



BILINGUALISM AND IN CROSS-BORDER ENTREPRENEURSHIP



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Resumen

El emprendimiento transfronterizo es importante para el desarrollo económico regional. Aplicamos el enfoque basado en la teoría de la acomodación de la comunicación para examinar el papel que juega el bilingüismo en el emprendimiento transfronterizo en las regiones italianas transfronterizas de Trentino, Alto Adige y Tirol del Sur con Suiza, Francia y Austria. Nuestros resultados empíricos demuestran que las regiones donde el bilingüismo está bien extendido (Val d'Aosta y South Tyrol en Italia) se comportan de manera diferente a otras regiones italianas como Trentino en la creación de nuevas empresas. Los resultados pueden utilizarse para evaluar el efecto de la cultura y el idioma transfronterizos sobre el emprendimiento transfronterizo en otras regiones europeas.

Palabras clave: *Emprendimiento transfronterizo, bilingüismo, región multi-cultural.*

Clasificación JEL: *L26, R11, Z13*

Abstract

Cross border entrepreneurship is important for regional economic development. We apply the communication accommodation theory lens to examine the role that bilingualism plays in cross-border entrepreneurship in Trentino, Alto Adige and South Tyrol cross-border Italian regions with Switzerland, France and Austria. Our empirical results demonstrate that regions where bilingualism is well-spread – Val d'Aosta and South Tyrol in Italy behave differently from other Italian regions such as Trentino in startup growth. Results can be used to evaluate the effect of cross-border culture and language on cross-border entrepreneurship in other European regions.

Keywords: *Cross-border entrepreneurship, Bilingualism, Multi-cultural region.*

JEL Classifications: *L26, R11, Z13*

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1. Introduction

Very little is known about how cultural heterogeneity affects cross-border entrepreneurship (Churchill, 2016). The purpose of this study is to explain the mechanism of entrepreneurial opportunity recognition in heterogeneous contexts, as well as to further explore the relationship between bilingualism and regional entrepreneurship in a multicultural region. We use communication accommodation theory (CAT) with the idea that speakers adjust (or accommodate) their speech in order to create and maintain positive individual and social interactions as well as demonstrate mutual identities and interests.

The paper focuses on sub-regional unit of analysis (districts), contrasting the prevailing approach which studies the effectiveness of context at a regional and country levels (Szerb et al. 2013; Rothstein et al. 2013; Caiazza et al. 2020). The choice of our analysis follows the belief that regional and sub-regional differences matter more than national ones. (Charron et al. 2014).

This study makes two contributions to cross-border entrepreneurship literature. Firstly, using the communication theory perspective (Gudykunst and Kim 1992; Gallois et al. 2005; Soliz and Giles 2014) we explain how bilingualism can facilitate entrepreneurial activity with a focus on multicultural regions. Secondly, we use longitudinal data to empirically examine the effect of changes in regional bilingualism on new firm formation and density expanding Churchill's (2017) argument on the role of linguistic fractionalization on entrepreneurship in all three cross-border and multicultural regions in Italy.

2. The role of language in regional entrepreneurship

This study departs from the prior research on regional institutions and cross-border entrepreneurship (Fritsch and Wyrwich, 2014; Fritsch et al. 2019), that facilitates trust and knowledge sharing (Audretsch et al. 2010; Westlund et al. 2014; Chowdhury et al. 2015, 2019). It also builds on cultural and linguistic fractionalization (Churchill, 2017) literature as well as entrepreneurial cognition which helps to understand new ideas and introduce them to market (Qian et al. 2013; Audretsch and Belitski 2013). Several studies using evidence from other countries (Andersson and Koster 2010) in examining the role

language plays for entrepreneurial activity have been helpful. Our argument on the relationship between bilingualism as a form of linguistic fractionalization only applies to regions with substantial ethnic groups with a different mother tongue due to deep historical circumstances. Modern migration to certain places is not a focus of this study.

Thus, language acts as location-specific resources (Lawson, 1999) that enables individuals to adjust to community expectations, develop trust, collaborate and facilitate entrepreneurial cognition (Alvedalen and Boschma 2017). Frequent contacts between community members increase communication competences and decreases anxiety related to market uncertainty when new ideas are introduced (Gudykunst and Nishida, 1984). Theories of communication such as speech accommodation theory (SAT) and communication accommodation theory (CAT) can be helpful to better interpret the social physiological mechanism of entrepreneurial cognition (Shepard et al. 2001; Sachdev and Bourhis 2001).

Two CAT strategies are convergence and divergence, which are supported by the satellite theories developed to account for communication between various ethnic groups (Giles et al. 1987). While the divergence strategy is an expression of the desire to show the distinctiveness of a cultural background and self-identity, the convergence strategy is used to facilitate comprehension and collaboration (Street and Giles 1982).

Hypothesis: proficiency in multiple languages in a region increases cross-border entrepreneurship.

3. Data and methods

3.1. Data

We constructed a longitudinal dataset at the district level in South Tyrol during 2000-2015 drawing on Bosma and Sternberg (2014) and Fritsch et al. (2019), which include various variables that affect regional entrepreneurship. The firm level data on new business registered was taken from the Chamber of Commerce of South Tyrol and Istat (Italian Statistical Office). Our sample includes regional firms which come from a single annual business registry cohort.

Firstly, we covered all firms which are registered as new firms, firm exits including mergers and acquisitions as well as total businesses

registered. This made our analysis compatible with other regions where similar indicators are used. Secondly, the data provides extensive geographic coverage. Firms in our sample were in 116 municipalities and eight aggregated districts.

Once the business data was aggregated at a district level (*Bezirksgemeinschaften*), we matched various geographical, socio-economic and cultural characteristics of districts from the Office of National Statistics (Istat) and the Chamber of Commerce. This approach allowed us to bring language exams metrics to the sample of eight districts over 16 years. Table 1 provides summary statistics of variables used in this study, while Table 2 is a correlation matrix.

Dependent variables

We used two groups of dependent variables related to start-up rate and start-up density in a district (Audretsch et al. 2019). Start-up rate is measured as a share of newly registered businesses to total businesses registered. Start-up density is measured as a ratio of new registered businesses to total population multiplied by 1000. (Shane and Venkataraman 2000; Audretsch 2007). As a robustness check we calculated differences between start-up rates (density) in South Tyrolean districts and start-up rates (density) in Trentino (adjunct region mainly Italian speaking), Vale D'Aosta (French-Italian speaking region) and on average in Italy. These variables were used as dependent variables in our estimation.

Independent variables.

We use the share of residents who passed a bilingual/trilingual test (category A) and who lived in district i in year $t-1$. (Inglehart, 2004; Sachdev and Bourhis 2001).

Table 1: Descriptive statistics

Variable	Description	Mean	St. dev	Min	Max
Start-up rate	Share of newly registered firms in total firms, %	5.25	1.14	3.45	8.45
Start-up rate Val D'Aosta	Difference in start-up rate in South Tyrol with the start-up rate in Val D'Aosta, %. Val D'Aosta is another bilingual region of Italy	-0.96	1.14	-2.77	2.21
Start-up rate Italy	Difference in start-up rate in South Tyrol with the start-up rate in Italy, %	-1.46	1.15	-3.58	1.86
Start-up rate Trentino	Difference in start-up rate in South Tyrol with the start-up rate in Trentino, %. Trentino is mainly Italian speaking region of Italy, adjunct to South Tyrol	-1.14	1.26	-3.70	2.59
Start-up density	Number newly registered firms per 1000 inhabitants	5.98	1.02	3.85	8.71
Start-up density Val D'Aosta	Difference in start-up density in South Tyrol with the start-up density in Val D'Aosta, %.	-1.17	1.10	-3.15	2.56
Start-up density Italy	Difference in start-up density in South Tyrol with the start-up density in Italy, %.	-0.92	1.00	-2.62	2.34
Start-up density Trentino	Difference in start-up density in South Tyrol with the start-up density in Trentino, %.	0.01	1.13	-2.33	3.43
Business density	Business density per km (number of businesses registered divided by area and by 1000 km)	0.03	0.06	0.00	0.21
Bilingualism	Share of residents passing bilingual/trilingual test (at level A – highest proficiency)	56.28	14.11	26.00	90.10
Commuter-in	Share of employees who commute to the region, %	51.31	7.12	37.00	63.50
Human capital	Proportion of employees with university degree and above	0.20	0.07	0.11	0.44
Public	Share of institutions in public administration, defence; social security, education and teaching, health and social care, arts, sports, entertainment and other services to total number of firms (institutions) registered	4.45	1.29	2.47	6.20
Energy	Share of energy institutions to total number of firms (institutions) registered	0.01	0.01	0.00	0.05
Employment	Number of full-time employees, in logs	9.85	0.54	8.65	10.50

Variables used as instruments in the first stage regression to predict bilingualism intensity					
Unemployment	Unemployment rate, %	3.91	1.61	1.50	9.10
Commercial infrastructure	New non-residential and commercial buildings available in m ³	12.29	0.58	10.62	13.45
Vocational education	Proportion of residents subscribing for vocational education per 1000 residents	20.99	14.39	3.20	63.40
Population growth	Population growth, % to previous year	0.73	0.77	-4.48	2.64
Social Income	Social Income per capita per day (in Euro)	30.76	30.74	3.87	182.07

Source: Astat – South Tyrolean Office of Statistics : 2000-2015. Istat – Italian Office of National Statistics .Note: The number of observations is 128 during 2000-2015.

Table 2: Correlation table

	1	2	3	4	5	6	7	8
1. Start-up rate	1							
2. Start-up density	0.84*	1						
3. Business density	0.79*	0.77*	1					
4. Bilingualism	-0.05	0.16	-0.03	1				
5. Commuter-in	-0.17	-0.38*	-0.38*	-0.19*	1			
6. Human capital	0.77*	0.63*	0.72*	-0.13	-0.17*	1		
7. Public	-0.35*	-0.59*	-0.40*	-0.28*	0.53*	-0.50*	1	
8. Energy	0.14	-0.09	0.13	-0.32*	0.25*	0.34*	0.17*	1
9. Employment	0.36*	0.49*	0.47*	0.15	-0.33*	0.57*	-0.65*	-0.14

Source: Astat – South Tyrolean Office of Statistics : 2000-2015. Istat – Italian Office of National Statistics. Note: The number of observations is 128 during 2000-2015. Variables which represents the differences between start-ups rates of South Tyrol ad other regions were supressed to safe space.

Control variables.

First, business networks proxied by business density (Bosma and Sternberg 2014). Second, regional human capital, which is measured as the share of employees with a bachelor university degree and above (Acs et al. 2007). There is a strong relationship between human capital and new knowledge (Kenney and Patton 2005), as well as human capital and the competitiveness of new ventures (Audretsch et al. 2011). Third, availability of labor force in a region is measured as a total number of full-time employees, taken in logs (Frenken and Boschma, 2007). Fourth, bilingualism is mandatory for public sector in many multicultural regions. We measure the size of public sector by for a share of entities (institutions) in public administration, defence; social security, education and teaching, health and social care, arts, sports, entertainment and other services to total number of firms registered (Szerb et al. 2013; Audretsch et al. 2015). Fifth, share of energy firms and proportion of commuters in this region to measure the mobility and presence of large corporations (Andersson et al. 2018) were included. We also control for year fixed effects. We used one-year lag for all control variables.

3.2. Method

We use fixed effects (FE) estimator concentrates on differences that, over time, characterise a single district. Therefore the FE estimator is also referred to as the 'within' estimator. That is, it explains to what extent a given district's change in a variable of interest (bilingualism) affects entrepreneurship activity. It is the very idea of FE to rule out that observed and unobserved time-invariant factors drive the results. Random effects estimator was used as a robustness check which obtained by weighing the 'within' effect with the 'between' effect, which allows us to identify the factors that explain the differences driven by the districts in the panel. While the signs of the coefficients and confidence intervals between RE and FE estimation are similar, the significance of the coefficients is stronger when estimated with RE.

The FE estimation with year fixed effects is as follows:

$$S_{it} = \beta_0 + \beta_1 B_{it-1} + \beta_2 W_{it-1} + \lambda_t + \varepsilon_{it} \quad [1]$$

where S_{it} is a dependent variable of entrepreneurship in district i at time t . We deal with sixteen waves of data for each dependent and independent variable. B_{it-1} is a vector of our variables of interest: the share of residents who passed the test class A in the total number of

residents for district i in year $t-1$. w_{it-1} is a vector of control variables for district i in year $t-1$. Moreover, we include an additional vectors λ_t is a vector of time-fixed (district invariant effects) over each time period t across all districts. ε_{it} is the error term that consists of two components:

$$\varepsilon_{it} = \gamma_i + v_{it} \quad [2]$$

Where γ_i controls for other characteristics of districts which remain unobserved (e.g. health, digital and other physical and soft infrastructure), while v_{it} is the error term.

4. Results

Our hypotheses is supported. Bilingualism rate is an important predictor of start-up rate and density in 8 districts of South Tyrol, Italy. While the coefficients of bilingualism in Tables 3 and 4 (column 3) are positive and significant, we visualized the effect at each level of bilingualism intensity, demonstrating that the difference between start-up rates in South Tyrol and Val D'Aosta does not change when bilingualism level changes.

This is an interesting finding as results in Tables 3 and 4 (columns 3-5) clearly demonstrate that bilingualism enables to minimize the difference in start-up rates between South Tyrol and another adjacent Italian regions (e.g. Trentino), while the results are not statistically significant for another bilingual region of Italy. South Tyrol essentially has had lower rates of start-ups and density as majority of businesses were registered several generations ago, as South Tyrol represents *Mittelstand* culture, typical for this area with many family-owned businesses sustainable through generations of entrepreneurs (De Massis et al. 2018). Positive coefficients of bilingualism represent that the language may serve as a conduit for new knowledge and knowledge transfer mechanism (Owen-Smith and Powell, 2004). Results in Figure 1 are both interesting and unexpected. In particular the differences between the results for Trentino – the adjacent region to South Tyrol and Val d'Aosta another bilingual region. Change in bilingual population in a region positively affects entrepreneurial activity, however the share of bilingual population has to gain a “critical mass” of 50 percent and more to be able to reverse the difference between start-up density between the South Tyrol and Trentino (Bathelt and Cohendet, 2014).

Table 3: Start-up rates fixed effects estimation

Dependent variable	Start-up rate	Start-up rate	Start-up rate		
			deviation from Val D' Aosta	deviation from Italy average	deviation from Trentino
Specification	(1)	(2)	(3)	(4)	(5)
Business density	87.92*** (26.95)	85.73*** (27.00)	28.35 (27.72)	56.42** (25.54)	135.81*** (35.12)
Bilingualism	0.06* (0.00)	-0.01 (0.01)	0.01* (0.00)	0.01* (0.00)	0.12** (0.00)
Commuter-in	-0.02 (0.06)	-0.02 (0.06)	0.04 (0.06)	0.05 (0.06)	0.16** (0.08)
Human capital	-6.68* (3.63)	-6.72* (3.62)	2.92 (3.73)	2.85 (3.44)	-3.80 (4.73)
Public	0.32 (0.52)	0.082 (0.57)	0.45 (0.54)	0.60 (0.50)	-0.18 (0.68)
Energy	-14.81 (9.07)	-16.14* (9.14)	7.26 (9.33)	-2.95 (8.60)	-29.00** (11.82)
Employment	2.69* (1.56)	2.84* (1.56)	-0.03 (1.60)	1.77 (1.48)	4.98** (2.03)
Bilingualism x Public		0.003 (0.00)			
Constant	-23.58* (13.89)	-23.42* (13.88)	-6.60 (14.29)	-27.12** (13.17)	-62.03*** (18.11)
No obs.	128	128	128	128	128
r2 within	.14	.15	.14	.33	.43
r2 overall	.52	.53	.54	.62	.43
r2 between	.61	.61	.63	.72	.60
F stat	2.35	2.40	2.45	6.99	10.65
F Test u=0	20.77	18.44	12.13	11.63	8.91
Sigma u	6.66	6.41	1.15	3.16	12.84
Sigma e	.43	.43	.44	.41	.56
Rho	.99	.99	.86	.98	.99

Note: Method of estimation: Fixed (FE) panel data estimation. *= significant at 10% level, **=significant at 5% level, *** significant at 1% level.

Source: Astat – South Tyrolean Office of Statistics : 2000-2015. Istat – Italian Office of National Statistics

Table 4: Start-up density fixed effects estimation

Dependent variable	Start-up density	Start-up density	Start-up density		
			deviation from Val D' aosta	deviation from Italy average	deviation from Trentino
Specification	(1)	(2)	(3)	(4)	(5)
Business density	132.70*** (29.43)	130.10*** (29.46)	43.51 (32.47)	63.71** (29.18)	151.40*** (36.33)
Bilingualism	0.08** (0.00)	-0.01 (0.01)	0.01* (0.00)	0.01* (0.00)	0.14*** (0.00)
Commuter-in	-0.03 (0.07)	-0.04 (0.07)	0.07 (0.07)	0.07 (0.07)	0.15* (0.08)
Human capital	-15.60*** (3.96)	-15.65*** (3.95)	3.79 (4.37)	-1.90 (3.93)	-7.38 (4.89)
Public	-0.49 (0.57)	-0.78 (0.62)	-0.09 (0.63)	-0.16 (0.57)	-0.84 (0.71)
Energy	-10.91 (9.90)	-12.47 (9.97)	29.08*** (10.93)	16.06 (9.82)	-12.27 (12.23)
Employment	2.98* (1.70)	3.15* (1.70)	0.94 (1.88)	-0.17 (1.69)	4.86** (2.10)
Bilingualism x Public		0.003 (0.00)			
Constant	-20.72 (15.17)	-20.53 (15.14)	-16.92 (16.74)	-4.399 (15.04)	-56.26*** (18.73)
No obs.	128	128	128	128	128
r2 within	.31	.32	.49	.22	.42
r2 overall	.47	.47	.51	.46	.58
r2 between	.31	.32	.49	.22	.42
F stat	4.85	4.44	1.75	3.25	3.80
F Test u=0	7.69	7.37	2.89	3.28	11.13
Sigma u	6.49	5.99	13.65	3.98	10.21
Sigma e	.42	.41	.42	.41	.56
Rho	.93	.93	.97	.97	.97

Note: Method of estimation: Fixed (FE) panel data estimation. *= significant at 10% level, **=significant at 5% level, *** significant at 1% level. Source: Astat – South Tyrolean Office of Statistics : 2000-2015. Istat – Italian Office of National Statistics

5. Discussion and conclusion

Bilingualism in a multicultural region is the bread and butter of entrepreneurial activity and is likely to independently of other factors change regional entrepreneurship. This study extends what we know about the role of language, acculturation and maturity of people who practice different cultures and the likelihood of entrepreneurial activity in such regions (Andersson et al. 2017). We developed and tested a model that confirmed positive and significant impact of bilingualism on entrepreneurial activity in eight South Tyrolian regions. We also found that bilingualism, *ceteris paribus*, in South Tyrol enables to further shrink the difference in entrepreneurial activity between adjacent region of Italy (Trentino) and Italy overall. Bilingualism in South Tyrol was not associated with changes in entrepreneurial activity between South Tyrol and other bilingual region in North-Western Italy Val D'Aosta. The use of the relative measure as outcome (difference in start-up rates between South Tyrol and other regions within the country) enabled us to avoid that the results for South Tyrol pick up a general Italian trend.

This study extends the CAT in entrepreneurship by demonstrating the role of language in a multicultural region. It also expands regional studies literature on the advantages of learning other language for new idea generation and knowledge transfer. We used both firm-level and district data aggregated at during 2000-2015 to answer our research question.

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