Economic' Preferences, Firms and Policies: evidence from INAPP data

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Workers, entrepreneurs and economic psychology: the research agenda at Inapp.
Conference Triple Helix - 25 november 2020

Psychology, personal traits and quasi-rational behaviors are key factors for understanding labor market histories, management and human resource practices, firms' choices, effectiveness of public policies and so on.

The INAPP project "Strategic Analysis of the Public Policies" devotes increasing attention to this issue exploiting information from:

- *"Rilevazione su Imprese e Lavoro"* (RIL) Survey;

- *"Survey on Labour Partecipation and Unemployment* "(PLUS);

- Scientific agreement between INAPP and University of Milan "Bicocca": *Behavioral sciences s applications to support new entrepreneurship*

- Field experiments on managerial practices and human resource management

Outline

- <u>Analysis</u>: the evolution of time preferences and risk attitudes of a large sample of Italian entrepreneurs

- <u>Focus</u>: on the demographics and educational characteristics behind the evolution of entrepreneurs' preferences

- <u>Data</u>: responses to questions intended to elicit risk taking and patience included in the RIL survey

- <u>Preliminary evidence</u>: i) investing in tertiary education reduces impatience and risk aversion; ii) being female is positively correlated with risk aversion iii) others results

- <u>Implications</u>: risk-taking and patience ("animal spirits"?) affect investments, economic growth and dynamics of the labor markets, then …

Background discussion

Personality traits of entrepreneurs are important in economies characterized by small firms owned by families - where choices reflect the individual features and skills of managers-employers

Literature: Andersen et al (2014) , Vischer et al (2018) , Bloon and van Reenen (2011) Lazear and Oyer (2011), etc

Italy: degree of innovation carried out by firms is quite low and the specialization is tilted towards traditional productions.

The RIL survey I: data and information

- The empirical analysis is based on *Rilevazione su Imprese e Lavoro* (RIL), a survey conducted in 2015 and 2018 by the INAPP on a representative sample of 30,000 firms in the non-agricultural private sector.

- The RIL gathers a unique set of information about managerial and corporate governance characteristics, workforce composition, personnel policies and industrial relations, firms' competitive choices and productive specialization .

- Sample selection: firms for which the respondent is an entrepreneur and which employed at least one workers – 5,000 firms in each sample year

- In 2018 and 2015 waves two questions regarding the entrepreneur psychological attitudes in term of time preferences and risk attitudes have been included.

The RIL survey II: data and information

- RIL Survey respondents: individuals that self-selected into entrepreneurship – their preferences differs form those of the population at large? Not necessarily as the choice of run a business may reflect exogenous factors:
    - i) *the need of perpetuation of a family enterprise,*
    - ii) *the availability of finance,*
    - iii) *the possibility to learn entrepreneurship from neighbors*

- Risk and time preferences are elicited through related quantitative question , i.e. binary choices between:
    - i) a *fixed lottery* and *varying sure payments*
    - ii) *immediate* and *delayed financial rewards*

- The wording used reflects the standard in which preferences are elicited within surveys (see Falk et al, 2018); questions common for <u>household surveys</u> but relatively unexplored in <u>firms surveys</u>

Impatience. *Suppose you were given the choice between a payment (say €x, equal to your* *current annual income*) *today and a higher payment (€x + a given percentage, as clarified below) in 12 months. We will now present to you six situations. The payment today is the same in every situation. The payment in 12 months is different in every situation. For each of these situations we would like to know which one you would choose. Please assume there is no inflation, i.e., future prices are the same as today's prices.*

Would you rather receive €x today or €x + the following premia in 12 months: 1) 1%; 2) 5%; 3) 10%; 4) 50%; 5) 100%; 6) 300%; 7) none of the previous.

Risk taking. *Please imagine the following situation. You have a lottery ticket that gives you a 50 percent chance of receiving an amount equal to* *your current annual income* *and the same 50 percent of receiving nothing. Would you give away your lottery ticket in exchange of a percentage of your current annual income?*

What percentage it will be: 1) 5%; 2) 10%; 3) 25%; 4) 50%; 5) 80%; 6) none of the previous.

As for _time preference_ within each sample year 2015 an 2018: we show an convex pattern between [1% - 50%] and a decreasing one beyond this percentage point until the last possible delayed reward (300%) , i.e impatience has a no monotonic trend

As for _risk taking_ within each sample year 2015 and 2018: a double convex pattern is found between the interval [5% - 50%] and between the interval [50%-100%], i.s risk aversion has a no monotonic trend (with 50% acting as a breaking point)

The cross sectional distribution across categories of responses seems similar to that observed on households (ie Vischer et al, 2013).

Descriptive statistics displayed in Tables 1 and 2 shows that impatience tend to increase over time while risk aversion are relatively more stable during the period 2015-2018

Table 1 : descriptive statistics for time preferences

| | cross-sections | | |
	2015	2018	Total
0.01	1,179	657	1,836
row %	56.17	43.83	
0.05	787	625	1,412
row %	50.35	49.65	
0.1	974	928	1,902
row %	50.66	49.34	
0.5	1,542	1,458	3,000
row %	50.29	49.71	
1	703	707	1,410
row %	46.34	53.66	
3	644	775	1,419
row %	33.8	66.2	
Total	5,829	5,150	10,979
%	48.34	51.66	

Source: our elaborations on RIL 2018-2015 data. Not: sampling weights applied

Table 2 : descriptive statistics for risk behavior

	cross-sections		
	2015	2018	Total
0.05	1,400	916	2,316
row %	51.91	48.09	
0.1	545	462	1,007
row %	53.59	46.41	
0.25	711	649	1,360
row %	50.19	49.81	
0.5	1,691	1,493	3,184
row %	49.12	50.88	
0.8	1,094	1,092	2,186
row %	48.88	51.12	
1	2,383	2,218	4,601
row %	50.3	49.7	
Total	7,824	6,830	14,654
%	50.27	49.73	

Source: our elaborations on RIL 2018-2015 data. Not: sampling weights applied

- The baseline model:

$$[1] \qquad \text{Pref}_{i,t} = a_0 + a_1 \text{ female}_{i,t} + a2 \text{ education}_{i,t} + a3 \text{ M}_{i,t} + \text{W}_{i,t} + \text{F}_{i,t} + \varepsilon_{i,t}$$

where $\text{Pref}_{i,t}$ is cardinal, ordinal and dicothomous indicators of both time preferences and risk profiles. As for controls:

$M_{i,t}$ = managerial and corporate governance;
$W_{i,t}$ = workforce characteristics;
$F_{i,t}$ = firms' productive characteristics;

Estimation models: pooled probit, correlated random, pooled ols, fixed effects;
Firms time-invariant unobserved heterorgeneity;

Econometric results: an overview

Using **cardinal measures** of preferences we find the following results :

i) *Tertiary education* is negatively correlated with impatience and risk aversion, but these results are not robust to correlated random effect specification
ii) *Being a female* is positively correlated wit impatience and risk aversion (in all specifications)

Using **binary measures** we find the following results:

i) *Tertiary education* is negatively correlated with impatience and risk aversion , but these results are not robust to correlated random effect specification
ii) *Being a female* is positively correlated with impatient (all specifications), but not significatively related with risk aversion

Caveats: data structure; economic environment (ex: dynastic selection of the female entrepreneurs)

Econometric results I: continuous measures

Table 2: main estimates. Dep var: continuous measures

	Time preferences			Risk adversion		
	OLS	OLS_P	CRE_P	OLS	OLS_P	CRE_P
tertiary ed	-0.111***	-0.098*	-0.045	-0.031***	-0.044**	0.003
female	0.068**	0.091**	0.157	0.027***	0.027**	0.064**
public procur	-0.013	-0.047	0.034	-0.018**	-0.021*	-0.044*
year 2018	0.130***	0.080***	0.071**	0.042***	0.039***	0.037***
other controls	YES	YES	YES	YES	YES	YES
N of Obs	9096	4092	4092	11868	5322	5322
R2	0.013	0.011		0.007	0.006	

Source: our elaborations on RIL 2018-2015 data. Note: other controls include workforce characteristics (education, age, female, contractual arrangements, professions etc) , firms' characteristics (public procurement, foreign markets, log of sales per employee, firms' size in classes, second level bargaining, multinationals). All regressions controls for sectors of activity and macro-regions fixed effects. Clustered standard errors (in parentheses)

Econometric results II: binary measures

Table A Dep Var: **Impatient**

	Linear				no linear probit		
	OLS*	OLS	CRE	FE	ML*	ML	CRE
tertiary ed	−0.058***	−0.067**	−0.051	−0.014	−0.055	−0.068***	−0.049
female	0.036***	0.068***	0.109**	0.091	0.100**	0.067***	0.110**
other controls	YES	YES	YES	YES	YES	YES	YES
N of Obs	9096	4092	4092	4092	9096	4092	4092

Table B: Dep Var: **Risk adversion**

	OLS*	OLS	CRE	FE	ML*	ML	CRE
tertiary ed	−0.028*	−0.051**	−0.027	−0.015	−0.028*	−0.050**	−0.025
female	0.018	0.022	0.055	0.098	0.018	0.022	0.054
other controls	YES	YES	YES	YES	YES	YES	YES
N of Obs	11868	5322	5322	5322	11868	5322	5322

Source: our elaborations on RIL 2018-2015 data. Note: other controls include workforce characteristics (education, age, female, contractual arrangements, professions etc) , firms' characteristics (public procurement, foreign markets, log of sales per employee, firms' size in classes, second level bargaining, multinationals). All regressions controls for sectors of activity and macro-regions fixed effects. Clustered standard errors (in parentheses)

Conclusions and future research

- Thanks to a unique source of firm-level information, we provide the more updated evidence about the time preferences and risk taking ("animal spirits"?) of the entrepreneurs .

- Our analysis shows that education and gender are key factors to explaining entrepreneurs' preferences and , as consequence, firms choices on investments and personnel policies

- Taking into account control for economic environment and self-selectivity in being an entrepreneurs in order to infer causal relationship. This topic will be investigated in future research

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THANK FOR YOUR ATTENTION!