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The irresistible rise of the craft brewing sector in Italy: can we explain it?

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Research question

How has beer come to such prominence in a country long known for its dedication to wine? What types of global and local changes have propelled and enabled this new phenomenon?

Exogenous factors

The craft brewing sector, in Italy, is a relatively small economic niche, but it can be seen as an example of broader processes of transformation that currently characterize much of food production and consumption within post-industrial societies, in terms of ongoing changes within mass consumption (Miller 2000, Scarpellini 2008) and production, especially small-scale (Blim 1990, 2012; Orazi, 2007 e 2008).

Productive leisure (De Solier, 2013) and craft consumers (Campbell, 2005): more consumers define themselves through what they produce in their leisure.

Economic integration and globalization have caused a convergence in alcoholic consumption patterns among countries.

Share of beer, wine and other spirits in total alcoholic consumption (1961, 2000, 2010; data in liters of pure alcohol)

Country	1961			2000			2010		
	Beer	Wine	Spirits	Beer	Wine	Spirits	Beer	Wine	Spirits
Germany	**57.14**	17.32	25.54	**55.46**	24.63	19.91	**53.61**	27.83	18.55
Czech Republic	**69.01**	19.05	11.94	**56.58**	13.84	29.58	**53.51**	20.48	26.00
United States	**47.05**	11.15	41.79	**56.27**	14.25	29.48	**50.00**	17.29	32.71
Spain	11.04	**65.39**	23.58	**37.68**	37.05	25.27	**49.74**	20.12	28.19
Belgium	**71.28**	15.06	13.67	**57.26**	35.62	7.03	**49.10**	36.33	14.38
Russia	14.61	17.14	**68.26**	21.44	6.92	**71.64**	37.59	11.42	**50.99**
United Kingdom	**80.95**	4.32	14.73	**49.26**	25.97	18.37	**36.94**	33.82	21.83
Italy	2.08	**89.60**	8.26	17.71	**76.24**	6.05	22.95	**65.57**	11.48
France	11.25	**74.41**	14.33	15.26	**63.02**	19.88	18.80	**56.41**	23.08
Poland	27.66	12.24	**60.10**	**49.29**	21.19	29.52	**55.14**	9.35	35.51
China	1.52	0.00	**98.48**	35.35	4.23	**60.42**	27.82	2.96	**69.22**

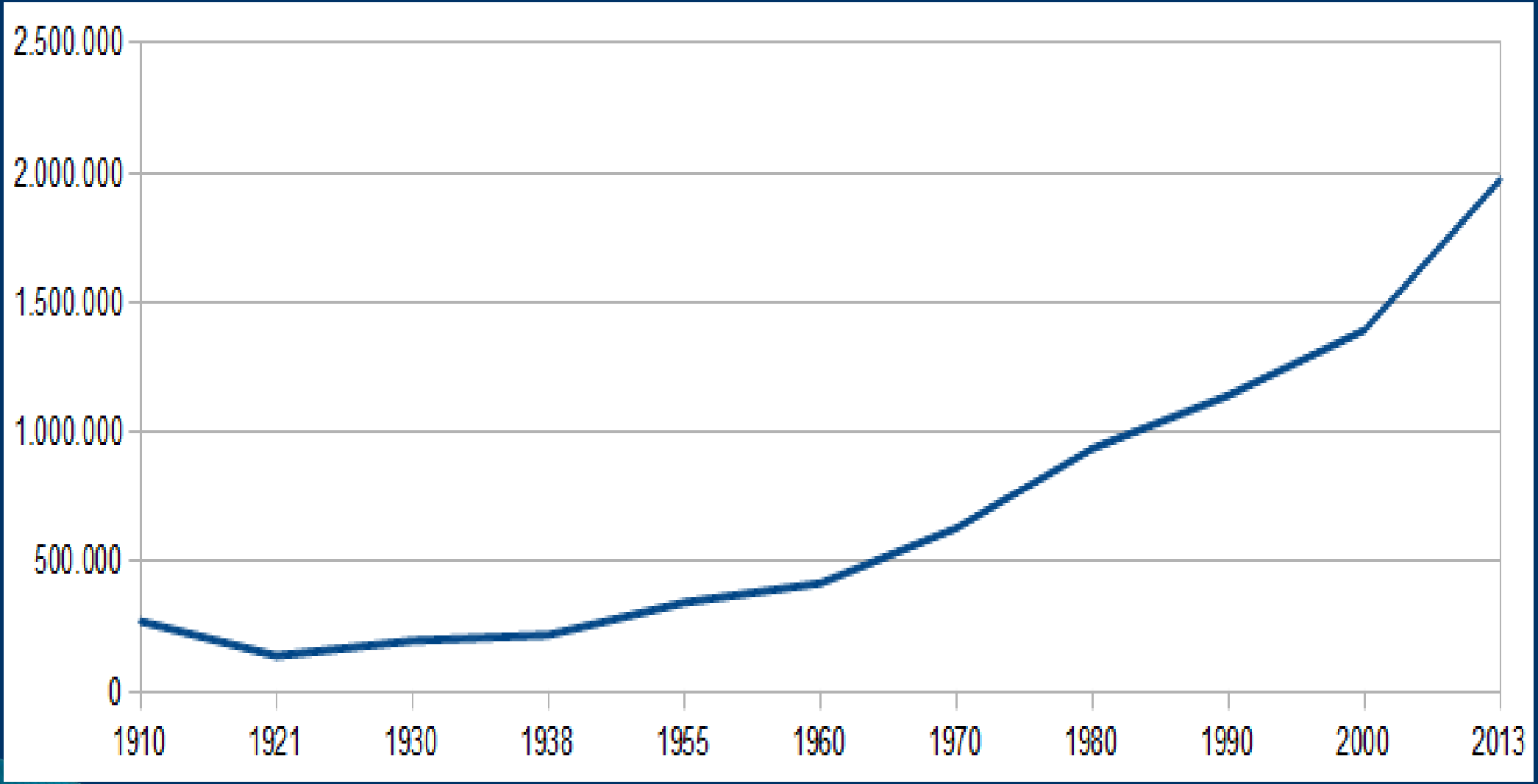
Source: Colen e Swinnen (2011), WHO Global Alcohol Database (2014).

The paradigm of the local development

In economic and sociological literatures it is well established the idea that the whole Italian industrialization process has been mostly based on the success of localized systems of small and medium enterprises in semi-peripheral areas rather than on fordist factories (Bagnasco, 1977; Becattini, 1979; Fuà e Zacchia, 1983; Blim, 1990; Trigilia, 2005; Orazi, 2007, 2008; Blim, 2012).

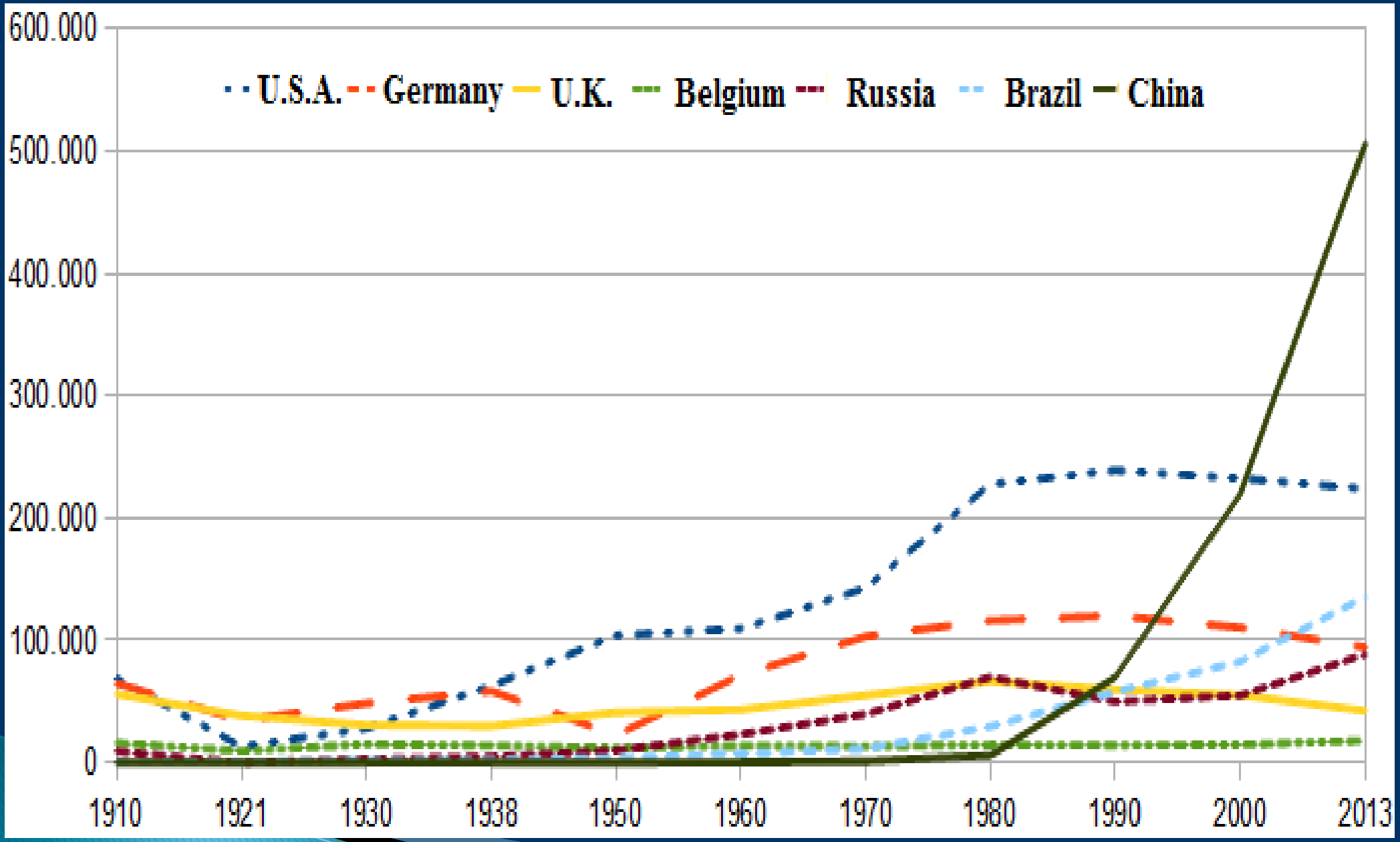
The "local", intended as socio-cultural and institutional *milieu*, may positively contribute to create value and economic development (Carboni, 2009).
Might this view explain the success of the craft brewing sector in Italy?

Evolution of the world's beer production
(1910-2013; 000 hl.)



Source: The Barth Report (various years).

Evolution of beer production, per country
(1910-2013; 000 hl.)



Source: The Barth Report (various years).

Global beer consumption

From 2003 on, China has become the largest beer–consuming and producing country.
Asia and South America count together around 50% of the global market (Kirin University, 2014).

In terms of VOLUME, world beer consumption is about 6 times higher than wine consumption and 8 times than spirits.

In terms of VALUE, world beer consumption is twice wine consumption and 50% more than spirits consumption.

Microbreweries in Italy

The Italian craft beer movement was (is) strongly influenced by the U.S. craft beer revolution, which started in the 1970s in California.

The **Legislative Decree** no. **504/1995** brought some simplifications and innovations into the complex bureaucratic procedures which the production of beer was subjected to.

1996: this year is considered the birth year of the italian craft brewing sector.

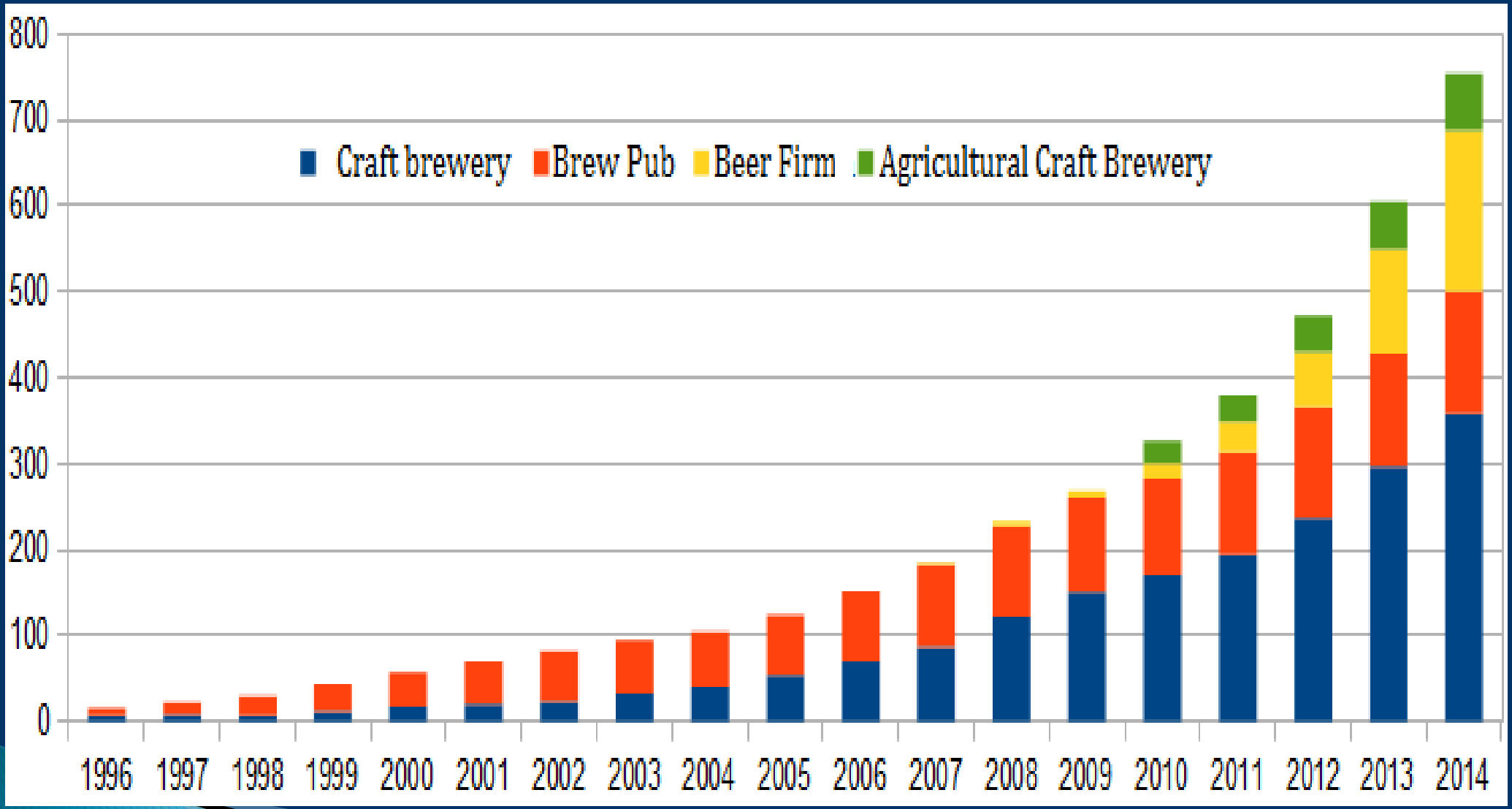
Up to **2003**, the number of microbreweries was lower than 100 firms, but in the next decade boom of new craft producers.

Microbreweries in Italy

In Italy, there is not a definition of craft beer.
It is forbidden to write “birra artigianale” on the label.

In the common sense, “birra artigianale” is an *all flag* beer, which means that it is produced with malted barley, hop, water and yeast, neither microfiltered nor pasteurized, contrary to what done for the vast majority of industrial beers (Garavaglia, 2010).

Number of active Microbreweries in Italy (1996-2014)



Source: www.microbirrifici.org


Schweiz
Suisse
Svizzera
Switzerland
Liechtenstein
Graz
Genève
Slovenija
Slovenia
Zagreb
Trieste
Grenoble
Hrvatska
Croatia
Bosna i
Hercegovi
Босна и
Херцегови
Bosnia an
Herzegovi
Zadar
Monaco
Aix-en-Provence
Split
Italia
Italy
Adriatic Sea
Dubrovnik
Corsica
Fiumicino
Matera
Lecce
Tyrrhenian Sea
Trapani
Marsala
Siracusa
Tunis
Microbirrifici
www.microbirrifici.org
Legenda:.
: Brewpub
: Birrificio artigianale
: Beer firm

Event History Analysis

- In social sciences, duration models (also known as event history analysis) supply information on the causes behind a transition between two states (called *event*) of the units observed within a specific time span.

- In order to perform an event history analysis, we need to know duration, that is for how long each unit is at-risk of an *event* during the observation period; and destination, whether an *event* happens to the unit during the period of observation (Knoke, 2011).

- Both the event "**Entry in the market**" and the event "**Exit from the market**" are separately analyzed, in order to understand if local factors positively or negatively contribute to the evolution of the Italian craft beer sector.

- **Data set**: information on all the italian microbreweries whose production is lower than 10.000 hl., which entered/exited in/from the market over the time span 1993-2014.
- **866 observations** (754 still active + 112 which exited from the market).

Event History Analysis

1) *Non parametric estimation*

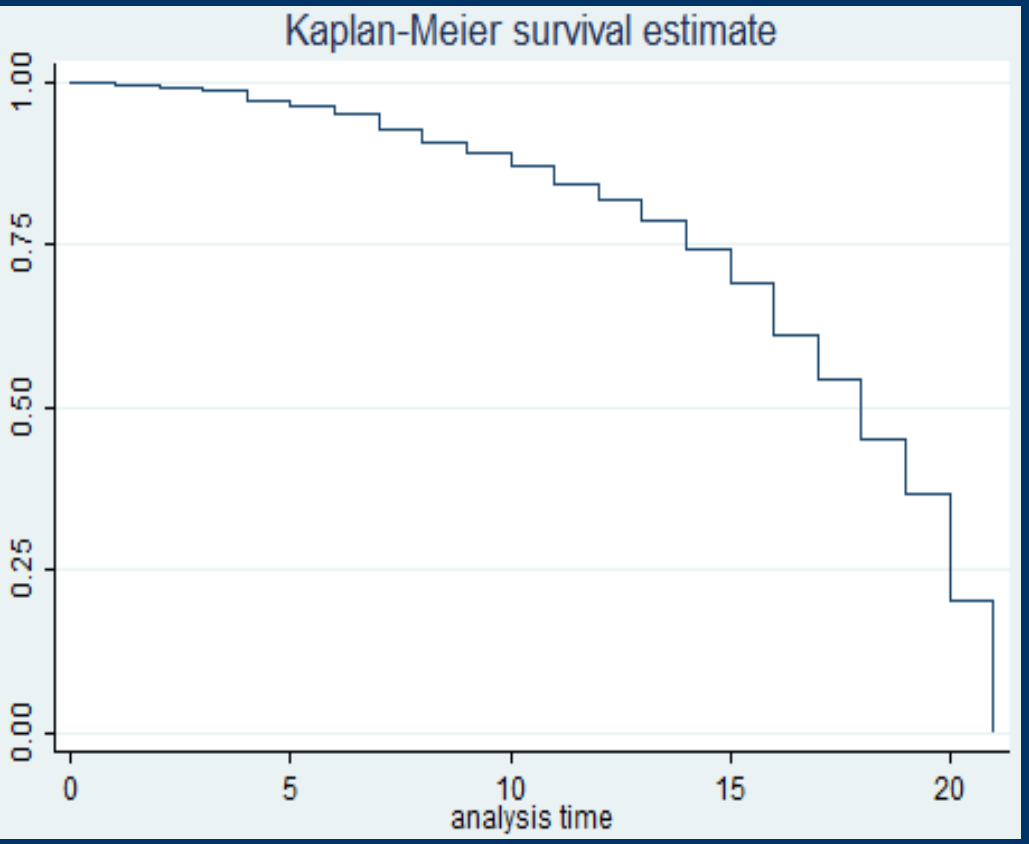
A useful estimator to understand the life cycle of the population under observation is the "Kaplan-Meier", in which neither assumptions on time-distribution nor influence of the covariates are considered: the result of this procedure is the estimation of a "survivor function", that is the probability of a microbrewery to remain in its initial state until time t (in other words, the probability that the event does not occur); the inverse of this function is the "Hazard rate": it is the propensity of an event to occur during the time span [*t, t+1*];

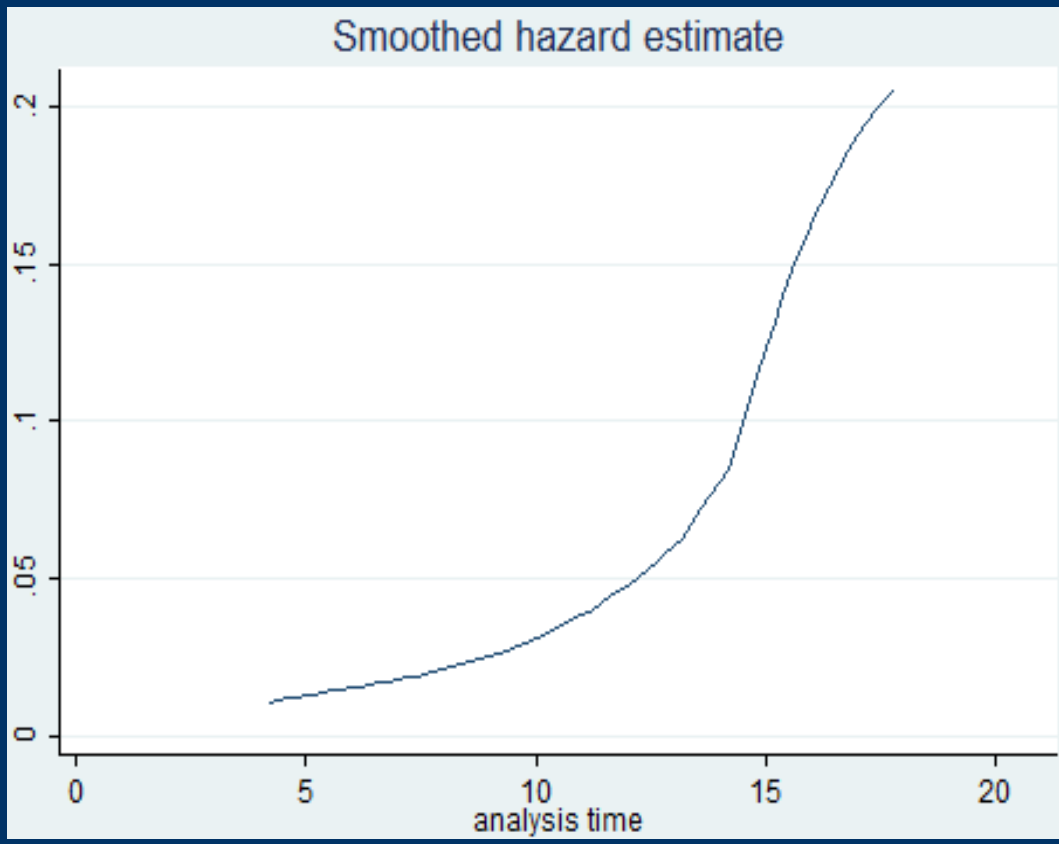
2) Comparison between *Semi–parametric* and *Parametric estimations*

In semi-parametric estimations, only the effect of the covariates is introduced in the model, but not the assumption on the time-distribution. The most popular version among the semi-parametric regression models (used in this research) is the Cox proportional hazards model; instead, if socio-economic theory – or previous empirical evidences – suggests a particular distribution of the "hazard function", the parametric models are preferred (Knoke, 2011), and they can be either Proportional Hazard (PH) or Accelerated Failure-Time (AFT) models.

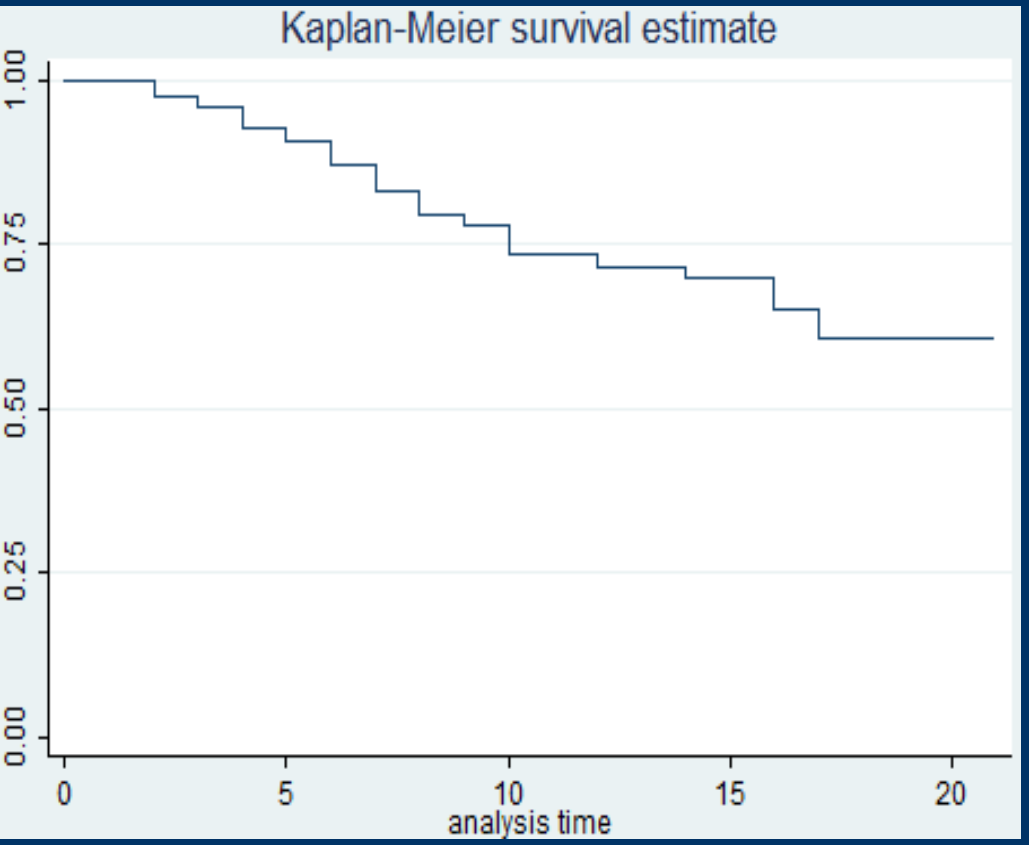
Independent Variables	Territorial disaggregation	Year	Source
1) % employees of the beverage industry on employees of the manufacturing industry	Province	2011	Industry and services census (Istat)
2) % employees of the food industry on employees of the manufacturing industry	Province	2011	Industry and services census (Istat)
3) Unemployment rate	Province	2011	Population and housing census (Istat)
4) % familiar and non familiar labour (permanent employees only) in agriculture on population	Municipality	2010	Agricultural census (Istat)
5) Number of microbreweries already active over the birth year of the new microbrewery	Province		www.microbirrifici.org
6) Region *dummies*	Region		www.microbirrifici.org
7) Altimetric zone *dummies* (1 = Interior mountain; 2 = Litoral mountain; 3 = Interior hill; 4 = Litoral hill; 5 = Plain)			Istat
8) Type of microbrewery *dummies* (craft brewery, brew pub, beer firm, agricultural craft brewery)			www.microbirrifici.org
9) Birth year, year of exit from the market (if exited), number of different beers produced, top/bottom fermenting process adopted			www.microbirrifici.org

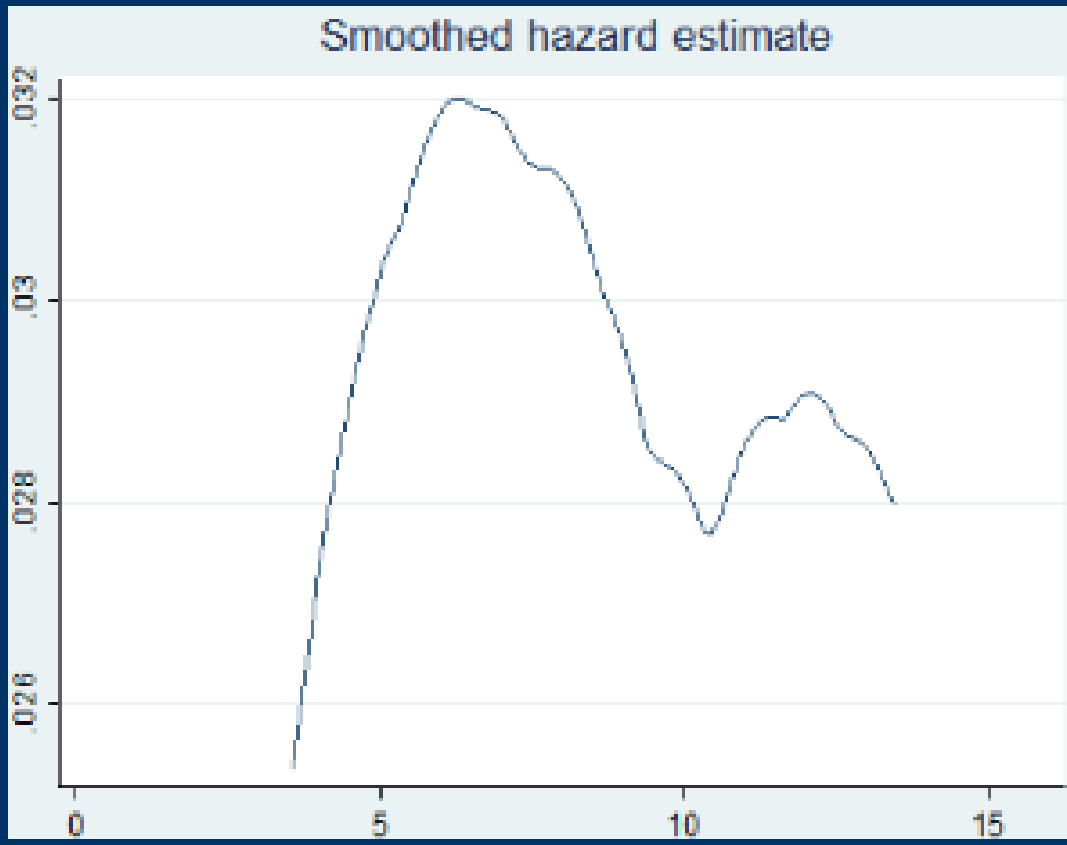
ENTRY ANALYSIS





EXIT ANALYSIS





ENTRY ANALYSIS	COX PH				GOMPERTZ			
Variable	**Hazard**	**Std. Err.**	**Sign**	**p-value**	**Hazard**	**Std. Err.**	**Sign**	**p-value**
Production Mix:								
type_beers_produced	1.044	.004	+	***	1.051	.005	+	***
bottom_fermentation	1.359	.114	+	***	1.366	.113	+	***
top_fermentation	.494	.058	–	***	.449	.052	–	***
craft_brewery	.568	.054	–	***	.511	.048	–	***
beer_firm	.437	.048	–	***	.407	.044	–	***
Local factors:								
unemployment_rate	.914	.025	–	***	.925	.025	–	***
microbreweries_at_birth_year_in	.902	.007	–	***	.905	.007	–	***
%_employees_beverage_industry	1.102	.043	+	**	1.110	.044	+	***
%_employees_food_industry	.981	.007	–	***	.981	.007	–	***
%_employees_agricultural_sector	.993	.005	–		.992	.006	–	
Geographical factors:								
Valle d'Aosta	.469	.260	–		.378	.209	–	*
Piedmont	.760	.177	–		.718	.1668	–	
Lombardy	.651	.148	–	*	.580	.131	–	**
Veneto	.526	.128	–	***	.487	.118	–	***
Trentino/südtirol	.617	.193	–		.581	.182	–	*
Liguria	.734	.231	–		.759	.236	–	
Emilia-Romagna	.361	.090	–	***	.328	.081	–	***
Tuscany	.475	.114	–	***	.443	.106	–	***
Umbria	1.000	.315	+		.907	.284	–	
Marche	.488	.129	–	***	.458	.121	–	***
altimetric_zone_1	.737	.095	–	**	.745	.096	–	**
altimetric_zone_2	.854	.248	–		.791	.228	–	
altimetric_zone_3	.937	.086	–		.944	.087	–	
altimetric_zone_4	.928	.132	–		.919	.129	–	
Constant					.003	.001	–	***
***Gamma parameter					.410	.011		
Likelihood ratio	485.54				498.81			
AIC.					–481.82			

EXIT ANALYSIS	COX PH				LOG-NORMAL		
Variable	**Hazard**	**Std. Err.**	**Sign**	**p-value**	**Coefficient**	**Std. Err.**	**p-value**
Production Mix:							
type_beers_produced	.755	.029	–	***	.182	.024	***
bottom_fermentation	1.276	.301	+		-.186	.1567	
top_fermentation	1.248	.318	+		-.156	.182	
craft_brewery	1.037	.277	+		-.029	.173	
beer_firm	.865	.334	–		-.091	.221	
agricultural_craft_brewery	.094	.098	–	**	1.490	.569	***
Local factors:							
unemployment_rate	.953	.066	–		.017	.043	
microbreweries_at_birth_year_in_	.894	.035	–	***	.048	.024	**
%_employees_beverage_industry	.956	.094	–		.057	.071	
% employees food industry	.984	.019	–		.007	.012	
%_employees_agricultural_sector	1.029	.016	+	*	-.017	.009	*
Geographical factors:							
Valle d'Aosta	0.001	0.000	–		3.182	25.594	
Piedmont	7.054	5.669	+	**	-1.126	.474	**
Lombardy	7.541	5.821	+	***	-1.234	.456	***
Veneto	2.360	2.014	+		-.306	.499	
Trentino/südtirol	3.077	2.931	+		-.716	.582	
Liguria	6.023	5.858	+	*	-.936	.602	
Emilia-Romagna	10.120	8.104	+	***	-1.529	.474	***
Tuscany	5.537	4.655	+	**	-1.157	.488	**
Umbria	6.523	6.235	+	**	-1.099	.603	*
Marche	2.942	3.035	+		-.420	.605	
Abruzzo	6.690	6.440	+	**	-.983	.594	*
Apulia	8.721	10.232	+	*	-1.314	.692	*
Calabria	1.845	2.979	+		-.012	.957	
Sicily	25.754	34.876	+	**	-1.950	.795	**
Sardinia	5.240	6.668	+		-.782	.769	
altimetric_zone_1	.849	.296	–		.123	.234	
altimetric_zone_2	0.001	0.000	–		5.645	18.506	
altimetric_zone_3	1.268	.341	+		-.208	.179	
altimetric_zone_4	1.339	.511	+		-.265	.241	
Constant					2.950	.550	***
***Sigma parameter					1.009	.073	
Likelihood ratio	152.00				157.65		
AIC.					623.96		

Results of the Entry/Exit Analysis

The sole variables resulting highly significant in both the specifications (entry and exit) are the **number of the craft beer producers** operating in the same province during the birth year of the new producer, and the **number of beer produced** by each microbrewery.

Variables reducing the propensity to ENTER: unemployment rate, employees in the food industry (on the employees of the manufacturing industry), people working in the agricultural sector, top-fermenting technique, few Regions which have already registered high entry rates in the last years.

Agglomeration economies and bottom-fermenting technique, instead, *increase the propensity to ENTER*.

Variables reducing the propensity to EXIT: being an agricultural craft brewery.

Congestion effect in some Regions, or poorer beer culture in some southern Regions, *increase the propensity to EXIT*.

Thank you for your attention...