7.3 Alternative Explanations

In this section, we consider the two key competing explanations to culture: language skills and discrimination.

7.3.1 Language: human capital or proxy for culture?

We first take a closer look at the question whether an individual's language just reflects an individual's human capital rather than cultural norms and values. Notice that, as long as the Latin language is as valuable in the Latin region as is the German language in the German region, an individual's own language per se should not generate any differences in labor market outcomes. However, it could still be that Latins are less proficient in the German language than are Germans in the relevant Latin language. This is potentially important in the present context, as the Latin effect is identified at the language border. Individuals living close to the border might face worse job opportunities if they do not speak the other language. The Latin gap could just reflect differences in human capital rather than differences in attitudes towards work and job search.

Column (1) of Table 7 measures language proficiency of *Roesti* border residents. Results indicate Latins are less proficient in German than vice versa. The percentage who knows the language spoken just across the border is 20 percentage points lower on the Latin side compared to the German side. This is a sizeable gap in language proficiency. To see whether this difference can account for the observed differences in unemployment durations, we split the sample according to language proficiency. The language border contrast is of the same magnitude, indepently of the language proficiency of the job seekers.

7.3.2 Discrimination versus search intensities

One could argue that the LBC in unemployment durations reflects discrimination by employers against Latin-speaking job seekers. To shed light on the importance of discrimination, we exploit information available in the AVAM database on how a new job was started: (i) whether the unemployed worker him found the job; or (ii) whether the caseworker at the local labor office mediated the new job.

We argue that studying how unemployed individuals find jobs is informative on discriminatory behavior by employers for the following reason: If unemployment differences arise because employers discriminate against Latins, this should show up in both exit channels equally. Firms are central both to jobs that job seekers locate themselves and to jobs that caseworkers at the employment office mediate. If employer discrimination is a first-order explanation, we should see lower exit rates, irrespective of whether workers located the job themselves or whether jobs

Table 7: Language skills and unemployment durations

Dependent variable:	(1) knows other language	(2) log unemployment duration	(3)
		know other language	don't know other language
Latin	-0.217***	0.278***	0.275***
	(0.0427)	(0.0468)	(0.0528)
Distance (100km)	0.817***	-0.0531	0.0127
	(0.0977)	(0.111)	(0.117)
Distance · Latin	-1.319***	0.445***	0.294
	(0.115)	(0.163)	(0.179)
Constant	-0.124	2.759***	4.238***
	(0.306)	(0.538)	(0.424)
Individual Controls	Yes	Yes	Yes
Municipality Controls	Yes	Yes	Yes
Observations	60,713	25,935	34,778
R-squared	0.088	0.100	0.093

Notes: Standard errors robust and clustered on municipality level. *** p<0.01, ** p<0.05, * p<0.1. Know other language means, know German if living in Latin-Swiss part, know French/Italian if living in German-Swiss part. Latin = majority in municipality speaks French, Italian or Romansh. Distance = distance to language border (in 100 kilometers road distance.) Latin language border municipalities have distance = 0km. Fixed effects include canton (state) and year and quarter FE, as well as FE for large cities. Other controls are individual characteristics, community characteristics, labor demand controls. **Source:** Data from Unemployment Register 1998-2003, Swiss Census 2000, Federal Statistical Office (FSO), CH-2010 Neuchatel. Distances from search.ch.

Table 8: Exit Channels: Linear Probability Model

	(1) All exits	(2) Self	(3) PES	(4) Other
1 month				
Latin	-0.0217**	-0.0244***	0.0052**	-0.0025
	(0.0085)	(0.0061)	(0.0025)	(0.0047)
	[0.0784]	[0.0463]	[0.0080]	[0.0241]
3 months				
Latin	-0.0534***	-0.0581***	0.0132**	-0.0085
	(0.0146)	(0.0118)	(0.0067)	(0.0080)
	[0.334]	[0.221]	[0.0424]	[0.0714]
6 months				
Latin	-0.0804***	-0.0911***	0.0307***	-0.0200**
	(0.013)	(0.0137)	(0.0104)	(0.0094)
	[0.589]	[0.365]	[0.0852]	[0.139]
12 months				
Latin	-0.0503***	-0.0889***	0.0475***	-0.0089
	(0.0101)	(0.0151)	(0.0129)	(0.0109)
	[0.785]	[0.446]	[0.123]	[0.217]
Observations	60,713	60,713	60,713	60,713

Notes: Standard errors robust and clustered on municipality level. *** p<0.01, ** p<0.05, * p<0.1. Share exiting in squared brackets. Exit rates estimated using a Linear Probability Model. Latin = majority in municipality speaks French, Italian or Romansh. Distance = distance to language border (in 100 kilometers road distance.) Latin language border municipalities have distance = 0km. Fixed effects include canton (state) and year and quarter FE, as well as FE for large cities. Other controls are individual characteristics, community characteristics, labor demand controls. **Source:** Data from Unemployment Register 1998-2003, Swiss Census 2000, Federal Statistical Office (FSO), CH-2010 Neuchatel. Distances from search.ch.

were mediated by the employment office. In contrast, job seekers' search effort is clearly central in locating jobs individually, but search effort is less crucial for jobs public employment offices mediate. These jobs are assigned by caseworkers, and job seekers who refuse to apply for such a job run into the risk of having their benefits withheld.

Table 8 presents the coefficients of the LBC in unemployment durations by exit channels at various durations of unemployment. More precisely, the table provides estimates of the cumulative distribution function of spell durations, i.e. simple linear probability models with the dependent variable indicating whether the unemployment spell lasted less than x months (where x=1,3,6,12), separately for each exit channel. Regressions include the full set of characteristics as in our preferred unemployment duration model (see Table 4, column 4).

Column 1 does not distinguish between exit channels, i.e. the coefficients report the LBC in the probability that the unemployment spell is shorter than x months. (Numbers in parenthesis below the coefficient are standard errors, and numbers in brackets give the mean of the dependent variable.) Consistent with our basic findings in Table 4, the coefficients indicate that the probability of leaving the unemployment register within 1 month is 2.17 percentage points lower in the Latin-speaking regions, and the gap widens to 8.04 percentage points within 6 months duration and stays at 5.03 percentage points after a duration of 12 months.

Columns 2-4 of Table 8 report the corresponding estimates from regressions that are run

separately for three exit states: jobs found on own-initiative (column 2); caseworker-mediated jobs (column 3); and other exits (column 4). The coefficients of column 2 indicate that job seekers on the Latin-speaking side are significantly less likely to find jobs on their own. The LBC to this exit state is even larger than the overall gap in column 1. In contrast, unemployed individuals from the Latin-speaking side are significantly more likely to take up a job mediated by the local PES (column 3). The LBC in other exits does not differ systematically and is mostly insignificant.

Taken together, the results of Table 8 show that observed unemployment differences are unlikely entirely driven by discrimination against Latin-speakers. In that case, the LBC should not differ strongly across exit channels, as employers should discriminate irrespective of the particular way individuals found jobs. The evidence speaks more in favor of better access to search channels (= higher efficiency in job search) and/or higher motivation by unemployed individuals on the German-speaking of the language border.

7.4 Is culture quantitatively important?

Our empirical analysis has documented a robust difference in unemployment durations at the border between Latin-speaking and German-speaking regions. Job search lasts about 7 weeks or about 22 percent longer on the Latin side of the language border than on the German side of the border. How does this gap compare to the effects of unemployment insurance on unemployment? Katz and Meyer (1990) find that increasing the potential duration of unemployment benefits by 10 weeks increases unemployment duration by 1 week. Card and Levine (2000) find somewhat smaller effects for an exogenous albeit temporary expansion of potential benefit duration in New Jersey. Turning to the benefit level, Røed and Zhang (2003) find that the elasticity of duration with respect to benefits is about 1. This is an upper bound compared to other studies in the literature (Atkinson and Micklewright, 1991). We conclude that the Latin gap in unemployment is equivalent to an increase in benefit duration of somewhat more than one year, or an increase in the benefit level of at least 22 %. These calculations show that culture can be a substantial element of unemployment.

8 Conclusions

This paper studies the extent to which cultural differences in attitudes towards work and unemployment may help to explain regional unemployment differentials. We focus on the language border in Switzerland, the *Roesti* border, where strikingly large differences in unemployment durations are observed. We argue (and provide evidence supporting the view) that the language border separates two social groups with strikingly different attitudes towards work and unemployment. We find that attitudes towards work are important to explain the gap in unemployment durations. Crossing the language border from the German- to the Latin-speaking side leads to an increase in the average duration of unemployment that is of a similar order of magnitude as the one that is to expected form a drastic increase in the generosity of unemployment insurance.

We examine other candidate explanations for the observed unemployment gap and conclude that language-border discontinuities in variables related to these explanations (labor market conditions, composition of the unemployment pool, etc.) are too small to account for the observed gap in unemployment durations. This leads us to conclude that longer job search durations for Latin speakers are probably due to culture rather than markets or institutions.

We conclude that culture can be as important as sizeable changes in the incentives via unemployment insurance. The culture-driven gap in unemployment duration is equivalent to an increase in the potential benefit duration of 60 to 70 weeks, or an increase in the benefit level by 22 percentage points.

Our analysis also highlights that economic and institutional forces do not automatically lead to cultural convergence. The cultural rift we study is solely created by the fact that the two social groups speak different languages facing very similar institutions and economic opportunities. This finding is important for scholars who study convergence among heterogeneous federations such as the European Union or the United States. Culture can be an important impediment to reaching similar views and attitudes regarding the importance of work.

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A Proofs

Proof of Result 1

Part a) We first consider a worker not willing to move to the other region. For such a worker, we have $E_{-j} - f \leq U_j$. Using the equations for the value of unemployment and employment, we calculate $E_j - U_j = (w - b + z_j + \gamma s_j^2/2)/(r + \delta + s_j \lambda \pi)$. Combining this with the first order condition $\gamma s_j = \lambda \pi (E_j - U_j)$ yields a quadratic equation in s_j. The solution is

$$s_j(\gamma) = -\frac{r+\delta}{\lambda\pi} + \sqrt{\left(\frac{r+\delta}{\lambda\pi}\right)^2 + \frac{2\,(w-b+z_j)}{\gamma}},$$

from which Results 1a) directly follows.

Now consider a workers who is willing to move. For such a worker, $E_{-j} - f > U_j$ and $W_j - U_j = \pi E_j + (1-\pi)\,(E_{-j} - f) - U_j$. Plugging the $\gamma s_j = \lambda(W_j - U_j)$ into the value equations for unemployment and unemployment we can write $U_j = (b + \gamma s_j^2/2 - z_j)/r$, and $E_j = w/\,(r+\delta) + (b + \gamma s_j^2/2 - z_j)\delta/(r(r+\delta))$. We substitute these expression into the first order condition $\gamma s_j = \lambda(\pi E_j + (1-\pi)\,(E_{-j} - f) - U_j)$, which yields after some transformations

$$\gamma s_j = \lambda \left[\frac{w + \frac{\delta}{r} b}{r+\delta} + \pi \left(\frac{\delta}{r+\delta} \frac{\gamma \frac{s_j^2}{2} - z_j}{r} \right) + (1-\pi) \left(\frac{\delta}{r+\delta} \frac{\gamma \frac{s_{-j}^2}{2} - z_{-j}}{r} - f \right) - \lambda \left(\frac{b + \gamma \frac{s_j^2}{2} - z_j}{r} \right) \right].$$

This yields a system of two quadratic equations in s_j and s_{-j}. Taking derivatives w.r.t. γ, z_j and z_{-j}, it is straightforward (though somewhat tedious) to show that

$$\frac{\partial s_j}{\partial \gamma} < 0, \quad \frac{\partial s_j}{\partial z_j} > 0, \quad \text{and} \quad \frac{\partial s_j}{\partial z_{-j}} < 0.$$

(Detailed derivations are available on request). This completes part a) of the proof.

Part b) We first need to show that $\gamma s_j(\gamma)$ increases in γ (i.e. the gains when moving from unemployment to employment are higher for high-γ workers. For workers not willing to move, we see this immediately from applying the above equation for $s_j(\gamma)$. For workers not willing to move, the above system can be rewritten as a system of two quadratic equations in $Q(\gamma) \equiv \gamma s_j(\gamma)$. Taking derivatives of the system with respect to γ, shows that $\gamma s_j(\gamma)$ increases in γ also for movers.

Denote by $\hat{\gamma}_j$ the type who is indifferent – when offered a job in region $-j$ – between staying unemployed in region j and taking up employment in region $-j$. We consider the case $z_L < z_G$ which means so that unemployment is less painful in region L. This implies that $W_L - U_L > W_G - U_G$, i.e. the gain of moving to the other region is smaller for a searcher in L than for a searcher in G. Since $W_j - U_j$ increases in γ, the critical type $\hat{\gamma}_L > \hat{\gamma}_G$ who is indifferent between moving and staying. This means that – when offered a job from the other region – a searcher

with $\gamma \in (\hat{\gamma}_L, \hat{\gamma}_G)$ is willing to move when he is currently in region G, but will decline the offer when currently being in region L. $\hat{\gamma}_L$ and $\hat{\gamma}_G$ solve

$$s_L(\hat{\gamma}_L) \cdot \hat{\gamma}_L = \frac{r + 2(1-\pi)\delta}{r + (2-\pi)\delta} \cdot \lambda \pi x + \frac{\pi\delta}{r + (2-\pi)\delta} \cdot s_G(\hat{\gamma}_L) \cdot \hat{\gamma}_L$$

$$s_G(\hat{\gamma}_G) \cdot \hat{\gamma}_G = \frac{r}{r+\delta} \lambda \pi x + \frac{\delta}{r+\delta} \cdot s_L(\hat{\gamma}_G) \cdot \hat{\gamma}_G.$$

Notice the asymmetry in the solutions for $\hat{\gamma}_L$ and $\hat{\gamma}_G$. Type $\hat{\gamma}_L$ is indifferent when searching in L but willlling to move when searching in G. Type $\hat{\gamma}_G$ is indifferent when searching in G but *not* willlling to move when searching in L. In the special case when $z_G = z_L = z^*$, we have $\hat{\gamma}_G = \hat{\gamma}_L = \hat{\gamma}^*$, which solves $s(\gamma^*) \cdot \gamma^* = \lambda \pi x$.

Regional distribution of type-2 workers

Denote by u_{ij} the steady-state unemployment rate of type i in region j. The unemployment inflow of a type-i workers in region j is $\delta(1 - u_{ij})$, while the outflow is $\lambda \pi s_{0j} u_{0j}$ for type-0 workers and $\lambda s_{1j} u_{1j}$ for type-1 workers. In steady state, where in- and outflow are equally large, the unemployment rate is $u_{0j} = \delta/(\delta + \pi\lambda s_{0j})$ for type-0 workers and $u_{1j} = \delta/(\delta + \lambda s_{1j})$ for type-1 workers. In steady state, only type-2 workers are mobile. Type-0 worker remain in their region of birth, while type-1 workers end up in region L. Denoting by ϕ the steady-state share of type-2 workers eventually ending up in region L, there are $u_{2L}\phi\,[f_{2L} + f_{2G}]$ and $u_{2G}(1-\phi)\,[f_{2L} + f_{2G}]$ unemployed workers of type 2 in region L and G, respectively. The corresponding mobility rates depend on job offer arrivals from the other region, which are $\lambda s_{1L}(1-\pi)$ and $\lambda s_{1G}(1-\pi)$, respectively. Setting regional in- and outflows equal, we get $\frac{1-\phi}{\phi} = \frac{s_{1L}(\delta + s_{1G}\lambda)}{s_{1G}(\delta + s_{1L}\lambda)}$. From Result 1a), we have $s_{1L} < s_{1G}$. It follows that $\phi > 1/2$. This means the majority of mobile workers lives in region L.

Proof of Result 2

Part a) Follows from the result that, in steady state, only type 2 workers move. By assumption, we have $f_{2L} > f_{2G}$ which establishes the claim.

Part b) Note first that the expected duration of unemployment is $(\pi\lambda s)^{-1}$ for stayers and $(\lambda s)^{-1}$ for movers. We calculate $d_{jj'}$ as the weighted average of expected durations of the various types (with the fraction of types in the unemployment pool of the respective jj' group as weights). This yields average unemployment durations

$$d_{LL} = \eta^0_{LL} \cdot \frac{1}{\lambda \pi s_{0L}} + \eta^1_{LL} \cdot \frac{1}{\lambda \pi s_{1L}} + \eta^2_{LL} \cdot \frac{1}{\lambda s_{2L}}$$

$$d_{LG} = \frac{1}{\lambda s_{2G}}$$

$$d_{GG} = \eta^0_{GG} \cdot \frac{1}{\lambda \pi s_{0G}} + \eta^2_{GG} \cdot \frac{1}{\lambda s_{2G}}$$

$$d_{GL} = \eta^1_{GL} \cdot \frac{1}{\lambda \pi s_{1L}} + \eta^2_{GL} \cdot \frac{1}{\lambda s_{2L}}$$

where $\eta^i_{jj'}$ denotes the relevant weights. (For instance, η^1_{LG} is the share of type-1 workers among unemployed worker speaking language G and searching in region L; and so on). The weights are given by:

- $\eta^0_{GG} = \frac{f_{0G}u_{0G}}{f_{0G}u_{0G}+(1-\phi)f_{2G}u_{2G}}$, $\eta^1_{GG} = 0$, and $\eta^2_{GG} = \frac{(1-\phi)f_{2G}u_{2G}}{f_{0G}u_{0G}+(1-\phi)f_{2G}u_{2G}}$;
- $\eta^0_{GL} = 0$, $\eta^1_{GL} = \frac{f_{1G}u_{1L}}{f_{1G}u_{1L}+\phi f_{2G}u_{2L}}$, and $\eta^2_{GL} = \frac{\phi f_{2G}u_{2L}}{f_{1G}u_{1L}+\phi f_{2G}u_{2L}}$;
- $\eta^0_{LL} = \frac{f_{0L}u_{0L}}{f_{0L}u_{0L}+f_{1L}u_{1L}+\phi f_{2L}u_{2L}}$, $\eta^1_{LL} = \frac{f_{1L}u_{1L}}{f_{0L}u_{0L}+f_{1L}u_{1L}+\phi f_{2L}u_{2L}}$, and $\eta^2_{LL} = \frac{\phi f_{2L}u_{2L}}{f_{0L}u_{0L}+f_{1L}u_{1L}+\phi f_{2L}u_{2L}}$;
- $\eta^0_{LG} = \eta^1_{LG} = 0$ and $\eta^2_{LG} = 1$.

Under the assumptions on regional differences we have $s_{iG} > s_{iL}$. As $f_{2G} \to 0$, only type 0 is remaining in the GG pool, hence this group has the shortest possible duration. When $z_G \gg z_L$, type-2 workers in region G search harder than type-1 workers in region L, hence $d_{LG} < d_{jL}$ (with $j = L, G$). As $f_{0L} \to 0$ and $f_{2G} \to 0$, the GL pool consist of type-1 workers only, while the LL pool becomes a mixture of type-1 and type-2 workers, hence $d_{GL} < d_{LL}$. In sum, we get $d_{GG} < d_{LG} < d_{GL} < d_{LL}$.

B Supplementary Empirical Results

Table A.1 provides additional measures of labor demand.

Table A.1: Summary statistics: Labor demand

	(1) All	(2) Latin	(3) German	(4) Difference	(5) Difference at border All	(6) Difference at border Bilingual cantons
No. of work places/population ($\cdot\frac{1}{100}$)	8.07	8.39	7.90	.49***	.42	.37
Log no. of work places	6.05	5.41	6.39	-.97***	-.50	-.48
% new jobs	.05	.06	.04	.02***	.02	.01
% new firms	-.00	-.02	.00	-.02***	-.03**	-.03**
Vacancies per employed	.13	.15	.12	.03***	.01	-.01
Log median wage	3.51	3.45	3.54	-.08***	-.03	-.04

Notes: Latin = majority in community speaks French, Italian or Romansh. Difference at the border is estimated using linear specifications. Source: Data from Unemployment Register 1998-2003, Swiss Census 2000, Federal Statistical Office (FSO), CH-2010 Neuchatel. Distances from search.ch.