

Conference on Regional Entrepreneurship and Innovation

Regional development in the light of income
inequality, entrepreneurship and innovation

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(attendance via web)

Authors:

Emilia G. Marsellou (emarsellou@kepe.gr)

Vlassis Missos

Konstantinos Loizos

Centre of Planning and Economic Research (KEPE)

EGOV_INNO: E-government services
and tools from regional governments
and regional development bodies to
support and coordinate the regional
research and innovation capital

Introduction

Contribution to the existing literature of the determinants of economic growth and development at *regional level*.

European Union regions at NUTS-2 level, 2004-2016.

Income inequality, entrepreneurship, innovation.

Method: Panel Data Analysis, Two-step system GMM
(Arellano and Bover, 1995; Blundell and Bond, 1998)

Review of the literature

The empirical literature presents different results due to the different samples, methodologies, estimation techniques, sources of income distribution, time span etc.

Frank (2009b): USA, 1945-2004, IRS data, top decile as an inequality measure.

Atems and Jones (2015): USA, 1930-2005, Inequality and per capita income are negatively related, independent of the inequality measure.

Perugini and Martino (2008): EU, 1995, 2000, higher inequality is related to higher regional growth (it is questioned!).

Partridge (1997): US states, 1960-1990, 2SLS positive impact of income inequality (Gini) on economic growth.

Partridge (2005): US states, 1960-2000, Panel data (pooled OLS, BE, RE and FE) positive impact of inequality on growth.

Panizza (2002): US states, 1940-1980, Panel Data (FE, GMM), positive impact of income inequality (Gini) on economic growth yet the results are sensitive to the method used to measure inequality.

Ezcurra (2007): European Union regions, 1993-2002, ECHP data, spatial econometric model. The results indicate that income inequality is negatively associated with regional growth. The results are robust to alternative model specifications and measures of inequality.

Barro (2000, 2008): cross-country regression, 1965-1995 (2000) 1965-2004 (2008),

Braunerhjelm and Borgman (2004): Sweden's regions, 1975-1999, entrepreneurship (self-employment) and growth relate positively (especially in the service sector).

Data and methodology

- Independent variables are well-founded in the literature, selection was conditioned by their availability.
- Depending on the importance, we either choose to exclude or to find a close substitute.
- Two data-sets: Eurostat's regional statistics and EU-SILC (conditional interpolation/extrapolation circa 30%).
- 18 Countries: Austria, Belgium, Bulgaria, Cyprus, Czech, Germany, Greece, Spain, Finland, Italy, Luxembourg, Malta, Latvia, Portugal, Romania, Sweden, Slovakia, United Kingdom.
- 2004-2016.

Data and methodology

$$y_{i,t} - y_{i,t-1} = \alpha y_{i,t-1} + \beta_1 X'_{i,t} + \mu_i + \lambda_t + \epsilon_{i,t} \quad (1)$$

$$y_{i,t} = \alpha_1 y_{i,t-1} + \beta_1 X'_{i,t} + \mu_i + \lambda_t + \epsilon_{i,t} \quad (2)$$

$y_{i,t}$: The logarithm of real GDP per capita

α : The conditional convergence factor ($\alpha_1 = 1 + \alpha$)

$X'_{i,t}$: Vector of variables affecting regional growth

μ_i : Unobservable region-specific effect

λ_t : Time-specific fixed effect

Estimation results

The model allows testing the effect of our three core variables on EU regional economic growth:

- 1) Gini coefficient stands for inequality
- 2) Regional expenditures on R&D per inhabitant stand for innovation
- 3) Self-employed % of total population as an approximation for entrepreneurship

Control variables:

Tertiary education (controls for human capital)

Aged 65+ in total population (demography)

Long-run unemployment (accounts for persistent inequality)

Shares of regional GVA and GFCF (account for industry-mix)

LogRGDP	(1)	(2)	(3)
L.lnRGDP	0.957*** (0.005)	0.963*** (0.009)	0.970*** (0.007)
GINI	-0.135*** (0.041)	-0.146*** (0.035)	-0.174** (0.077)
lnR&D	0.009*** (0.003)	0.007* (0.003)	0.007** (0.003)
Tertiary	0.001*** (0.000)	0.001*** (0.000)	0.002** (0.000)
Self-employ	-0.044*** (0.020)	-0.044* (0.025)	-0.020 (0.035)
LongUnemploy			0.001 (0.001)
Age65+			0.001 (0.001)
sh_Agr		0.105 (0.082)	
invsh_Ind		0.025 (0.025)	0.037** (0.017)
invsh_Const			0.090 (0.075)
invsh_Serv			0.079* (0.041)
invsh_InfCom		0.086 (0.086)	
invsh_Prof		0.058*** (0.011)	
Constant	0.379*** (0.062)	0.350*** (0.072)	0.200* (0.118)
AR(1) (p-value)	0.043	0.004	0.007
AR(2) (p-value)	0.329	0.842	0.662
Hansen (p-value)	0.540	0.563	0.561
Number of Regions	184	184	184
Instruments No.	155	155	155
Number of Obs.	2178	2178	2178

Note: The dependent variable is the real GDP per capita (logRGDP); Windmeijer-corrected standard errors are in parenthesis; *, ** and *** denote significance levels of 10%, 5% and 1%; Region and time dummies are included but not reported for brevity; All explanatory variables are treated as potentially endogenous in the system GMM estimator; Instruments for differenced equation: 2-4 lagged core variables; Instruments for levels equation: differenced (sectoral) control variables.

Estimation results

Three different specifications are presented in the Table, results are produced by the two-step System GMM estimators.

Convergence factor is negative indicating that regions with initially lower GDP per capita have registered higher growth rates ($\alpha < 1$).

Gini coefficient is negative and highly significant (1%) in all model specifications.

Innovation coefficient is positive and significant in all specifications but at different levels (1%, 10% and 5% respectively). However, it is relatively low.

Self-employment (proxy of entrepreneurship) coefficient is negative in all model specifications but significant in specification 1 and 2 (1% and 10% respectively). This result is quite odd. One explanation might be that this proxy is general in the sense that there is no distinction between self-employed with or without personnel, or between "opportunity entrepreneurship" and "necessity entrepreneurship" (Acs, 2006).

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Conclusions

- The paper generates consistent approximations of income inequality at regional level for the period 2004-2016.
- Empirical results indicate that income inequality has a negative and significant impact on regional GDP growth.
- Innovation and human capital formation affect positively regional growth (though not always statistically significant).
- Entrepreneurship proxied by self-employment yields a puzzling, negative and weak relationship with regional GDP growth