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

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Motivation and research question

Secularization: historical process through which religion loses social and cultural significance.
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We study the link between secularization and human capital:

i) which is the sign of the correlation?

ii) how is it shaped by sociocultural factors?

iii) what is the role of institutional reform?

iv) how can we make sense of this?
Motivation and research question

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ii) how is it shaped by sociocultural factors?
iii) what is the role of institutional reform?
iv) how can we make sense of this?

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.

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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);
Related literature

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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 ≈ 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 (-);
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 (-);

2. we exploit information on $\approx 25000$ marriages to study the correlates of civil marriage at the individual level, and
   - obtain results that are fully consistent with the macro evidence;
In this paper,

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2. we exploit information on $\approx 25000$ marriages to study the correlates of civil marriage at the individual level, and
   - 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.
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 (→ 3 years);  
2015 further legal easing of divorce (→ 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)

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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)

Civil vs religious marriages
Macro evidence on civil marriages: data description

We use Census data, available for

- ≈ 8000 municipalities (comuni)
Macro evidence on civil marriages: data description

We use Census data, available for

- $\approx 8000$ municipalities (comuni)

Dependent variable:
\% of civil marriages celebrated in municipality $i$ in year $t$.

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

Macro evidence on civil marriages: data description

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Dependent variable:
% of civil marriages celebrated in municipality $i$ in year $t$.

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

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

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

Robust standard errors clustered at the municipality level in parentheses; ***: p<0.01, **: p<0.05, *: p<0.1.
**Does divorce matter? (before/after)**

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

Robust standard errors clustered at the municipality level in parentheses;

***: p<0.01, **: p<0.05, *: p<0.1.

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Civil vs religious marriages
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 50,000 individuals (from ≈ 24,000 families),
- marriages before and after the legalization of divorce,
- a wide range of socio-cultural factors, at the individual level.
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.

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

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

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

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Fabio Mariani (UCLouvain)  Civil vs religious marriages
### Does divorce matter? (before/after)

<table>
<thead>
<tr>
<th>Dependent: civil marriage</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher education</td>
<td>0.001</td>
<td>0.026*</td>
<td>0.025***</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.014)</td>
<td>(0.007)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Higher education x After</td>
<td>0.017**</td>
<td></td>
<td></td>
<td>0.027***</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td></td>
<td></td>
<td>(0.010)</td>
</tr>
<tr>
<td>Higher education x Placebo after</td>
<td></td>
<td>-0.022</td>
<td>-0.013</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.016)</td>
<td>(0.009)</td>
<td></td>
</tr>
<tr>
<td>Region dummies</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cohort dummies</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Age at marriage FE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Proxy for income</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Observations</td>
<td>29,165</td>
<td>9,159</td>
<td>14,402</td>
<td>13,244</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.049</td>
<td>0.023</td>
<td>0.057</td>
<td>0.035</td>
</tr>
</tbody>
</table>

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

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**Fabio Mariani (UCLouvain)**

Civil vs religious marriages
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:
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:

1. agents allocate time between leisure \( l_i \), education \( e_i \) and religious practice \( r_i \);
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:

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 \( (\neq \text{civil marriage}) \),
   - marriage quality is always good \( (m = g > 0) \);

Fabio Mariani (UCLouvain)
Civil vs religious marriages
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:

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 \( (m = g > 0) \);
3. observe marriage quality (good or bad), decide about divorce/remarriage, and consume;
   - if quality is bad \( (m = 0, \text{ with prob.} = p) \), 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;
- $j = RR, CC$, if not.
Marriage choices

Alternative marriage “profiles”:

- $j = RR, CC, RC$, if divorce is legal;
- $j = RR, CC$, if not.

If agents choose $RC$, they
- marry in the church in period 2, but
- remain open to the option of divorce/remarriage in period 3.
Marriage choices

Alternative marriage “profiles”:

- $j = RR, CC, RC$, if divorce is legal;
- $j = RR, CC$, if not.

If agents choose $RC$, they

- marry in the church in period 2, but
- remain open to the option of divorce/remarriage in period 3.

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

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

where

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

subject to

$$1 = l_i^j + r_i^j + e_i^j,$$

$$h_i^j = h(e_i^j) \equiv e_i^j.$$
Optimization

Agent $i$ chooses $r^j_i$ and $e^j_i$ so as to maximize

$$U^j_i = \sum_{t=1}^{3} \beta^{t-1} u^j_{i,t},$$

where

$$u^j_{i,t} = \begin{cases} l^j_i + \varphi_i \ln r^j_i & \text{if } t = 1, \\ m_t + \eta^j_t r^j_i + \ln c_{i,t} & \text{if } t = 2, 3, \end{cases}$$

subject to

$$1 = l^j_i + r^j_i + e^j_i,$$

$$h^j_i = h(e^j_i) \equiv e^j_i.$$
Note that

\[ m_2 = g, \]

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

\[ \eta_j^2 = \begin{cases} 0 \text{ if } j = CC, \\ \eta > 0 \text{ if } j = RR, RC; \end{cases} \]

\[ \eta_j^3 = \begin{cases} 0 \text{ if } j = CC, RC, \\ \eta > 0 \text{ if } j = RR; \end{cases} \]

\[ c_{2,i} = \begin{cases} h_j^i \text{ if } j = CC, \\ (1 - z)h_j^i \text{ if } j = RR, RC, \end{cases} \]

\[ c_{3,i} = \begin{cases} h_j^i - k \text{ if } m_3 = 0 \text{ and } j = CC, RC, \\ h_j^i \text{ if } m_3 = g, \text{ or if } m_3 = 0 \text{ and } j = RR. \end{cases} \]
Utility functions

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

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

\[ u_i^{RC} = l_i^{RC} + \varphi_i \ln r_i^{RC} + \beta \left( g + \eta r_i^{RC} + \ln((1 - z)h(e_i^{RC})) \right) + \]
\[ + \beta^2 \left( g + p \ln(h(e_i^{RC}) - k) + (1 - p) \ln h(e_i^{RC}) \right). \]
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
- decisions are taken at the couple level + perfectly assortative mating.
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- agents are all women (or men) and their prospective marriage spouses are all alike, or
- decisions are taken at the couple level + perfectly assortative mating.

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:

\[
\begin{align*}
  r_i^{RR} &= \frac{\varphi_i}{1 - \beta(1 + \beta)\eta}, \\
  e_i^{RR} &= \beta(1 + \beta), \\
  r_i^{CC} &= \varphi_i, \\
  e_i^{CC} &= \frac{\omega}{2}, \\
  r_i^{RC} &= \frac{\varphi_i}{1 - \beta(1 + (1 - p)\beta)\eta}, \\
  e_i^{RC} &= \frac{\omega}{2},
\end{align*}
\]

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,

\[
\frac{\partial r^j_i}{\partial \varphi_i} > 0, \ \forall j = CC, RC, RR
\]

(religious practice increases with religious inclination),

\[
r^{CC}_i < r^{RC}_i < r^{RR}_i;
\]

\[
\frac{\partial e^j_i}{\partial \varphi_i} = 0, \ \forall j = CC, RC, RR
\]

(education does not depend directly on individual attitudes towards religion),

\[
e^{RC}_i = e^{CC}_i > e^{RR}_i
\]

(education is lower if divorce is not an option).

Fabio Mariani (UCLouvain)  Civil vs religious marriages
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 $\tilde{z} \in (0, 1)$ such that:

(a) if $z < \tilde{z}$, 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 $z \geq \tilde{z}$, 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 $z$.***
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 \( \bar{r} \).
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 $\bar{r}$.

**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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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

\[
\begin{align*}
    r_i^{RR} &= \frac{\varphi_i}{1 - \beta(1 + \beta)\eta}, \\
    e_i^{RR} &= \beta(1 + \beta),
\end{align*}
\]

(8)

\[
\begin{align*}
    r_i^{CC} &= \varphi_i, \\
    e_i^{CC} &= \beta(1 + \beta).
\end{align*}
\]

(9)
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\[
\begin{align*}
    r_i^{CC} &= \varphi_i \\
    e_i^{CC} &= \beta(1 + \beta)
\end{align*}
\] (9)

**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 $\tilde{\varphi}$ such that individuals with $\varphi_i \leq \tilde{\varphi}$ choose the CC marriage profile, while those with $\varphi_i > \tilde{\varphi}$ prefer RR.*
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When divorce is legal,
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When divorce is legal,

- the prevalence of civil marriages
  - is higher than without divorce,
  - is correlated with human capital,
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- human capital increases with (people with low $\phi_i$ prefer RC to RR and invest more in education to pay for the eventual divorce cost);
Marriage profiles w/o divorce, and institutional change

Lemma 2

There exists a threshold \( \tilde{\phi} \) such that individuals with \( \phi_i \leq \tilde{\phi} \) choose the CC marriage profile, while those with \( \phi_i > \tilde{\phi} \) prefer RR.

When divorce is legal,

- the prevalence of civil marriages
  - is higher than without divorce,
  - is correlated with human capital,
- human capital increases with (people with low \( \phi_i \) 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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In this setting, suppose that for the two regional samples we estimate

$$C = b \bar{h} + \epsilon.$$ 

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.