Driven by institutions, shaped by culture: human capital and the secularization of marriage in Italy

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ASSET Conference – Athens; October 27, 2019

Motivation and research question

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We look at

- a specific dimension of secularization (% of civil marriages), in a country of late secularization (Italy);
- human capital and secularization as equilibrium outcomes;
- focus on economic incentives, and remain agnostic about "direct effects" of education on religiosity.

Related literature

Empirics:

- higher income or education brings about secularization: Paldam and Gundlach (2013), Hungerman (2014), Arias-Vazquez (2015), Becker et al. (2017);
- religiosity increases with income or education: Brown and Taylor (2007), Glaeser and Sacerdote (2008), Buser (2015);
- no clear, or two-way causality: Sander (2002), Lipford and Tollison (2003), Franck and Iannaccone (2014).

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Theory:

- unified growth theory, with secularization both cause and consequence of economic development: Strulik (2016a);
- secularization driven by cognitive style: Strulik (2016b).

What we do

In this paper,

1. we use Census data on $\approx$ 8000 Italian municipalities, and
   - find a robust, positive correlation between human capital and civil marriages,
   - show that it depends on socio-geographic characteristics and changes after the *legalization of divorce* in 1970;
   - disentangle the "effect" of education (+) and income (-);

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   - obtain results that are fully consistent with the macro evidence;
3. we provide a rationale for these results: a model with endogenous choice of religiosity, education and marriage-type.

Implications of our analysis

Through our study, we suggest that

- the forces of secularization are driven by economic incentives, but need institutional reform to be fully unleashed;
- deep-rooted cultural factors may explain why socio-economic processes follow diverging patterns (across regions, etc.);
- divorce may (also) have a growth-enhancing effect.

Marriage and divorce in Italy: institutional timeline

1929 The Lateran Treaty grants civil effects to church marriages;

1954-58 failed attempts to introduce a divorce law;

1969-70 the Fortuna-Baslini law 898 legalizes divorce (after 5 years of separation);

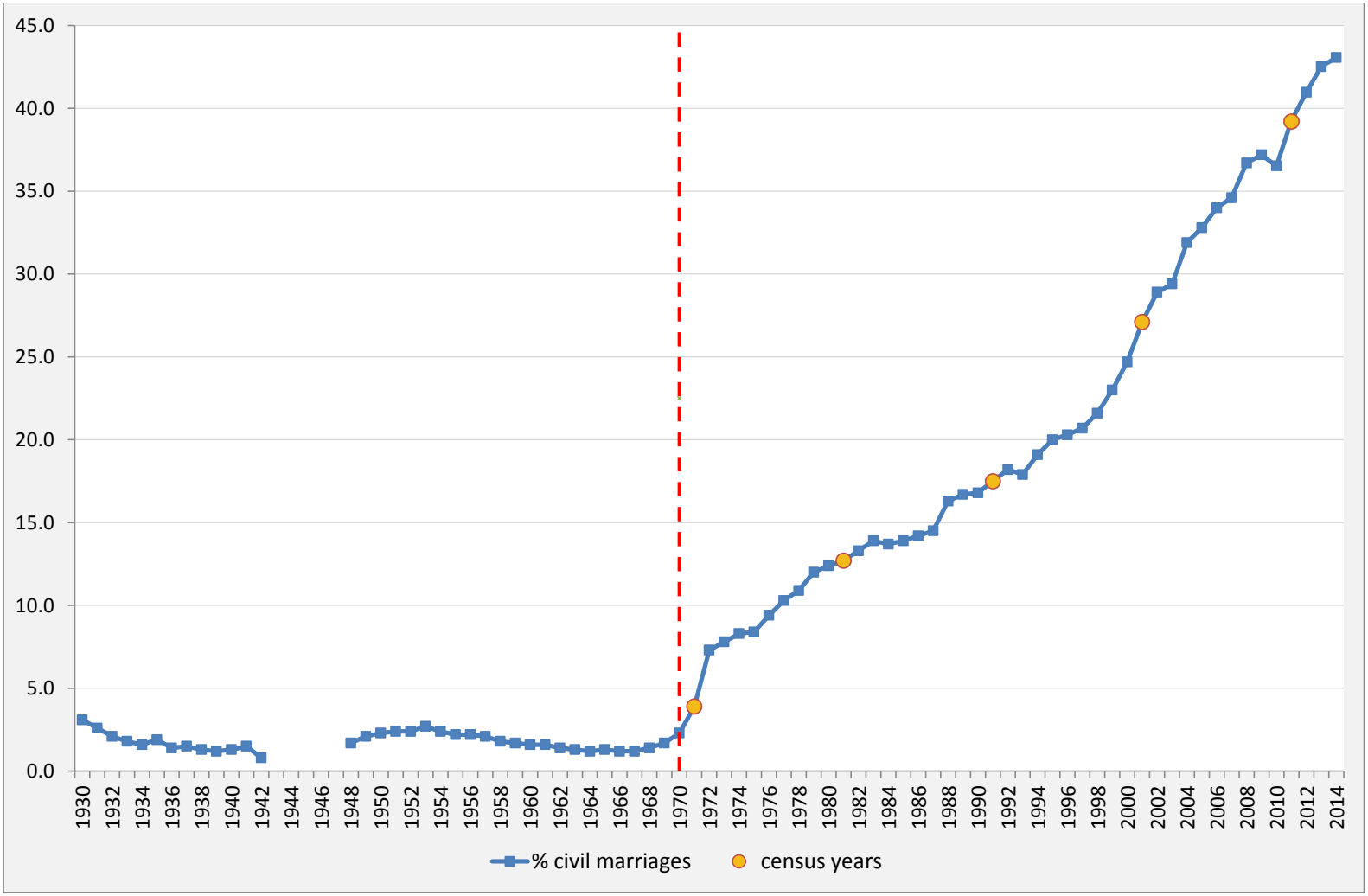
1974 a referendum promoted to repeal the law is defeated (by margin of 59.26 % to 40.74%);

1984 the revision of the Lateran Treaty fully confirms concordatarian marriage;

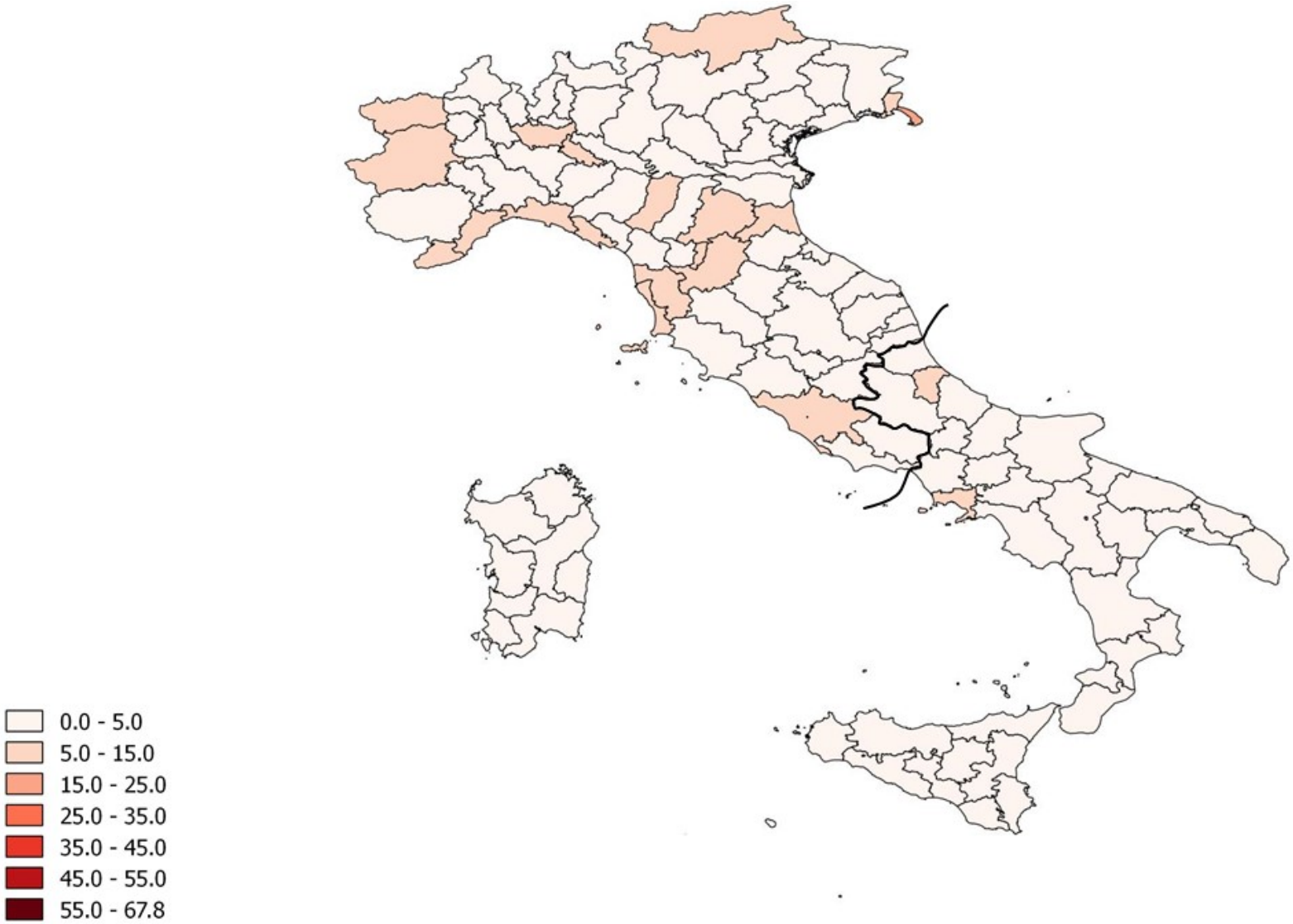
1987 the separation requirement is reduced ($\rightarrow$ 3 years);

2015 further legal easing of divorce ($\rightarrow$ 1 year or 6 months if consensual).

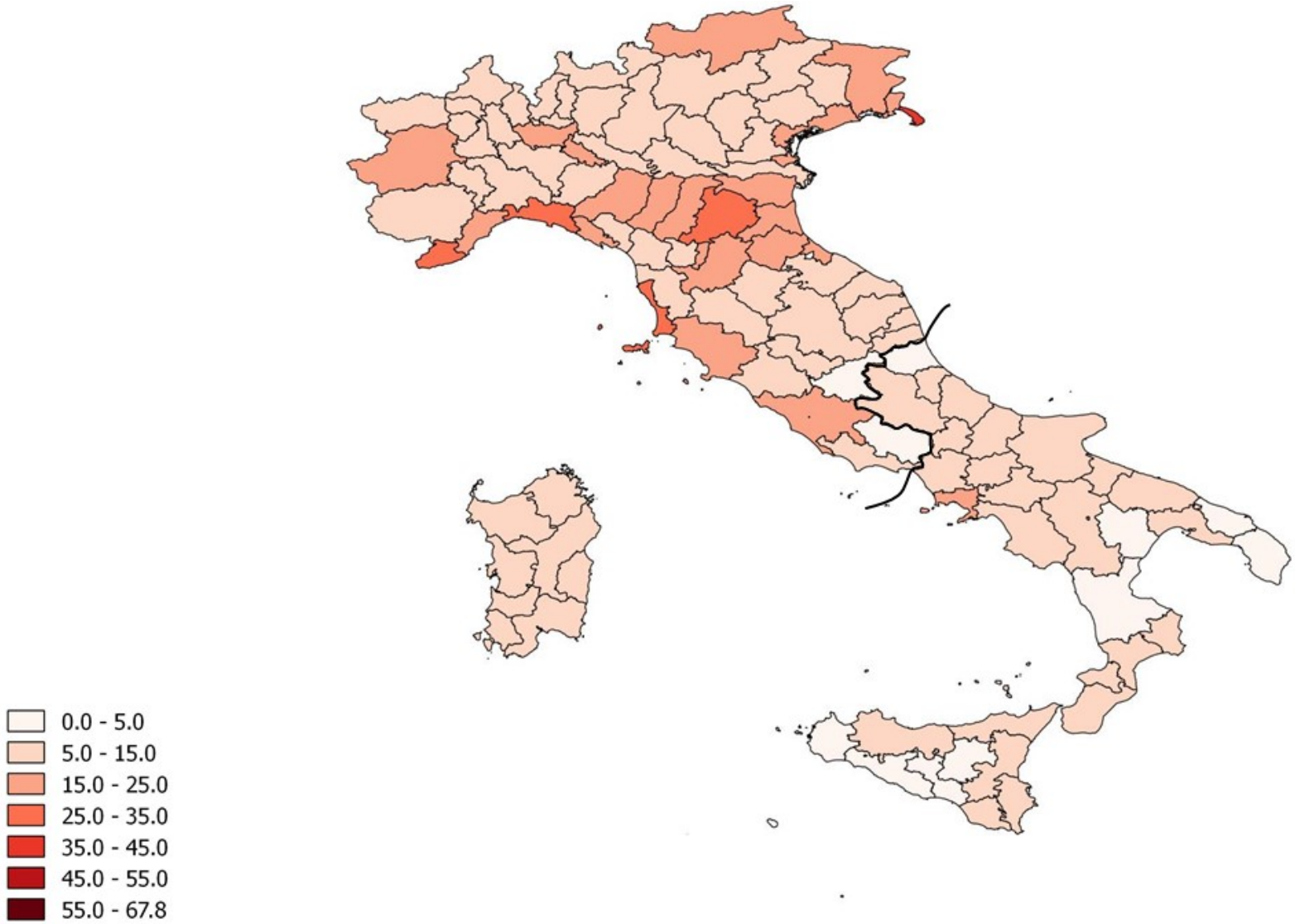
Time evolution: % civil marriages, Italy (1930-2014)



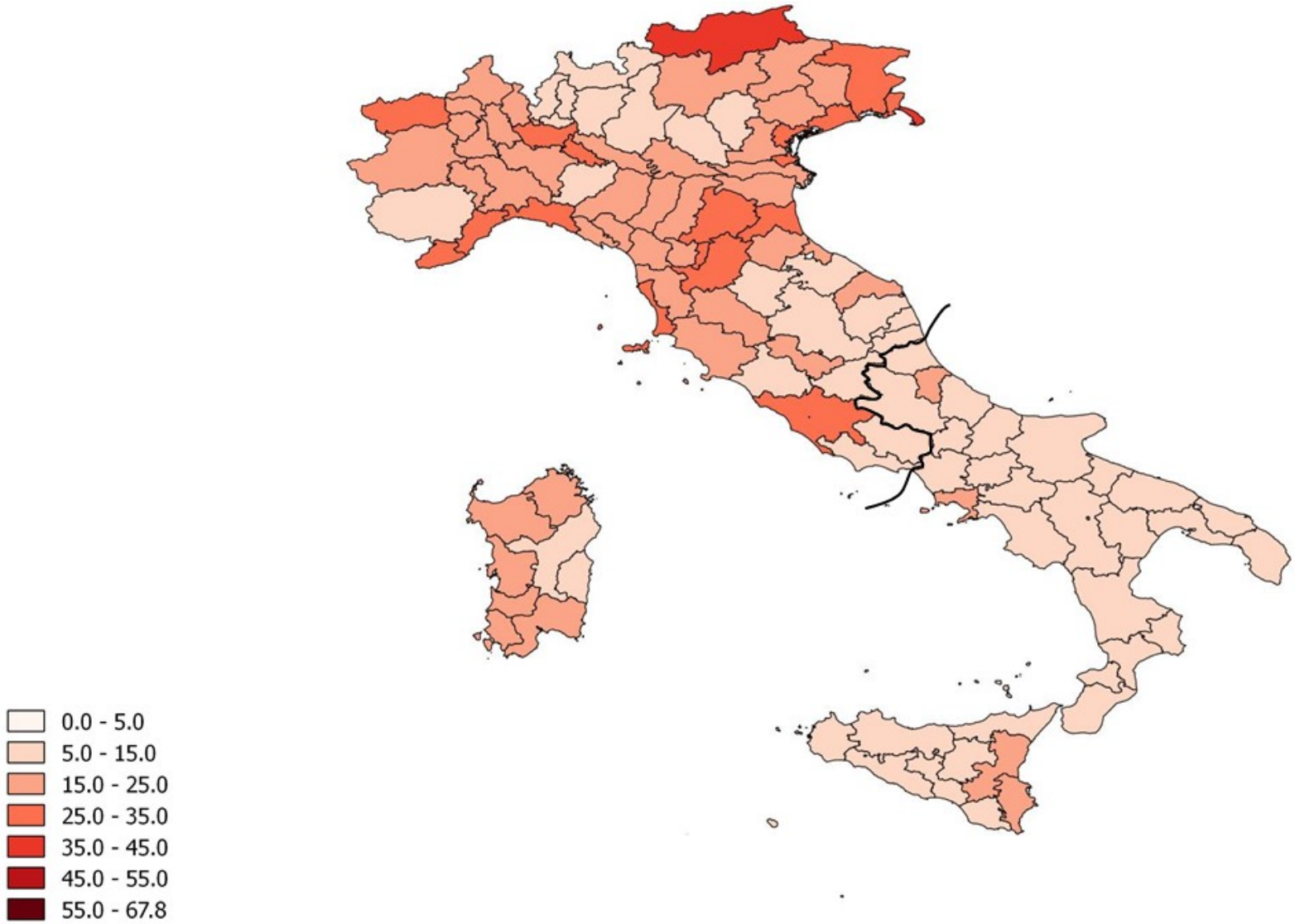
Time evolution: % civil marriages by province (1971)



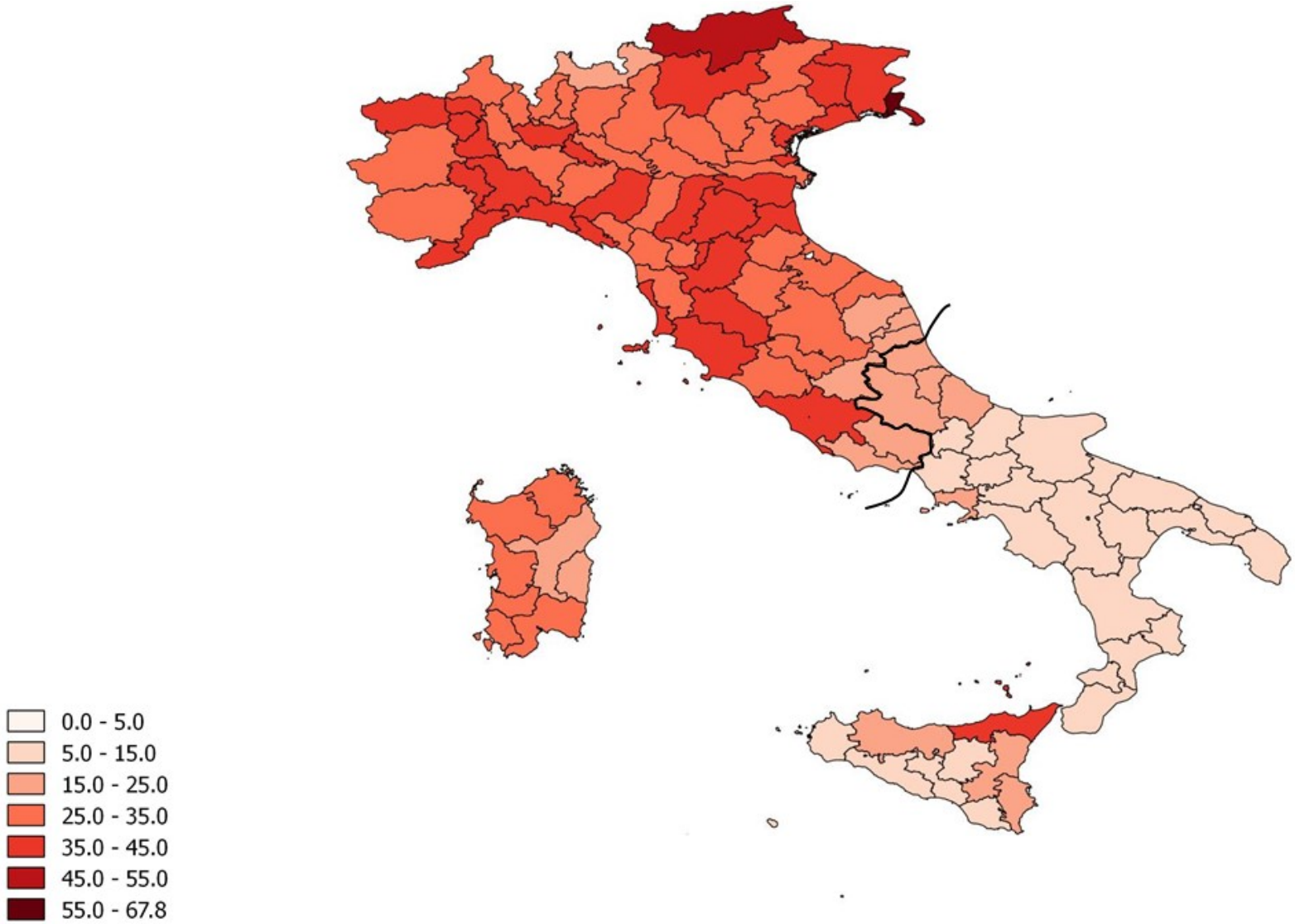
Time evolution: % civil marriages by province (1981)



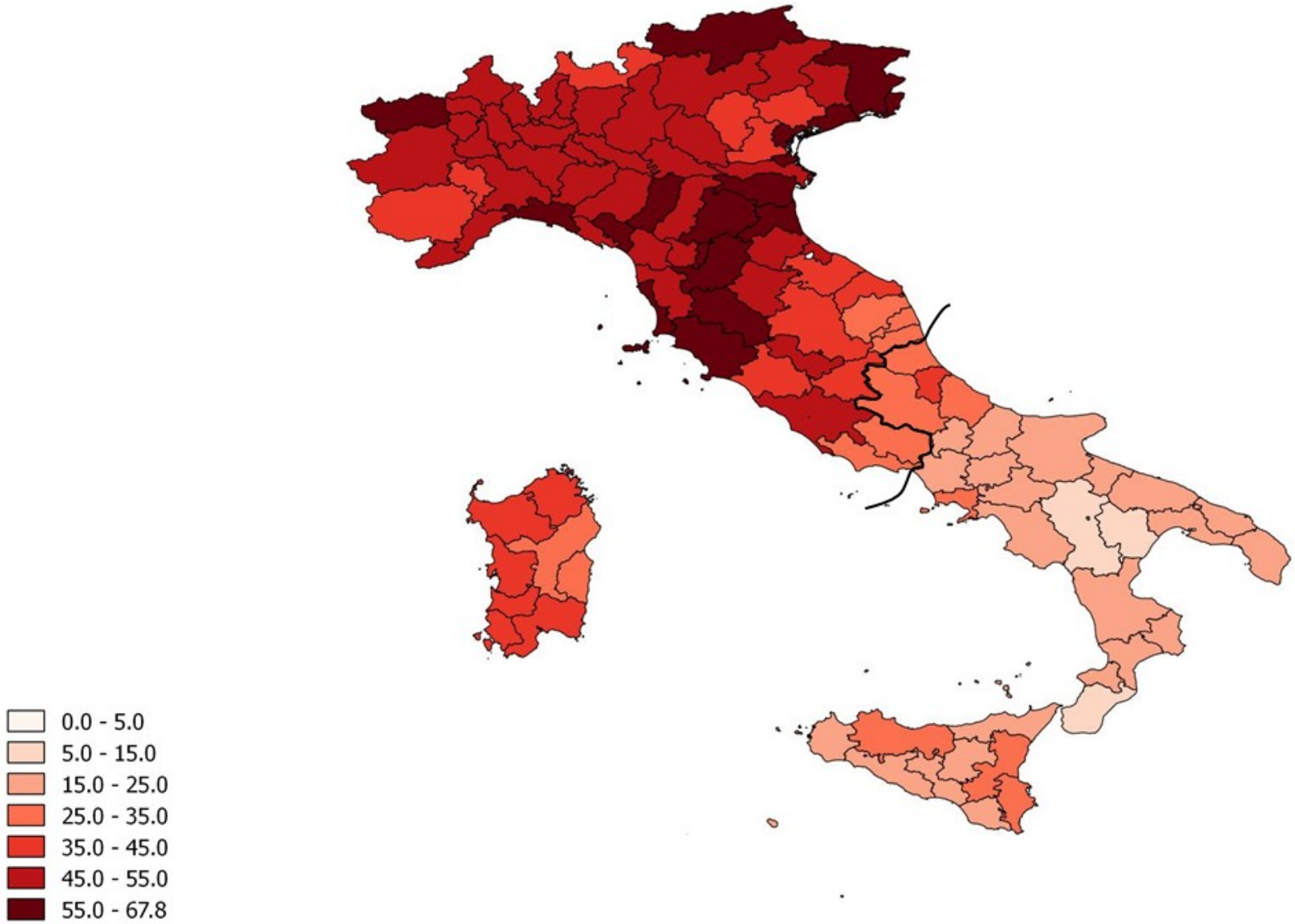
Time evolution: % civil marriages by province (1991)



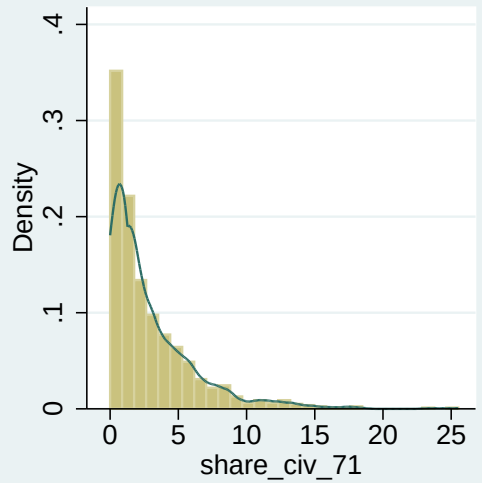
Time evolution: % civil marriages by province (2001)

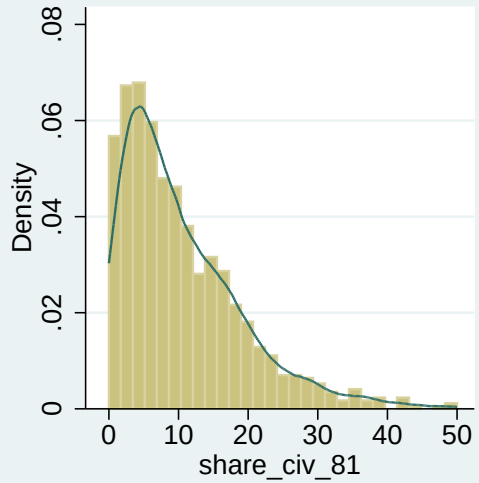


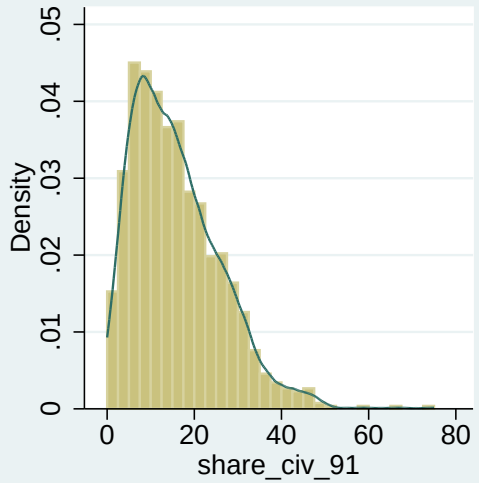
Time evolution: % civil marriages by province (2011)

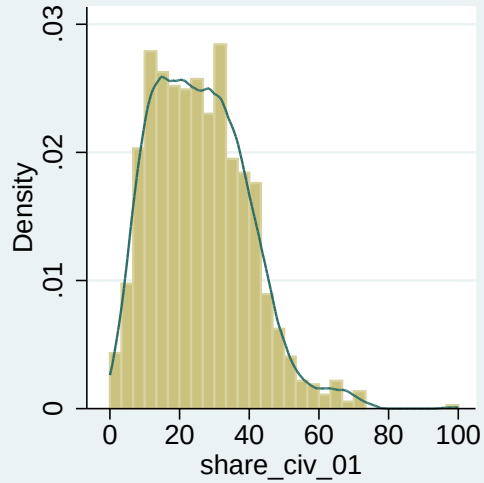


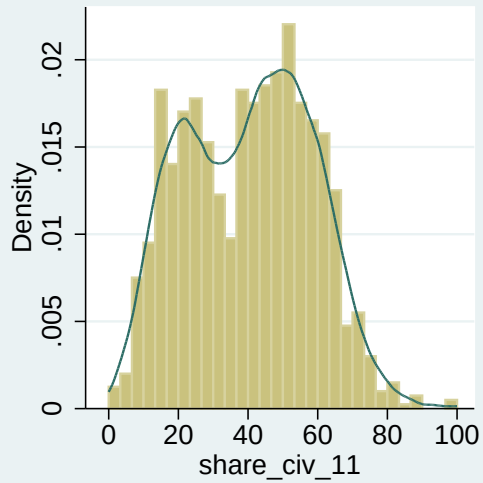
Divergence? (municipalities with pop>5000)











Macro evidence on civil marriages: data description

We use Census data, available for

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Main regressor:
human capital / education, as measured by the *% of population with secondary education or more, in municipality* i *in year* t.

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We only consider municipalities with population $>$ 5000 in 1971.

Benchmark regressions

Dependent: % civil	(1)	(2)	(3)	(4)	(5)	(6)
Higher education	0.691***	0.704***	0.396***	0.474***	0.347***	0.440***
	(0.036)	(0.048)	(0.052)	(0.051)	(0.056)	(0.056)
Pop (ln)			2.709**	2.281*	3.155**	2.545*
			(1.341)	(1.313)	(1.406)	(1.477)
Age			-0.137	-0.215	-0.139	-0.308**
			(0.136)	(0.132)	(0.140)	(0.149)
Accomodation overcrowding			0.701***	0.225***	0.732***	0.654***
			(0.036)	(0.038)	(0.038)	(0.038)
Higher education x South				-0.484***		
				(0.025)		
High. ed. x NGOs' empl. pc (1981)					9.470**	
					(3.956)	
High. ed. x consanguinity (1930 – 1934, province level)						-0.044***
						(0.009)
Year dummies	✓	✓	✓	✓	✓	✓
Municipality FE		✓	✓	✓	✓	✓
Observations	7,842	7,842	7,842	7,842	7,320	6,818
R-squared	0.496	0.654	0.679	0.705	0.690	0.679
Nb of munic.'s	1,965	1,965	1,965	1,965	1,834	1,708

Robust standard errors clustered at the municipality level in parentheses; ***: p<0.01, **: p<0.05, *: p<0.1.

Does divorce matter? (before/after)

Dependent:	(1)	(2)	(3)	(4)
% civil	1971	1981-91-01	1971-81-91-01	
Higher education	0.199***	0.443***	-0.056	0.126
	(0.035)	(0.042)	(0.048)	(0.097)
Higher education x After			0.554***	0.218***
			(0.043)	(0.063)
Controls (pop, age, y)	✓	✓	✓	✓
Year dummies		✓	✓	✓
Municipality FE				✓
Observations	1,965	5,877	7,842	7,842
R-squared	0.142	0.411	0.529	0.679
Nb of munic.'s	1,965	1,964	1,965	1,965

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Micro evidence on civil marriages: data description

We rely on the 1998 round of the FSS survey by ISTAT.

The FSS contains information on

- a sample of more than 50000 individuals (from $\approx$ 24000 families),
- marriages before and after the legalization of divorce,
- a wide range of socio-cultural factors, at the individual level.

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Dependent variable:
1 if the respondent i chose a *civil marriage* in year t, 0 otherwise.

Benchmark regressions

Dependent: civil	(1)	(2)	(3)	(4)	(5)	(6)
Higher education	0.023***	0.012***	0.014***	0.020***	0.019***	0.020***
	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)
Number of TVs			-0.011***	-0.011***	-0.010***	-0.011***
			(0.002)	(0.002)	(0.002)	(0.002)
Higher education x South				-0.013*		
				(0.007)		
Higher ed. x Sun. enl. family					-0.017**	
					(0.007)	
Higher ed. x Sibl. same mun.						-0.015**
						(0.007)
Region, cohort dum.'s	✓	✓	✓	✓	✓	✓
Age at marriage		✓	✓	✓	✓	✓
Observations	34,973	29,165	29,165	29,165	29,165	29,165
R-squared	0.016	0.048	0.049	0.049	0.051	0.050

Robust standard errors clustered at the municipality level in parentheses; ***: p<0.01, **: p<0.05, *: p<0.1.

Does divorce matter? (before/after)

Dependent: civil marriage	(1)	(2)	(3)	(4)
Higher education	0.001	0.026*	0.025***	-0.004
	(0.006)	(0.014)	(0.007)	(0.007)
Higher education x After	0.017**			0.027***
	(0.007)			(0.010)
Higher education x Placebo after		-0.022	-0.013	
		(0.016)	(0.009)	
Region dummies	✓	✓	✓	✓
Cohort dummies	✓	✓	✓	✓
Age at marriage FE	✓	✓	✓	✓
Proxy for income	✓	✓	✓	✓
Sample (marriage year)	1926 – 1998	1951 – 1970	1972 – 1991	1962 – 1981
Observations	29,165	9,159	14,402	13,244
R-squared	0.049	0.023	0.057	0.035

Robust standard errors clustered at the municipality level in parentheses; ***: p<0.01, **: p<0.05, *: p<0.1.

Empirical findings: summary

Both at the macro and the micro level,

- we find a robust, positive correlation between human capital and civil marriage;
- this correlation is stronger
  - i) in Northern and Central municipalities,
  - ii) if social capital is stronger and/or family ties are weaker,
  - iii) after the introduction of divorce;
- income turns out to be negatively correlated with civil marriage.

The model

Agents live for 3 periods. They are rational, forward-looking and heterogeneous w.r.t. religious inclination: $\varphi_i \sim f(\varphi_i)$, with $\varphi_i > 0$.

Timing:

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1. agents allocate time between leisure l_i, education e_i and religious practice r_i;
2. acquire human capital $h(e_i)$, decide between religious and civil marriage (no singles), and consume,
   - religious marriage costs time (z), brings more utility to religious people, does not allow for divorce ($\neq$ civil marriage),
   - marriage quality is always good ($m = g > 0$);

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   - marriage quality is always good ($m = g > 0$);
3. observe marriage quality (good or bad), decide about divorce/remarriage, and consume;
   - if quality is bad ($m = 0$, with prob.=p), they can remarry after divorce (at a cost k), but not in the church.

Marriage choices

Alternative marriage "profiles":

- $j = RR, CC, RC$, if divorce is legal;
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Note also that

i) the CR alternative is ruled out by assumption:
a civil marriage in period 2 cannot become religious in period 3;

ii) we establish conditions on the parameters so as to avoid time-inconsistent behavior.

Optimization

Agent i chooses r_i^j and e_i^j so as to maximize

$$U_i^j = \sum_{t=1}^{3} \beta^{t-1} u_{i,t}^j, \tag{1}$$

where

$$u_{i,t}^j = \begin{cases} l_i^j + \varphi_i \ln r_i^j & \text{if } t = 1, \\ m_t + \eta_t^j r_i^j + \ln c_{i,t} & \text{if } t = 2, 3, \end{cases} \tag{2}$$

subject to

$$1 = l_i^j + r_i^j + e_i^j, \tag{3}$$

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She will then select the best marriage profile.

Note that

$$m_2 = g,$$

$$m_3 = \begin{cases} g & \text{with prob} = p, \\ 0 & \text{with prob} = 1-p; \end{cases}$$

$$\eta_2^j = \begin{cases} 0 & \text{if } j = CC, \\ \eta > 0 & \text{if } j = RR, RC; \end{cases}$$

$$\eta_3^j = \begin{cases} 0 & \text{if } j = CC, RC, \\ \eta > 0 & \text{if } j = RR; \end{cases}$$

$$c_{2,i} = \begin{cases} h_i^j & \text{if } j = CC, \\ (1-z)h_i^j & \text{if } j = RR, RC, \end{cases}$$

$$c_{3,i} = \begin{cases} h_i^j - k & \text{if } m_3 = 0 \text{ and } j = CC, RC, \\ h_i^j & \text{if } m_3 = g, \text{ or if } m_3 = 0 \text{ and } j = RR. \end{cases}$$

Utility functions

$$u_i^{RR} = I_i^{RR} + \varphi_i \ln r_i^{RR} + \beta\left(g + \eta r_i^{RR} + \ln((1-z)h(e_i^{RR}))\right) + \\ + \beta^2\left((1-p)g + \eta r_i^{RR} + \ln h(e_i^{RR})\right),$$

$$u_i^{CC} = I_i^{CC} + \varphi_i \ln r_i^{CC} + \beta\left(g + \ln h(e_i^{CC})\right) + \\ + \beta^2\left(g + p\ln(h(e_i^{CC}) - k) + (1-p)\ln h(e_i^{CC})\right),$$

$$u_i^{RC} = I_i^{RC} + \varphi_i \ln r_i^{RC} + \beta\left(g + \eta r_i^{RC} + \ln((1-z)h(e_i^{RC}))\right) + \\ + \beta^2\left(g + p\ln(h(e_i^{RC}) - k) + (1-p)\ln h(e_i^{RC})\right).$$

About the model

Our characterization of marriage has two alternative interpretations:

- agents are all women (or men) and their prospective marriage spouses are all alike, or
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The cost of divorce $k \in (0, \infty)$ can be interpreted as an indirect measure of socio-cultural factors.
For simplicity, we abstract from the (possible) good cost of religious marriages – which would generate the negative correlation between income and civil marriages found in the data.

Optimal choices

Optimal choices are specific to marriage profiles:

$$\begin{cases} r_i^{RR} = \dfrac{\varphi_i}{1-\beta(1+\beta)\eta} \\ e_i^{RR} = \beta(1+\beta) \end{cases}, \tag{5}$$

$$\begin{cases} r_i^{CC} = \varphi_i \\ e_i^{CC} = \dfrac{\omega}{2} \end{cases}, \tag{6}$$

$$\begin{cases} r_i^{RC} = \dfrac{\varphi_i}{1-\beta(1+(1-p)\beta)\eta} \\ e_i^{RC} = \dfrac{\omega}{2} \end{cases}, \tag{7}$$

where

$$\omega \equiv k+\beta(1+\beta)+\sqrt{k^2+\beta^2(1+\beta)^2+2k\beta(1-\beta-2\beta(1+(1-p)))}.$$

Optimal choices

Marriage-related economic incentives are key determinants of both education and religiosity.

In particular,

- $\frac{\partial r_i^j}{\partial \varphi_i} > 0, \forall j = CC, RC, RR$
  (religious practice increases with religious inclination),
- $r_i^{CC} < r_i^{RC} < r_i^{RR}$;
- $\frac{\partial e_i^j}{\partial \varphi_i} = 0, \forall j = CC, RC, RR$
  (education does not depend directly on individual attitudes towards religion),
- $e_i^{RC} = e_i^{CC} > e_i^{RR}$
  (education is lower if divorce is not an option).

Choosing a marriage profile

Individual i selects her preferred marriage profile by comparing the indirect utility functions $V^{RR}(\varphi_i)$, $V^{CC}(\varphi_i)$ and $V^{RC}(\varphi_i)$.

Lemma 1

There exist unique $\bar{\varphi}$, $\hat{\varphi}$ *and* $\tilde{\varphi}$ *such that* $V^{CC}(\bar{\varphi}_i) = V^{RC}(\bar{\varphi}_i)$, $V^{RC}(\hat{\varphi}_i) = V^{RR}(\hat{\varphi}_i)$ *and* $V^{CC}(\tilde{\varphi}_i) = V^{RR}(\tilde{\varphi}_i)$.
There also exists $\check{z} \in (0,1)$ *such that:*

(a) *if* $z < \check{z}$, *we have* $\bar{\varphi} < \tilde{\varphi} < \hat{\varphi}$, *so that individuals characterized by* $\varphi_i \leq \bar{\varphi}$ *choose the CC regime, those with* $\bar{\varphi} < \varphi_i \leq \hat{\varphi}$ *choose RC, while those with* $\varphi_i > \hat{\varphi}$ *select RR;*

(b) *if* $z \geq \check{z}$, *we have* $\hat{\varphi} \leq \tilde{\varphi} \leq \bar{\varphi}$, *so that agents choose the CC regime if* $\varphi_i \leq \tilde{\varphi}$, *and the RR regime otherwise.*

Choosing a marriage profile

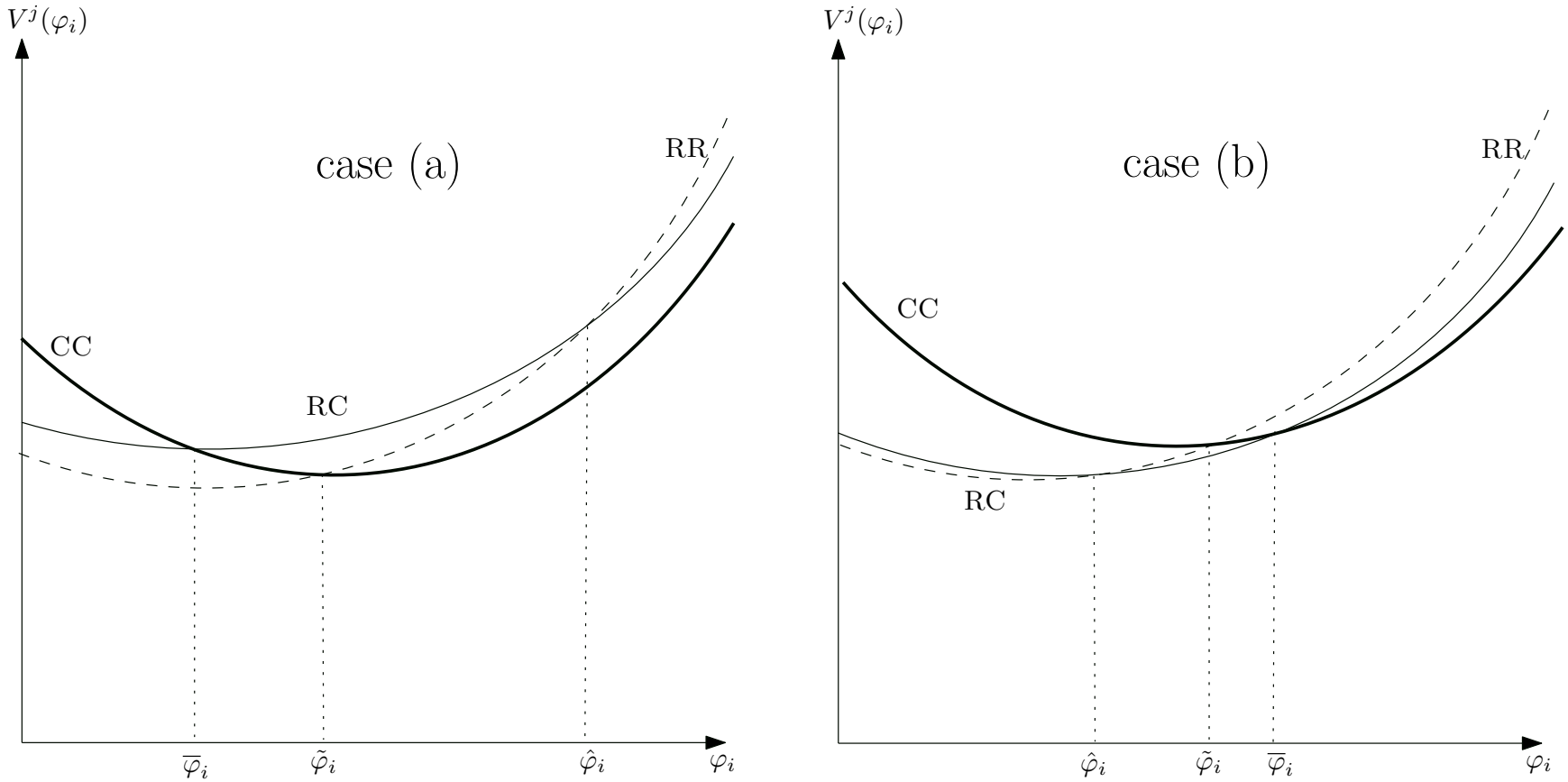

Figure : Indirect utility functions in the two cases of Lemma 1

Choosing a marriage profile

The choice of the marriage profile crucially depends on k and z (socio-cultural factors).

Proposition 1

The threshold $\bar{\varphi}$ is increasing in z, but is independent of k.
The thresholds $\hat{\varphi}$ and $\tilde{\varphi}$ are both decreasing in k.
Moreover, $\tilde{\varphi}$ increases with z, while $\hat{\varphi}$ does not depend on z.

Aggregate outcomes

We consider identical OLGs, rule out inter-generational marriage.

Depending on $f(\varphi_i)$, we can compute the share of civil marriages C, average human capital $\bar{h}$ and average religiosity $\bar{r}$.

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Proposition 2

Assuming $f(\varphi_i) > 0$ for all $\varphi_i \in (0, \infty)$, both the proportion of civil marriages and average human capital are increasing in z and decreasing in k. Average religiosity is negatively correlated with the prevalence of civil marriages.

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We consider identical OLGs, rule out inter-generational marriage. Depending on $f(\varphi_i)$, we can compute the share of civil marriages C, average human capital $\bar{h}$ and average religiosity $\bar{r}$.

Proposition 2

Assuming $f(\varphi_i) > 0$ for all $\varphi_i \in (0, \infty)$, both the proportion of civil marriages and average human capital are increasing in z and decreasing in k. Average religiosity is negatively correlated with the prevalence of civil marriages.

Furthermore, civil first marriages are more likely to end in divorce than religious marriages (consistent with Impicciatore and Billari, 2012).

The model w/o divorce

If divorce is not allowed ($j = RR, CC$), optimal choices are given by

$$\begin{cases} r_i^{RR} = \dfrac{\varphi_i}{1-\beta(1+\beta)\eta} \\ e_i^{RR} = \beta(1+\beta) \end{cases}, \tag{8}$$

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Proposition 3

Investment in education is (i) independent of the marriage choice, (ii) lower than in the model with divorce for the CC profile.

Marriage profiles w/o divorce, and institutional change

Lemma 2

There exists a threshold $\tilde{\tilde{\varphi}}$ such that individuals with $\varphi_i \leq \tilde{\tilde{\varphi}}$ choose the CC marriage profile, while those with $\varphi_i > \tilde{\tilde{\varphi}}$ prefer RR.

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- human capital increases with (people with low φ_i prefer *RC* to *RR* and invest more in education to pay for the eventual divorce cost);
- economies characterized by different parameters (k, z) diverge.

The role of social capital and family ties

Consider the following environment:

- an economy where divorce is legal,
- made of two regions, characterized by different values of k (namely $k^H > k^L$),
- each region contains many municipalities, heterogeneous with respect to the parameter z that follows a common distribution.

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Consistent with our empirical analysis, the estimated coefficient $\hat{b}$ would be increasing in k.

Conclusions

In this paper, we

- study the main correlates of civil marriage in Italy;
- identify some factors that shape the (positive) correlation between human capital and secularization;
- suggest that the introduction of divorce unleashed the forces of (differential) secularization in marriage;
- provide a rationale for these results.