

MEASURING THE ENTREPRENEUR: A COMPARATIVE ANALYSIS USING BUSINESS AND HOUSEHOLD DATA

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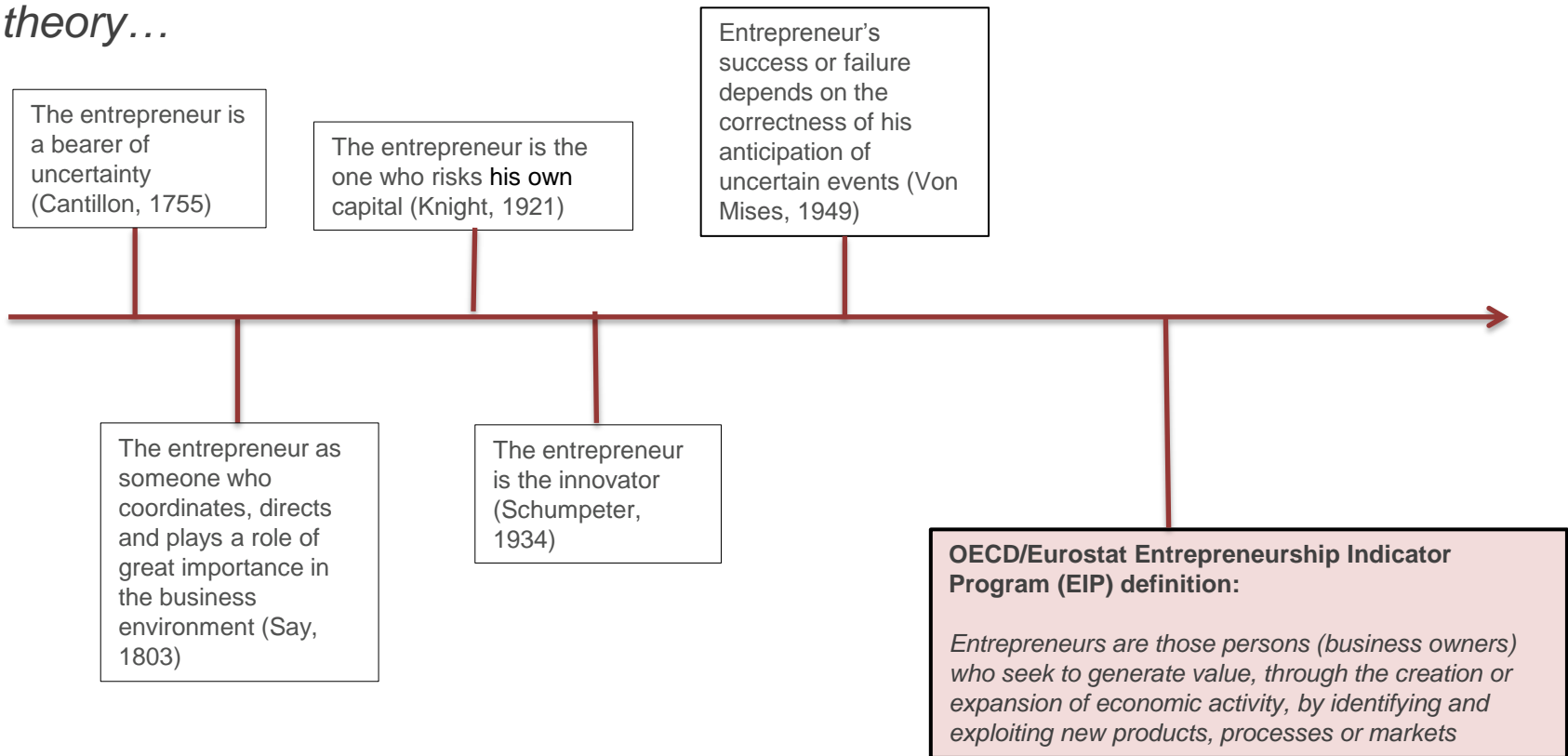
Joint UNECE/Eurostat/OECD Meeting of the Group of Experts on Business Registers
Brussels, 21 September 2015

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1. Defining the Entrepreneur

More than 500 years of economic theory...



2. Measuring entrepreneurship

In Italy:

Labour Force Survey (LFS)

**Official reference framework
ILO/ICSE-93**

Self-employment

- a) Entrepreneus *tout court*
- b) Freelance professionals
- c) Own-account workers
- d) Contributing family workers
- e) Members of cooperatives

Business Register (BR)

**Official reference framework
SNA-2008 /ICSE-93**

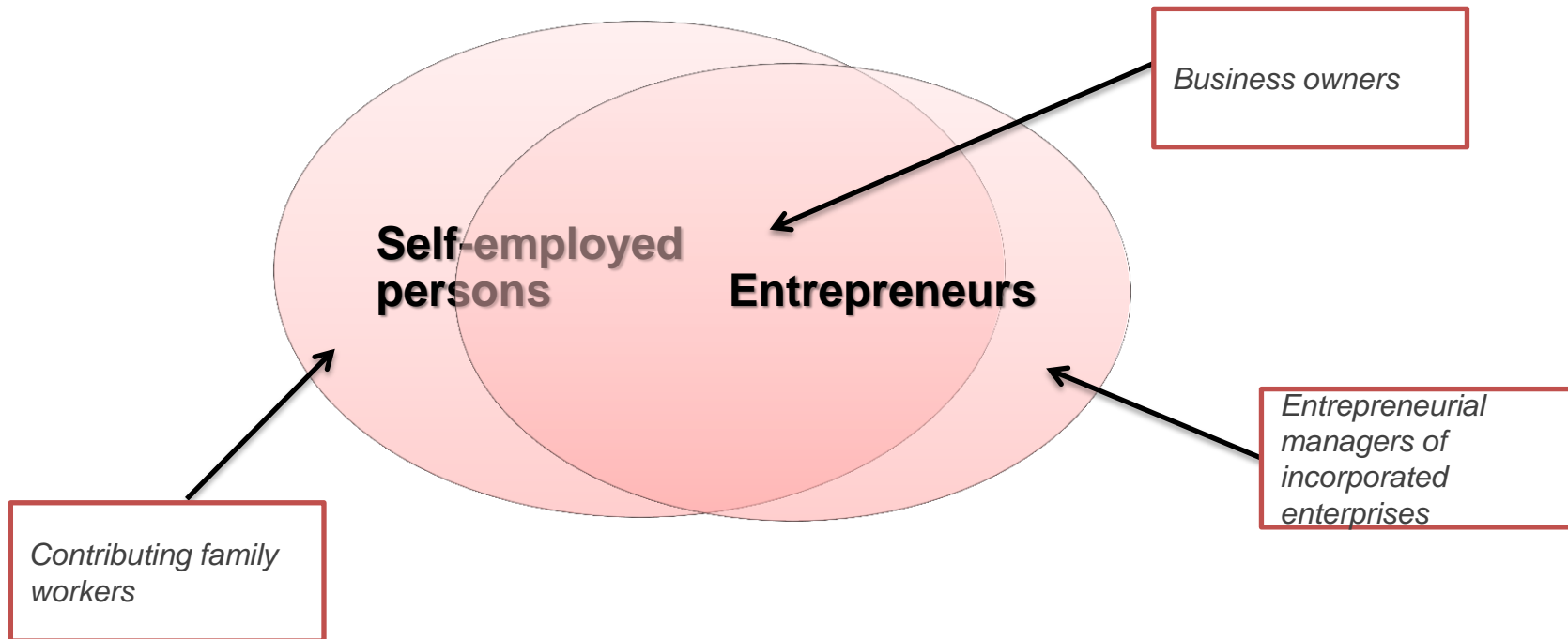
Self-employment

- Sole proprietor, freelance and own-account workers
- Contributing family workers
- Members of firms under the condition of an actual working activity carried out in the same enterprise of which they are shareholders

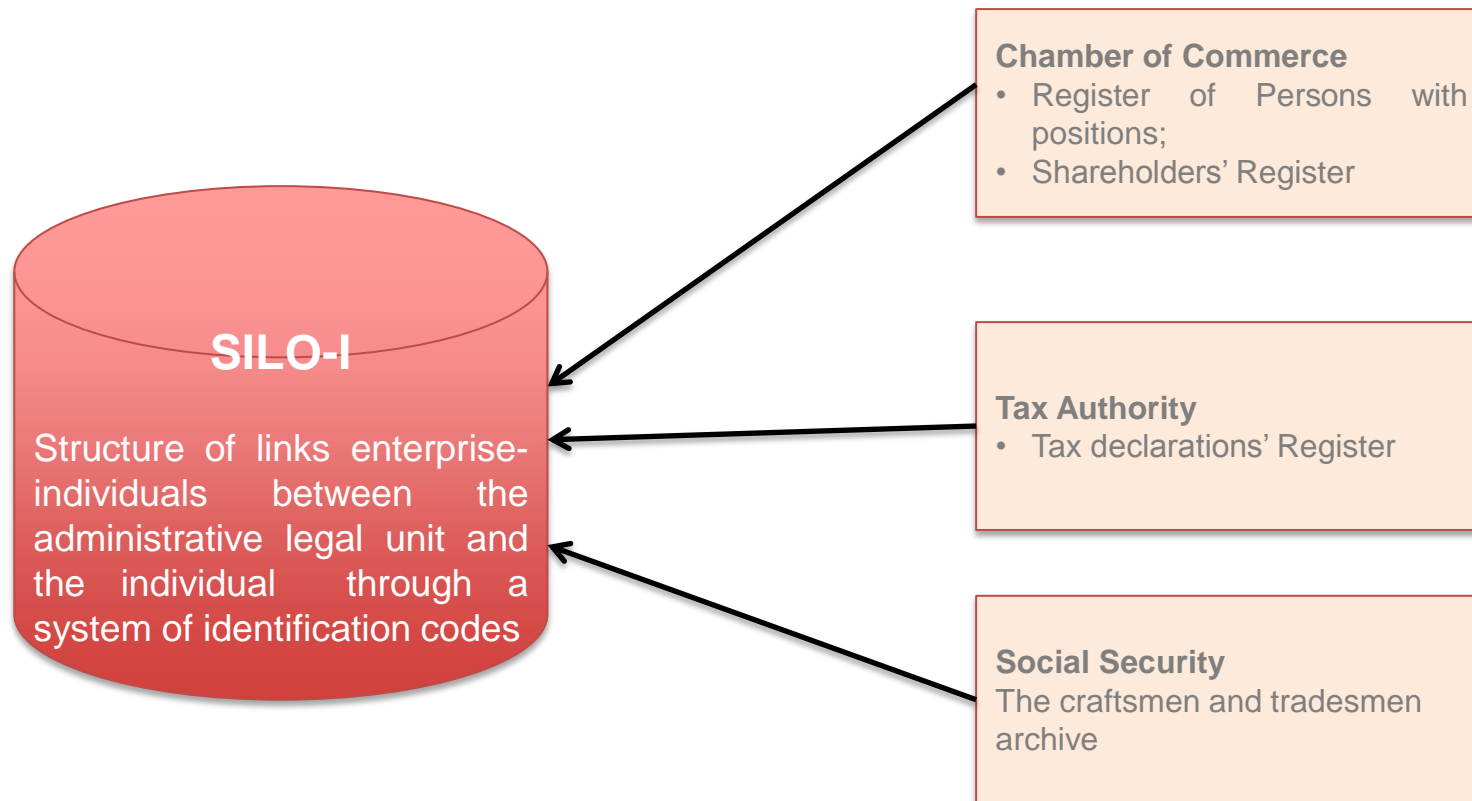


2. Measuring entrepreneurship

There are issues when measuring entrepreneurship through self-employment data.



2. Measuring entrepreneurship



2. Measuring entrepreneurship

Algorithm developed to flag entrepreneurs

Deterministic rules - depending on the legal form of the business

For the Sole Proprietors (**SP**):

Rule 1: entrepreneur corresponds to the owner. The contributing family workers are not considered as entrepreneurs.

For the other legal forms (such as Partnerships (**PA**), Limited Liability Companies (**LL**) and other businesses) a set of deterministic rules is based on:

- a) the function or position of the individuals in the enterprises (if he is a member or a shareholder; if he holds an administrative position or not);
- b) the share owned by the shareholder.

2. Measuring entrepreneurship

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The more restrictive rule to be an entrepreneur is:

Rule 1: He must be a shareholder with a share greater than the average share and simultaneously he must hold office as Chief of Executive Officer (CEO) or Managing Director.

Other rules are:

Rule 2: He is only a member of the company (without shares), but he must hold office as Chief of Executive Officer (CEO) or Managing Director.

Rule 3: He must be a shareholder with a share greater than the average share, but he doesn't hold an administrative position.

2. Measuring entrepreneurship

Algorithm developed to flag entrepreneurs

Rule 4: He must be a shareholder with a share equal to the maximum share, but he doesn't hold an administrative position (only if the outcome of rule 3 is null).

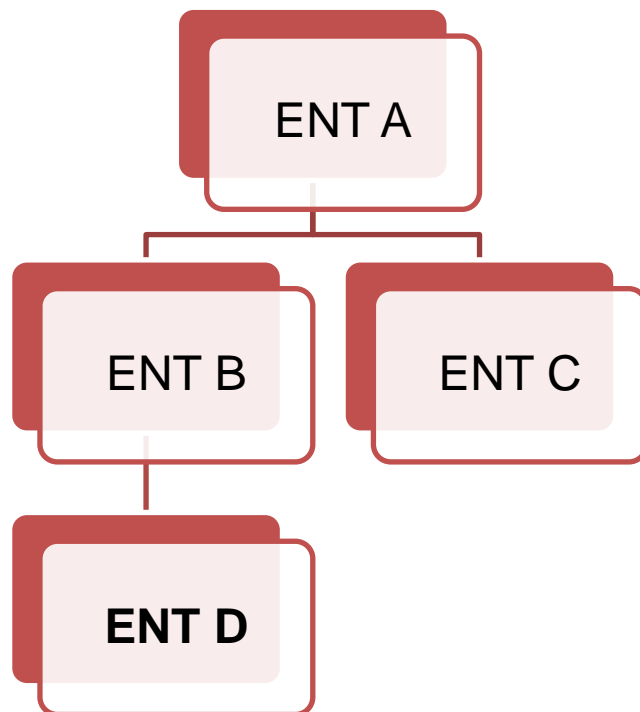
Rule 5: If there is only one member in the company then he is considered an entrepreneur (this rule has been applied to a small number of firms).

2. Measuring entrepreneurship

Algorithm developed to flag entrepreneurs

Bottom-up approach for Limited Liability companies that belong to an EG

Example

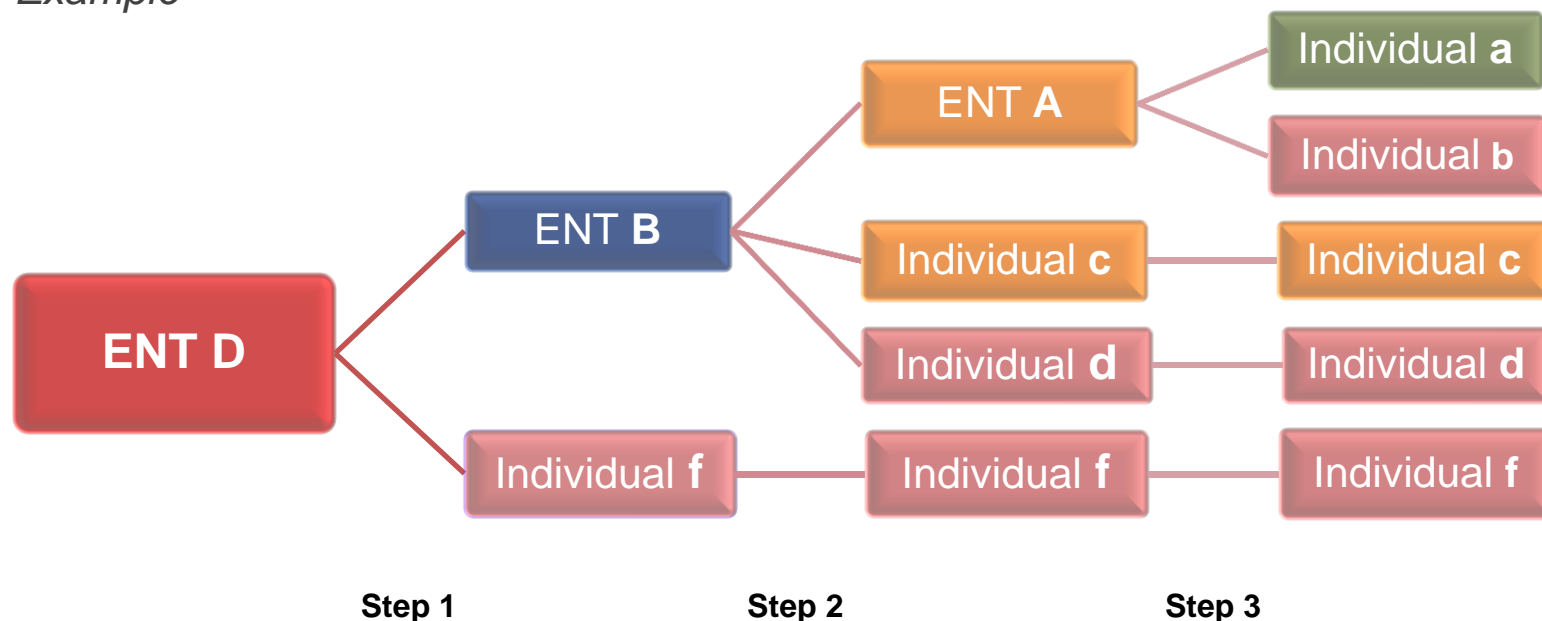


2. Measuring entrepreneurship

Algorithm developed to flag entrepreneurs

Bottom-up approach for Limited Liability companies that belong to an EG

Example



2. Measuring entrepreneurship

RULES	LEGAL FORMS				
	SP	PA	LL	Others	Total
1	100.0	49.2	51.8	10.3	75.7
2	0.0	17.3	17.7	0.0	8.6
3	0.0	33.5	30.4	5.1	15.7
others	0.0	0.0	0.0	84.7	0.0
Total	100.0	100.0	100.0	100.0	100.0

Source: SILO_I Register, year 2013

2. Measuring entrepreneurship

LEGAL FORM	SELF-EMPLOYED	ENTREPRENEUR		Total
		No	Yes	
SP	No	0.0	0.0	0.0
	Yes	10.2	89.8	100.0
	Total	10.2	89.8	100.0
PA	No	19.5	9.4	28.9
	Yes	11.0	60.1	71.1
	Total	30.5	69.5	100.0
LL	No	61.5	24.4	85.9
	Yes	4.3	9.8	14.1
	Total	65.8	34.2	100.0
Other	No	84.2	0.9	85.2
	Yes	14.8	0.0	14.8
	Total	99.0	1.0	100.0
Total	No	34.3	13.2	47.6
	Yes	7.7	44.7	52.4
	Total	42.0	58.0	100.0

Source: SILO_I Register, year 2013

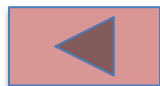
3. Integration of LFS and SILO-I

Objective:

To investigate the relationships between the self-assessment of the professional status by the LFS interviewees with the rules proposed in the BR in order to identify them as entrepreneurs.

More specifically, we wanted to compare the entrepreneurship signals of these individuals in the BR with the answers given by the same persons to LFS.

In LFS three response items might identify entrepreneurship:



4. The Logistic models

$$Pr(Y(LFS)_i = yes) = f(\mathbf{x}_i + \mathbf{z}_i)$$

where:

$$Y(LFS)_i = \begin{cases} (a) \text{ strict definition} \\ (a) + (b) + (c) \text{ larger definition} \end{cases} \quad \text{for } i = 1, \dots, k \text{ number of individuals;}$$

$\mathbf{x}_i = (x_{i1}, \dots, x_{in})$ vector of n individual characters (LFS)

$\mathbf{z}_i = (z_{i1}, \dots, z_{im})$ vector of m firm variables (BR)

4. The Logistic models

Source	Variable	Benchmark	Effect	95% limits				95% limits		
				Estimate	Lower	Upper		Estimate	Lower	Upper
LFS	GENDER	Female	Male	1.24	1.04	1.47		1.13	1.02	1.25
			Isced ≤ 2	0.64	0.51	0.82		1.95	1.66	2.29
	EDUCATION	Isced ≥ 5	Isced = 3	1.1	0.88	1.38		2.28	1.95	2.67
			Isced = 4	0.79	0.42	1.5		1.58	1.08	2.3
BUSINESS REGISTER	ENTREPRENEUR	No	Yes - Rule 1	2.87	2.27	3.62		2.5	2.12	2.94
			Yes - Rule 2	1.53	0.99	2.37		2.04	1.59	2.61
			Yes - Rule 3	1.42	1.06	1.91		1.3	1.07	1.59
	LEGAL STATUS	Partnerships	Sole proprietor	0.28	0.22	0.35		0.42	0.37	0.48
			Limited Liability	2.43	2	2.95		2.17	1.88	2.5
	BUSINESS GROUP	Yes	No	0.65	0.49	0.88		0.73	0.58	0.93
	NACE	Manufacturing	Business services	0.94	0.76	1.16		2.75	2.37	3.2
			Construction	1.27	0.99	1.63		1.08	0.9	1.31
			Other services	0.51	0.35	0.75		0.83	0.66	1.05
			Trade	0.85	0.68	1.06		1.23	1.05	1.45
	FIRM SIZE (n. employees)	> 10	No employees	0.1	0.08	0.13		0.16	0.13	0.19
			1-3	0.44	0.35	0.55		0.5	0.42	0.6
4-9			0.8	0.63	1.03		0.81	0.66	0.99	

Source: LFS-ADMIN integrated sample and SILO-I register, year 2013

Notes: Strict definition: Entrepreneur tout court; Larger definition: Entrepreneur plus Own-account worker plus Professional free-lance.

4. The Logistic models

$$Pr(Y(BR)_i = yes) = f(\mathbf{x}_i + \mathbf{z}_i)$$

where:

$$Y(BR)_i = \begin{cases} (Rule\ 1) \\ (Rule\ 2) + (Rule\ 3) \\ all\ Rules \end{cases} \quad \text{for } i = 1, \dots, k \text{ number of individuals;}$$

$\mathbf{x}_i = (x_{i1}, \dots, x_{in})$ vector of n individual characters (LFS)

$\mathbf{z}_i = (z_{i1}, \dots, z_{im})$ vector of m firm variables (BR)

4. The Logistic models

Source	Variable	Benchmark	Effect	95% limits			95% limits		
				Estimate	Lower	Upper	Estimate	Lower	Upper
LFS	GENDER	Female	Male	Rule 1 1.34	1.23	1.47	Further rules 0.84	0.76	0.92
			EDUCATION	Isced ≥ 5	Isced ≤ 2	0.84	0.73	0.97	0.98
	EMPLOYMENT STATUS	Not in employment	Isced = 3	0.87	0.75	0.99	0.95	0.82	1.1
			Isced = 4	0.95	0.69	1.29	0.95	0.67	1.34
			Employee	0.89	0.73	1.08	0.83	0.67	1.03
			Entrepreneur	3.57	2.88	4.44	0.56	0.44	0.71
			Professional free lance	3.33	2.8	3.97	0.43	0.36	0.52
	AGE (individual)	35-64 yrs.	Own-account worker	2.49	2.17	2.84	0.62	0.54	0.72
			Other self-employed	0.39	0.3	0.5	0.57	0.43	0.75
			15-24 yrs.	0.48	0.35	0.67	1.36	0.95	1.94
25-34 yrs.			0.64	0.56	0.75	1.22	1.03	1.43	
AGE (Firm)	≥ 11 yrs.	65-74 yrs.	1.01	0.88	1.17	1.34	1.16	1.55	
		≥ 75 yrs.	1.55	1.19	2.01	1.08	0.83	1.39	
		≤ 2 yrs.	2.22	1.9	2.6	0.59	0.5	0.7	
		3-5 yrs.	1.92	1.67	2.21	0.7	0.6	0.82	
BUSINESS REGISTER	NACE	Manufacturing	6-10 yrs.	1.65	1.47	1.85	0.65	0.57	0.74
			Business services	1.01	0.88	1.15	1.1	0.95	1.27
			Construction	1.48	1.26	1.73	0.76	0.63	0.91
			Other services	1.71	1.44	2.03	0.6	0.49	0.73
	Trade	1.2	1.05	1.37	0.85	0.74	0.98		
FIRM SIZE (n. employees)	> 10	No employees	3.8	3.14	4.61	0.91	0.73	1.13	
			1-3	1.71	1.41	2.07	1.59	1.29	1.97
			4-9	1.22	0.97	1.53	1.71	1.34	2.18

Source: LFS-ADMIN integrated sample and SILO-I register, year 2013

5. Concluding remarks

Caveats in the use of survey-ADMIN data:

- Non-sampling survey errors
- Weighting
- Incoherence between the two sources (definitions, coverage and reference period)
- Problems of administrative data coverage

5. Concluding remarks

- ❑ Defining the entrepreneur is a semantic issue, since this concept might be declined in several ways and contexts, even not necessarily in the world of self-employment.
- ❑ Various degree of entrepreneurship seem to exist, according to the intrinsic characteristics of the business and of the individuals.
- ❑ Strict definitions of entrepreneur are associated with “sophisticated” businesses and signals.
- ❑ The adoption of deterministic rules based only on administrative signals looks of great help in extracting a convincing evidence of what could be envisaged as entrepreneurship.
- ❑ The use of statistical integration of survey and administrative data paves the way for more appropriate probabilistic approaches, which can be configured as bases for the production of satellite information on businesses, self-employment and entrepreneurship.

Thank you

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