

Emigration and Fertility Decline in Spain Since the Economic Recession: A Population-Level Analysis

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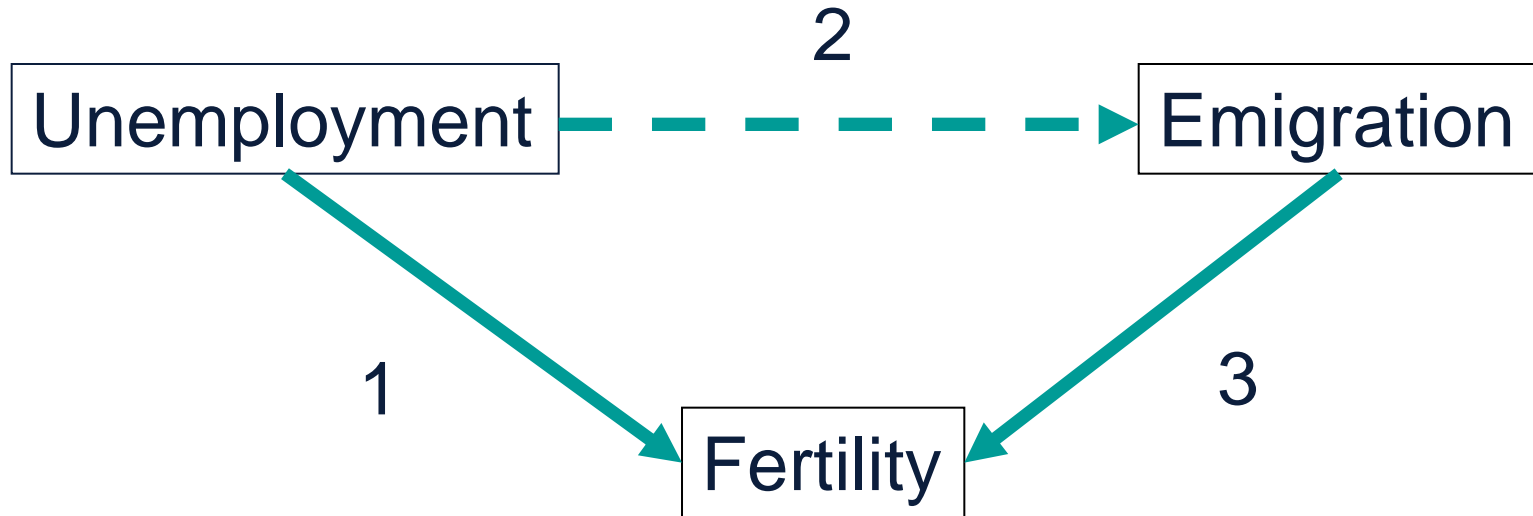
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Background

- In most studies that examine how economic uncertainty relates to fertility the focus is on **unemployment** (Goldstein et al. 2013; Schneider 2015; Sobotka et al. 2011)
- Empirical evidence supports a **procyclical relationship** between fertility rates and business cycle fluctuations, partly reflecting postponement until conditions improve (Sobotka et al. 2011)
- Migration-related factors have also been used to explain short- and long-term fertility changes (Billari and Dalla-Zuanna 2011; Sobotka 2008), albeit the focus is normally on **immigration** not **emigration**

Unemployment-emigration-fertility nexus

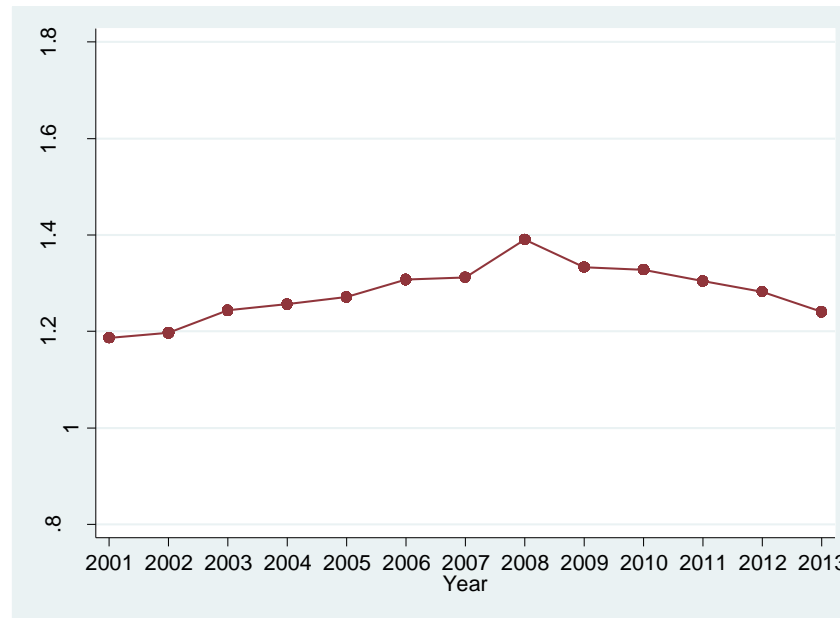
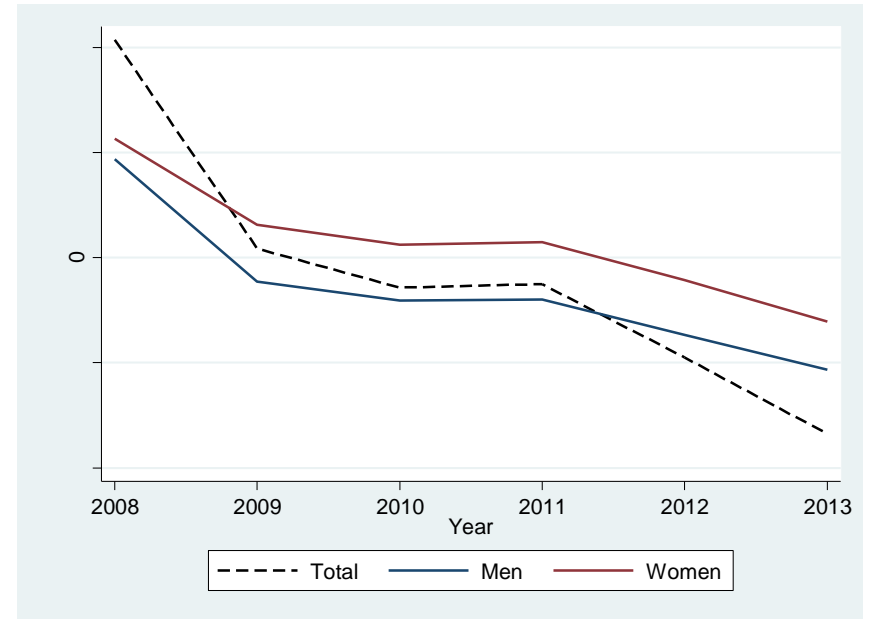
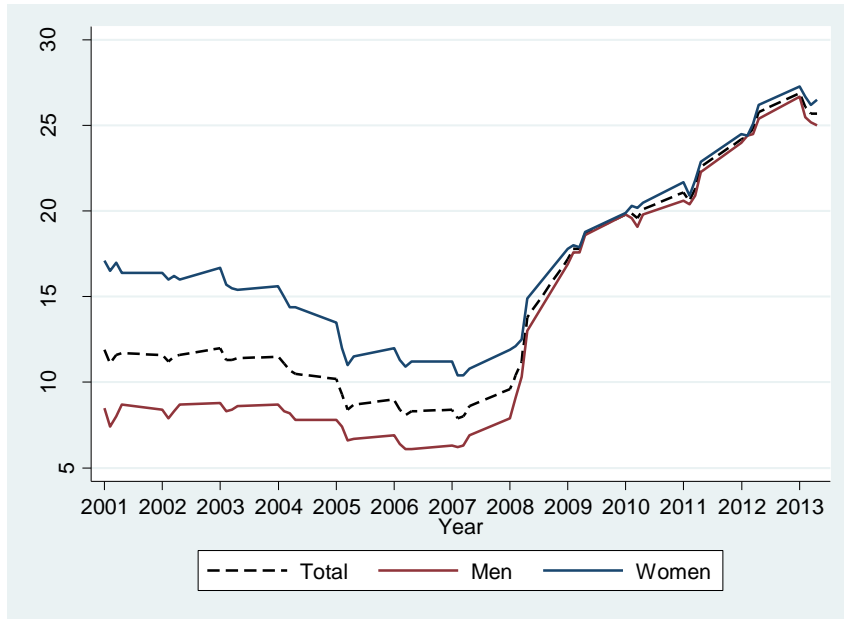


1 Rising unemployment usually associated with fertility decline

2 Unemployment may lead to emigration, although emigration is not necessarily caused by unemployment

3 Rising emigration may affect fertility via compositional change, as a proportion of the most fertile age groups emigrate

Unemployment, migration and fertility in Spain



Data & methods

Panel dataset (period 2009-2013 for 48 provinces)

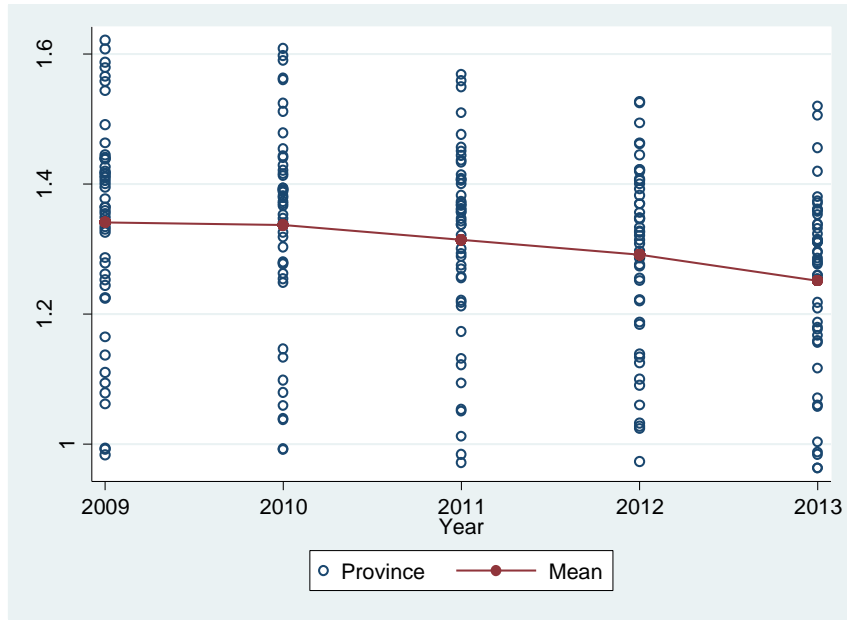
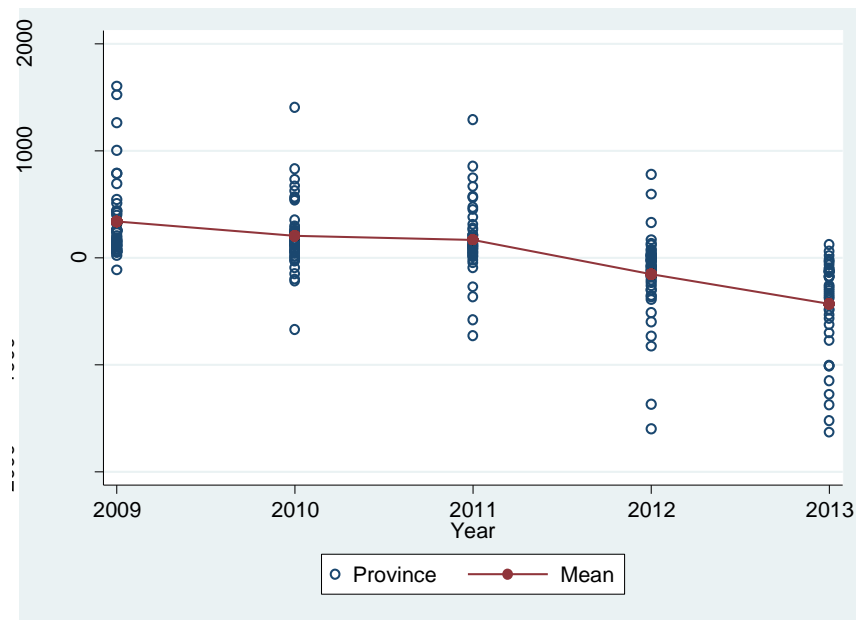
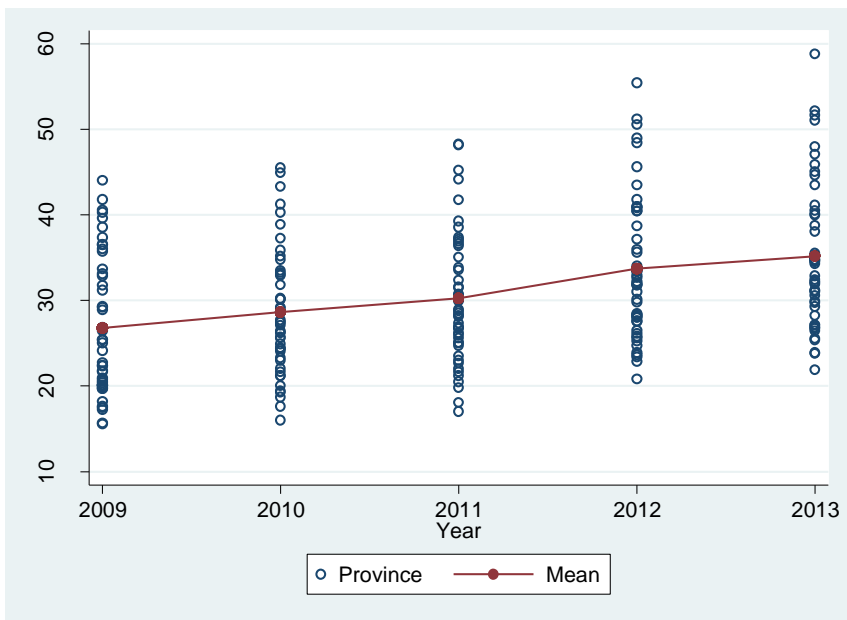
- TFR and ASFRs (outcome variables)
- Women's unemployment rate
- Women's total emigration (flow) by country of birth
- Other controls: women's total immigration (flow), female population (stock) by country of birth, and mean age at birth-first birth (diff)

(All variables are log-transformed, and all predictors are lagged by one year)

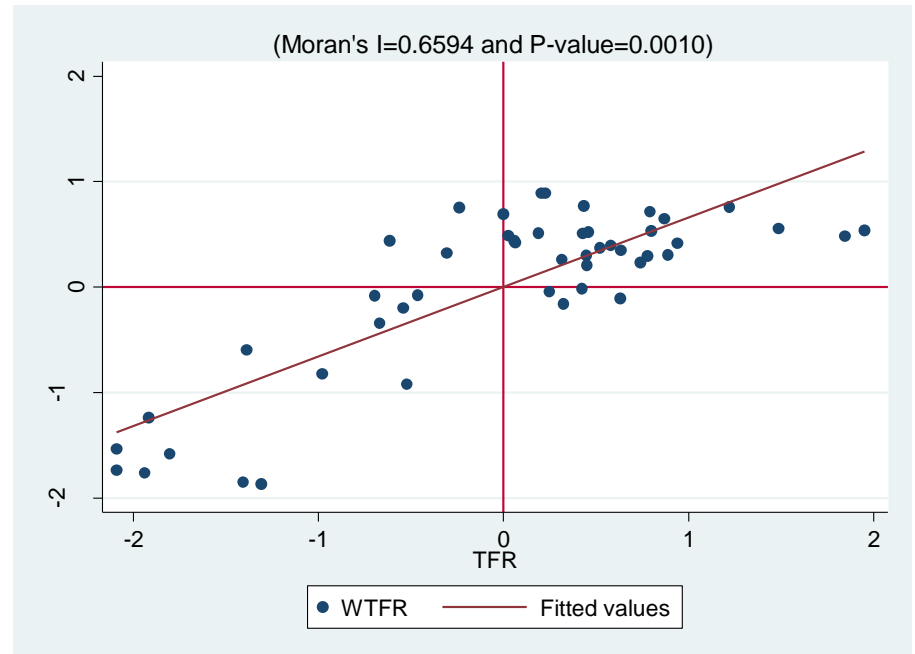
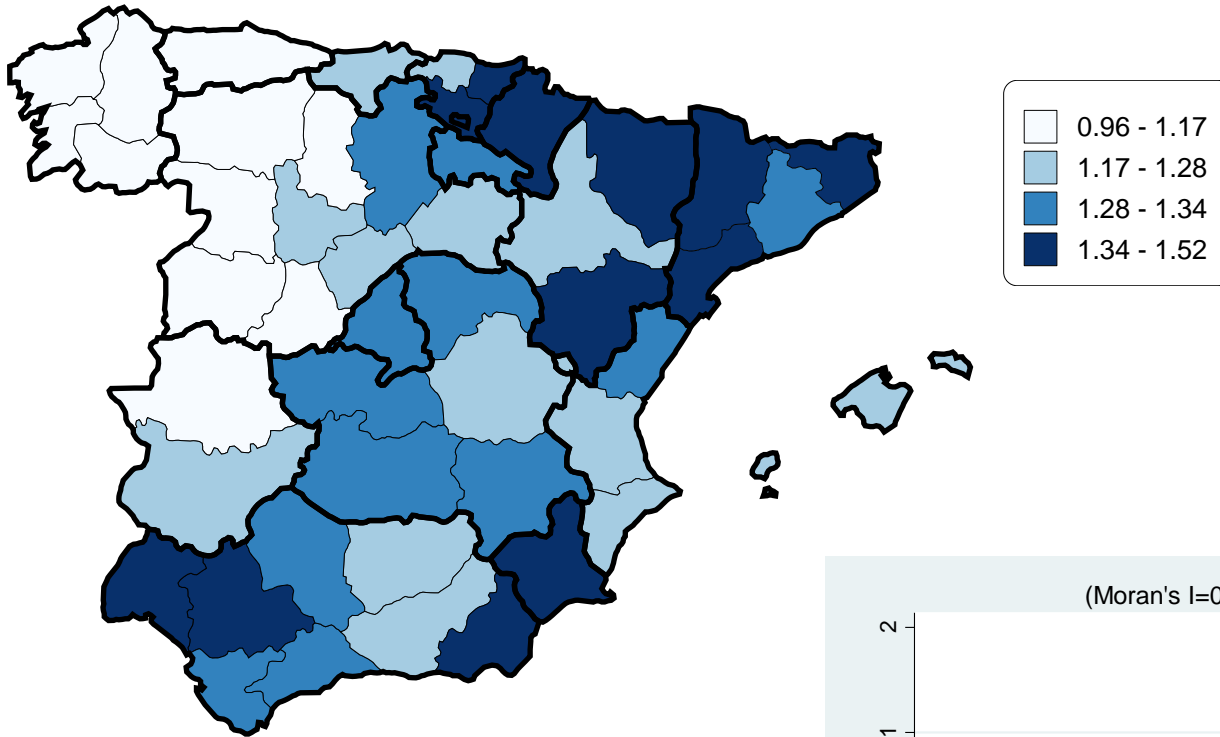
A two-step approach

- Panel regressions (OLS with provincial FE) (Stata's xtreg)
- Spatial panel regressions (Spatial Durbin with FE)
(Stata's xsmle)

Heterogeneity across provinces. Spain, 2009-2013



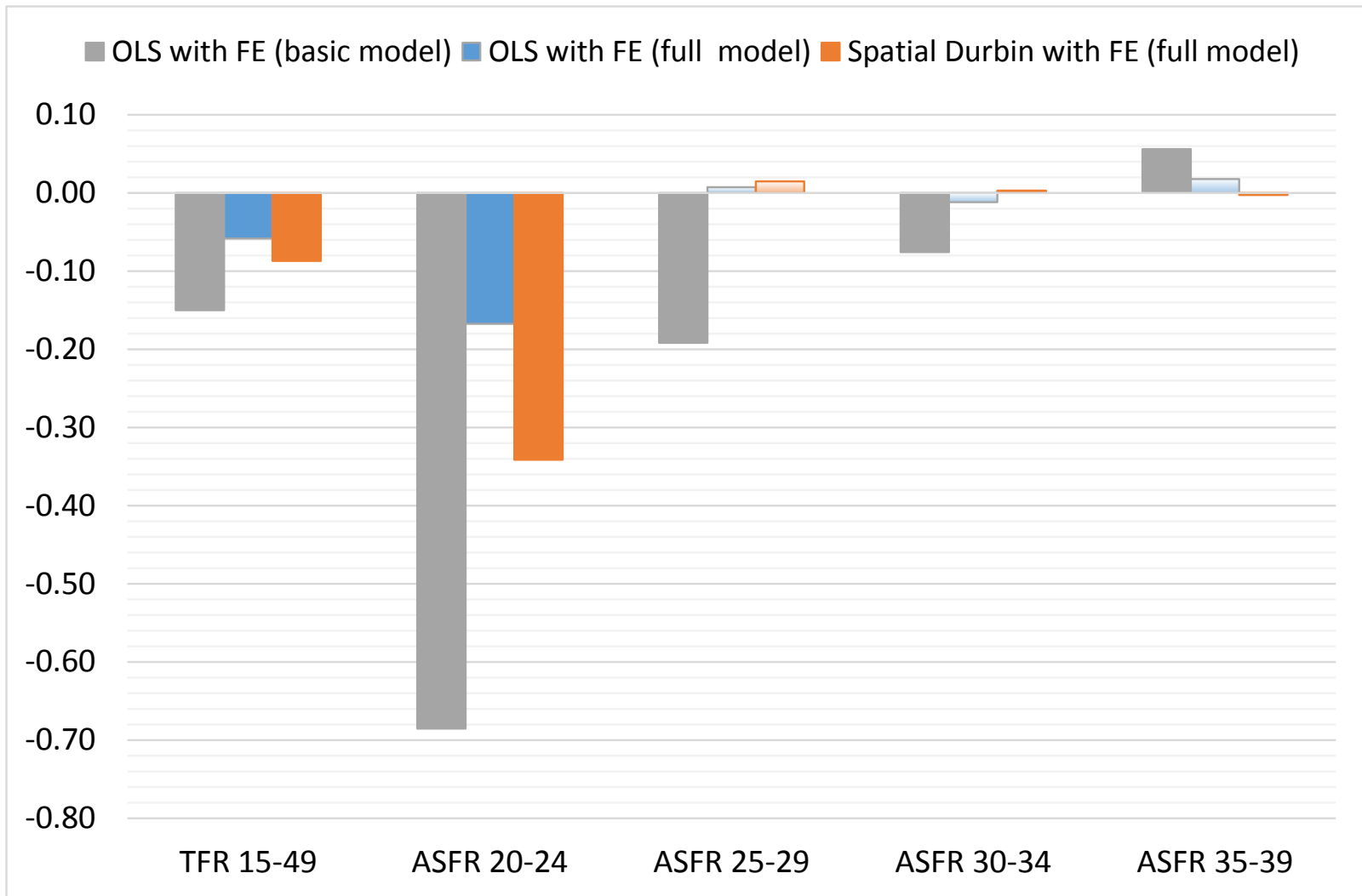
Spatial dependence. TFR in Spanish provinces, 2013





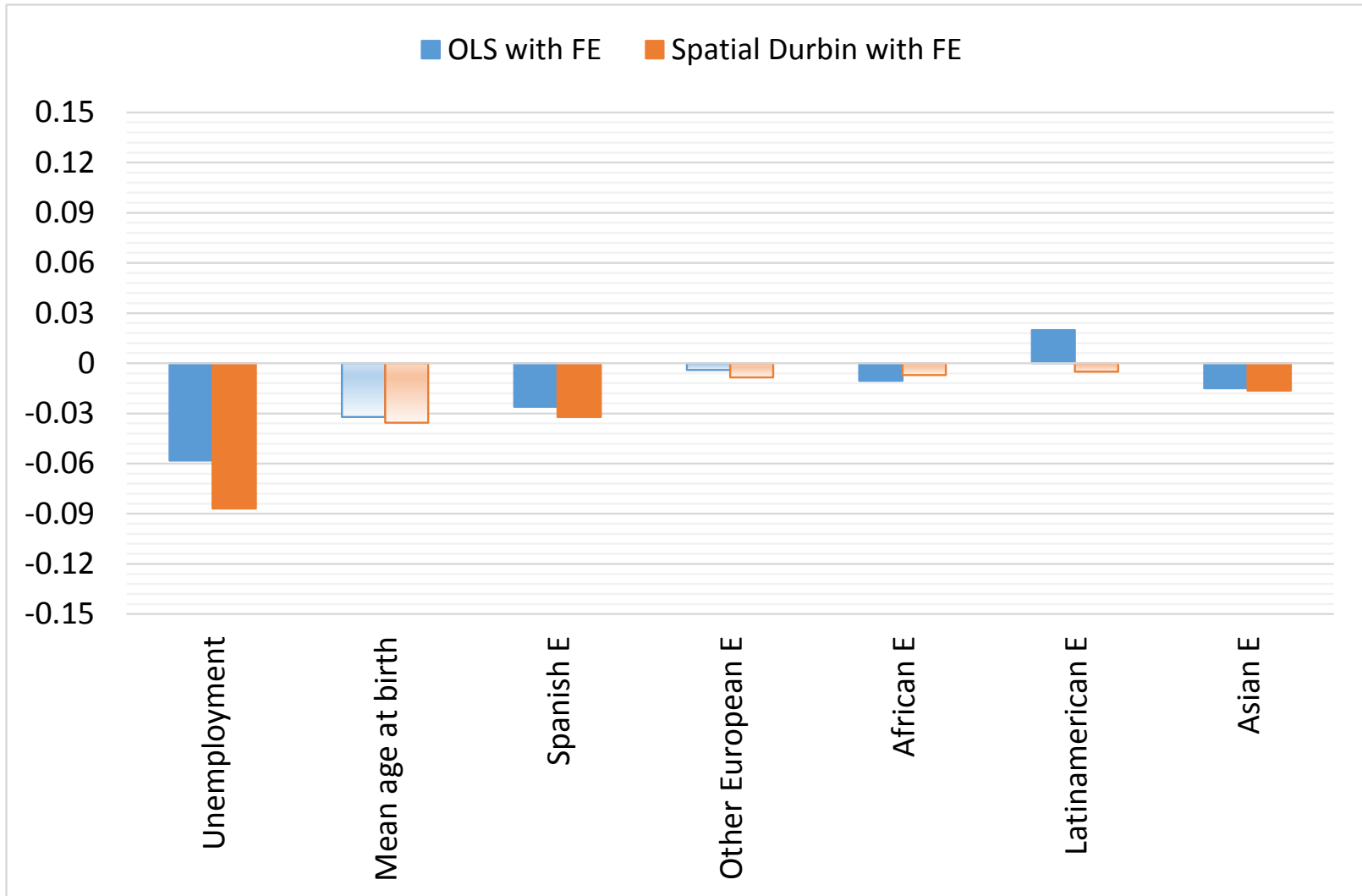
RESULTS

Panel data analysis with provincial fixed-effects, Spain 2009-2013 - Beta coefficients for unemployment



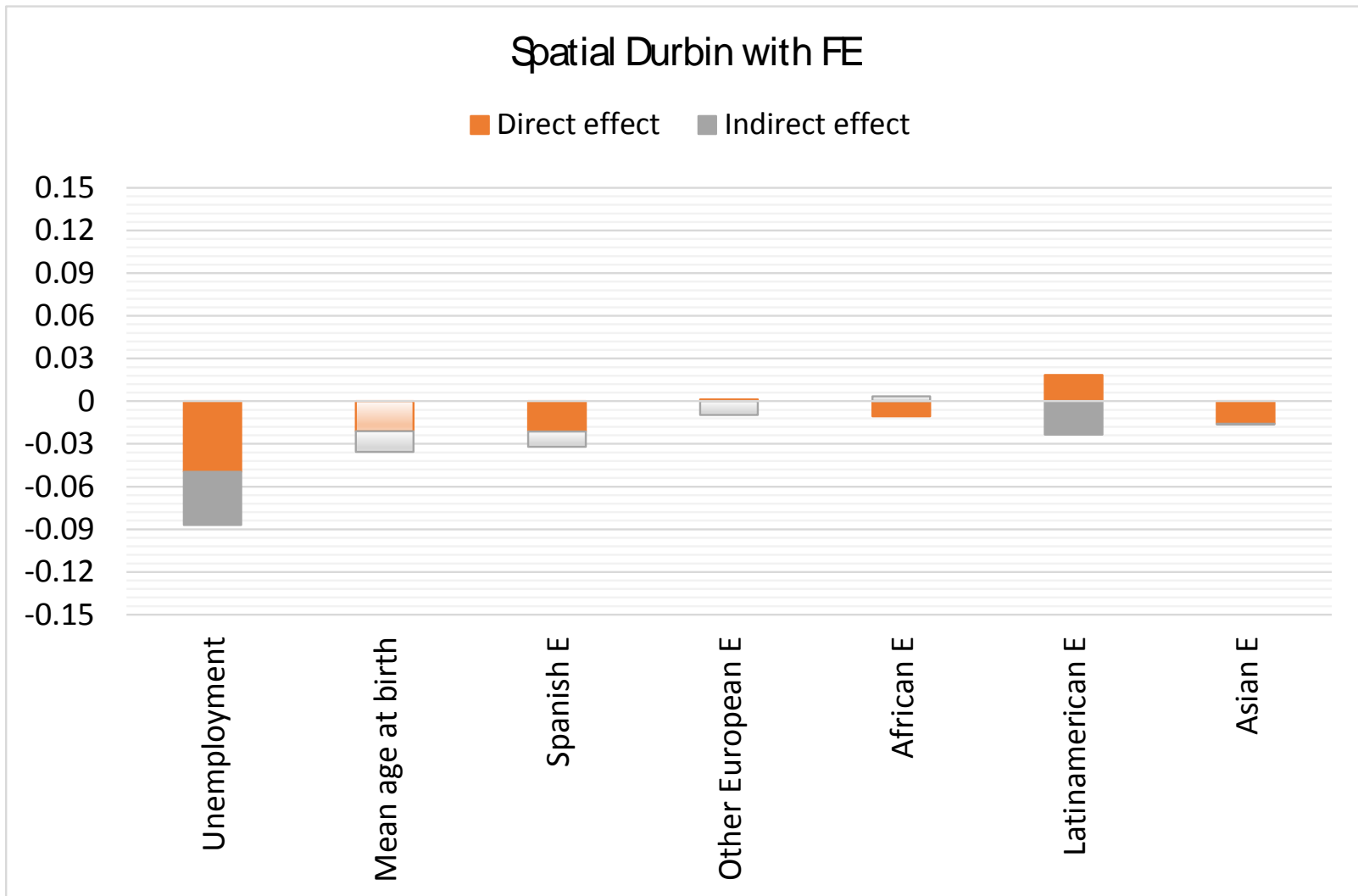
Significance at the 95 confidence level (otherwise in light shade)

Panel data analysis with provincial fixed-effects, Spain 2009-2013 – TFR (outcome)



Significance at the 95 confidence level (otherwise in light shade)

Panel data analysis with provincial fixed-effects, Spain 2009-2013 – TFR (outcome)



Significance at the 95 confidence level (otherwise in light shade)

Findings (1)

- **Higher levels of unemployment** are associated with lower fertility levels, although the effect is concentrated and significant among the youngest age groups
- **The negative effect of unemployment** on fertility is composed of direct and indirect effects on almost equal terms
- **Higher levels of emigration** are also associated with lower fertility levels, although the effect is concentrated and significant among two groups (Spanish and Asian)
- **The negative effect of emigration** on fertility is mainly composed of direct effects

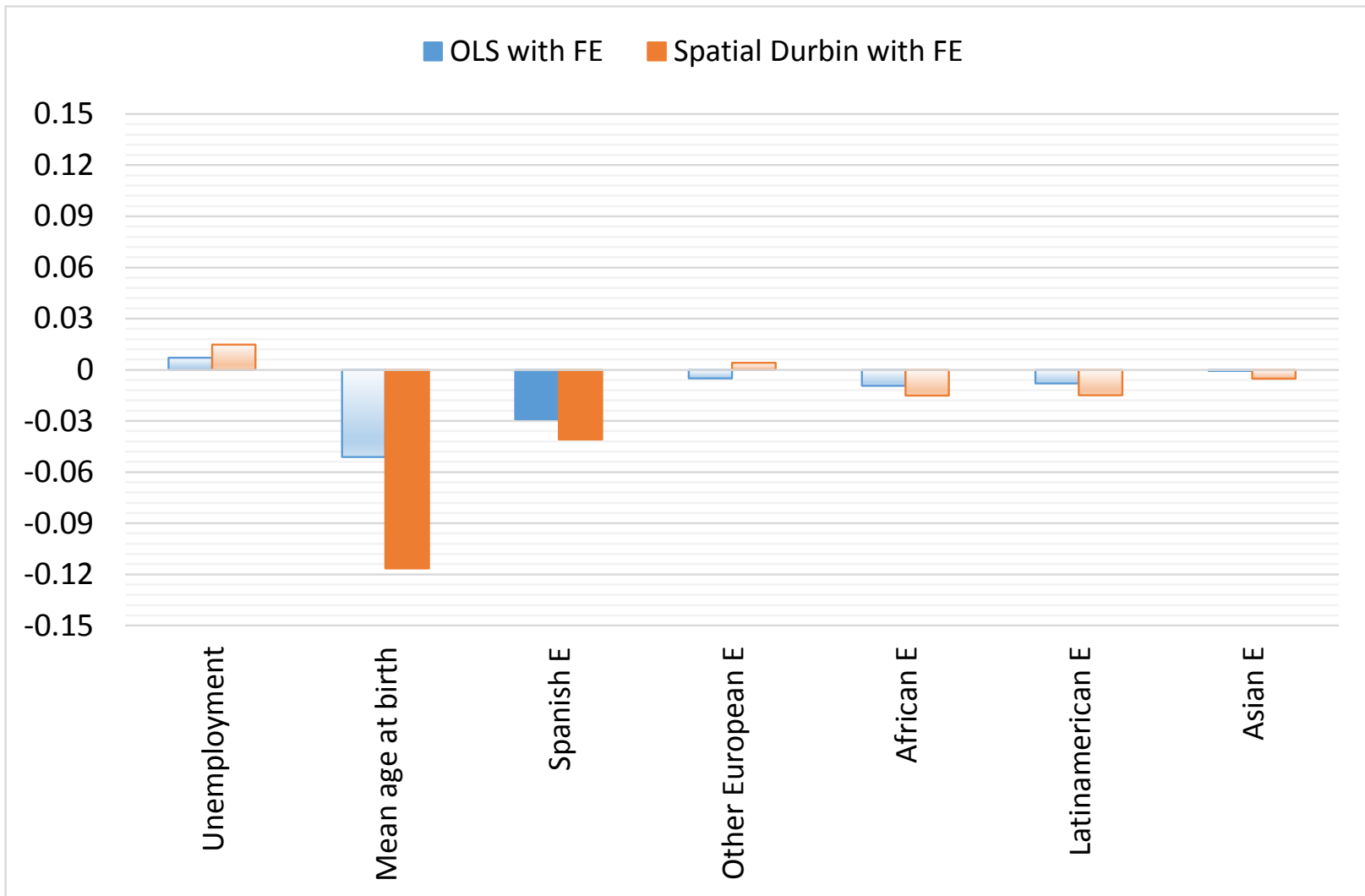
Findings (2)

- Our analyses indicate that unemployment and migration data are not independent, but rather spatially dependent (i.e. observations from one province exhibit values similar to those from nearby provinces)
- Spatial panel fixed-effect models corroborate that the non-spatial panel fixed-effects models underestimate the impact of unemployment and emigration



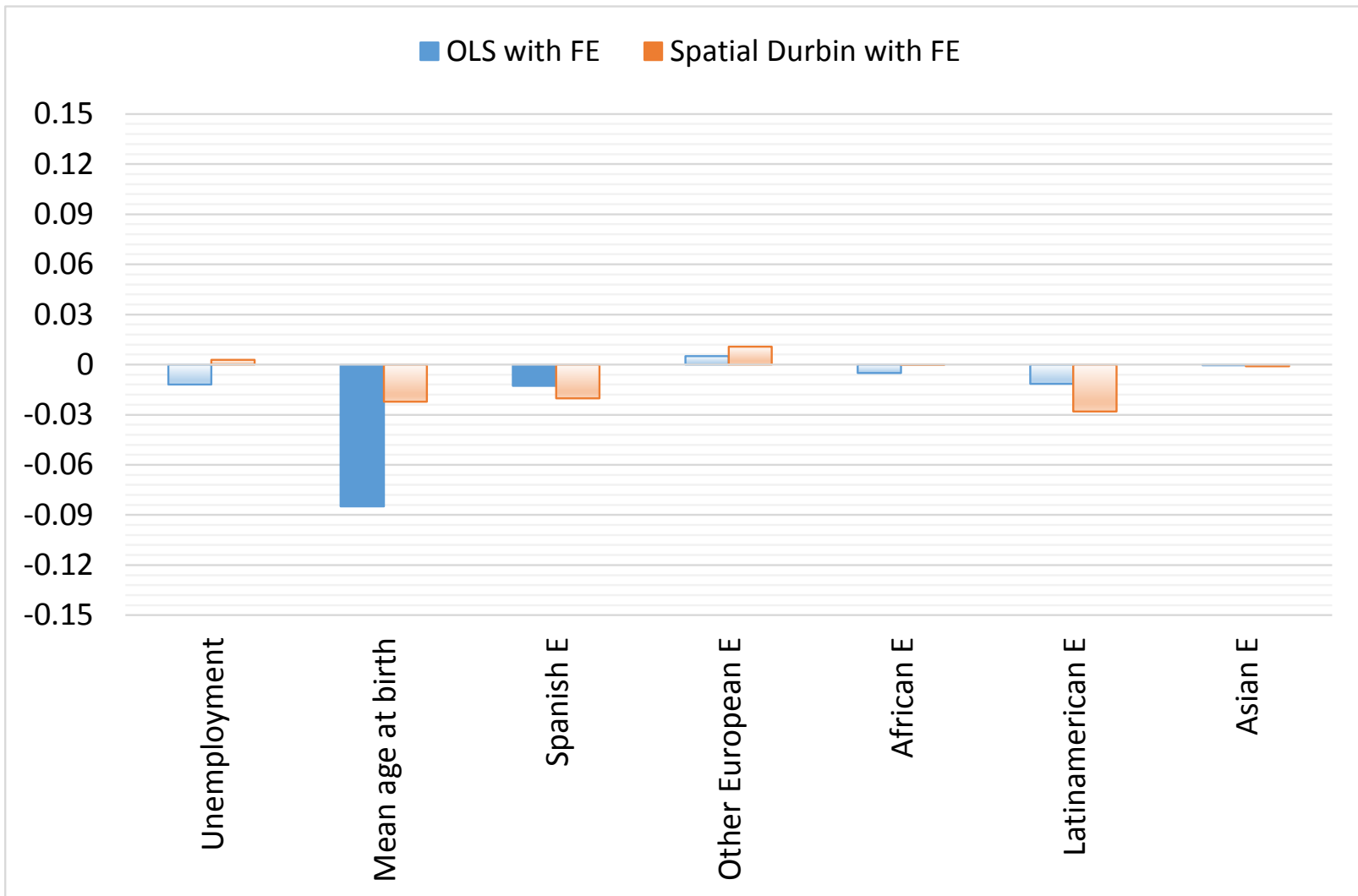
APPENDIX

Panel data analysis with provincial fixed-effects, Spain 2009-2013 – ASFR 25-29 (outcome)



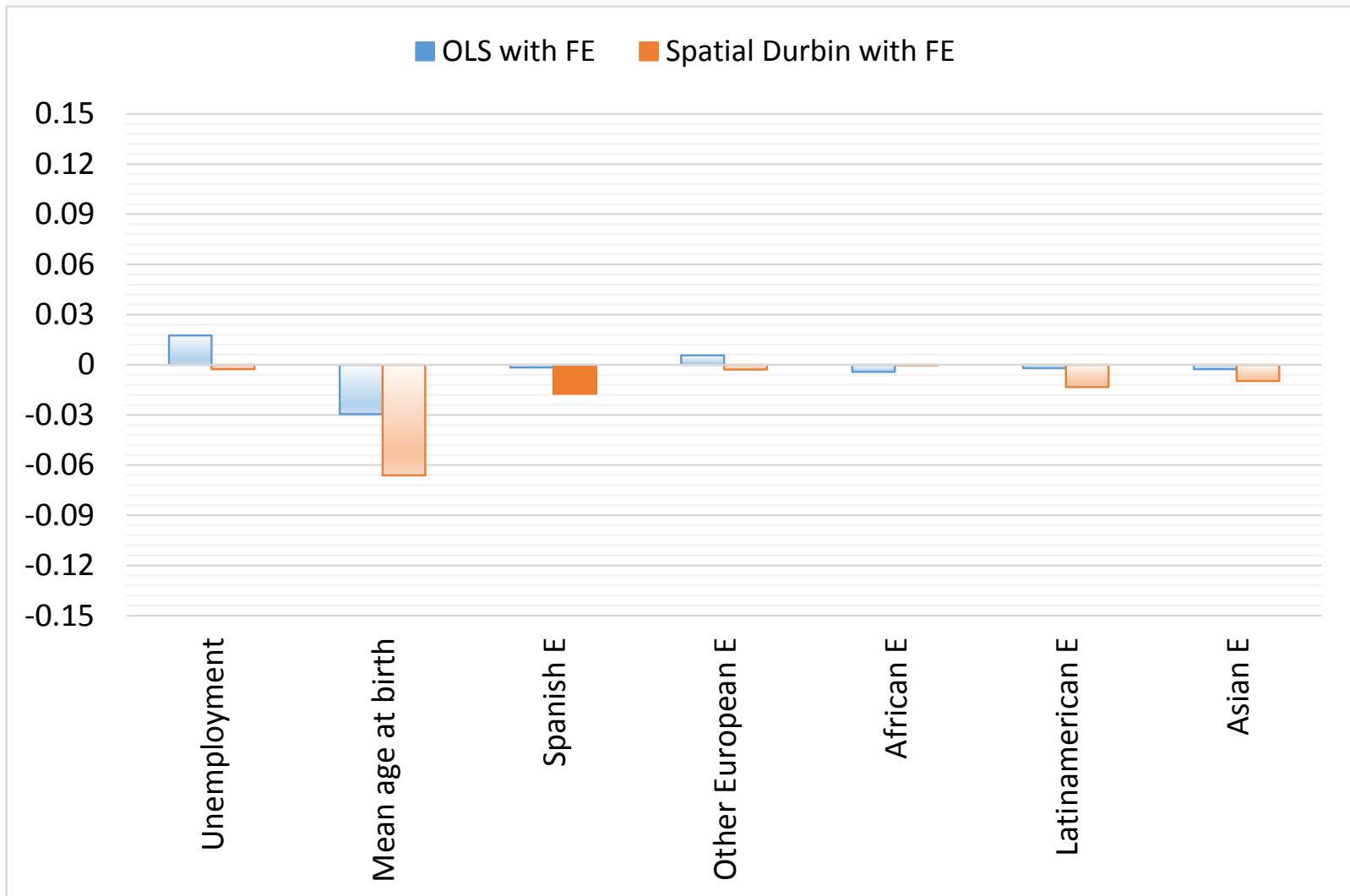
Significance at the 95 confidence level (otherwise in light shade)

Panel data analysis with provincial fixed-effects, Spain 2009-2013 – ASFR 30-34 (outcome)



Significance at the 95 confidence level (otherwise in light shade)

Panel data analysis with provincial fixed-effects, Spain 2009-2013 – ASFR 35-39 (outcome)



Significance at the 95 confidence level (otherwise in light shade)