

# The joint decision of labour supply and childcare in Italy under availability constraints

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## Research question

How can maternal labour supply (and childcare usage) be affected by relaxing the existing constraints in terms of childcare availability and costs?

## Overview

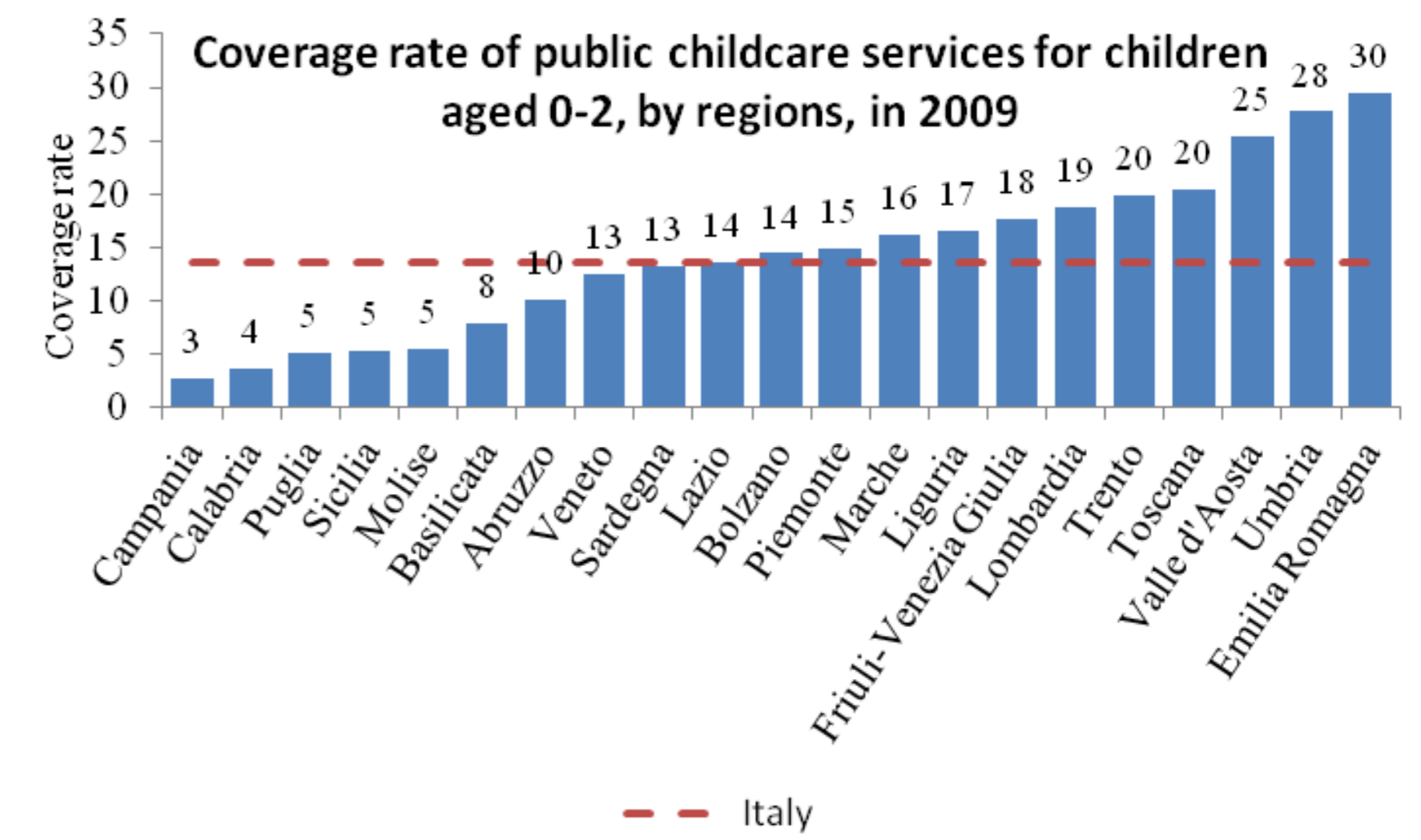
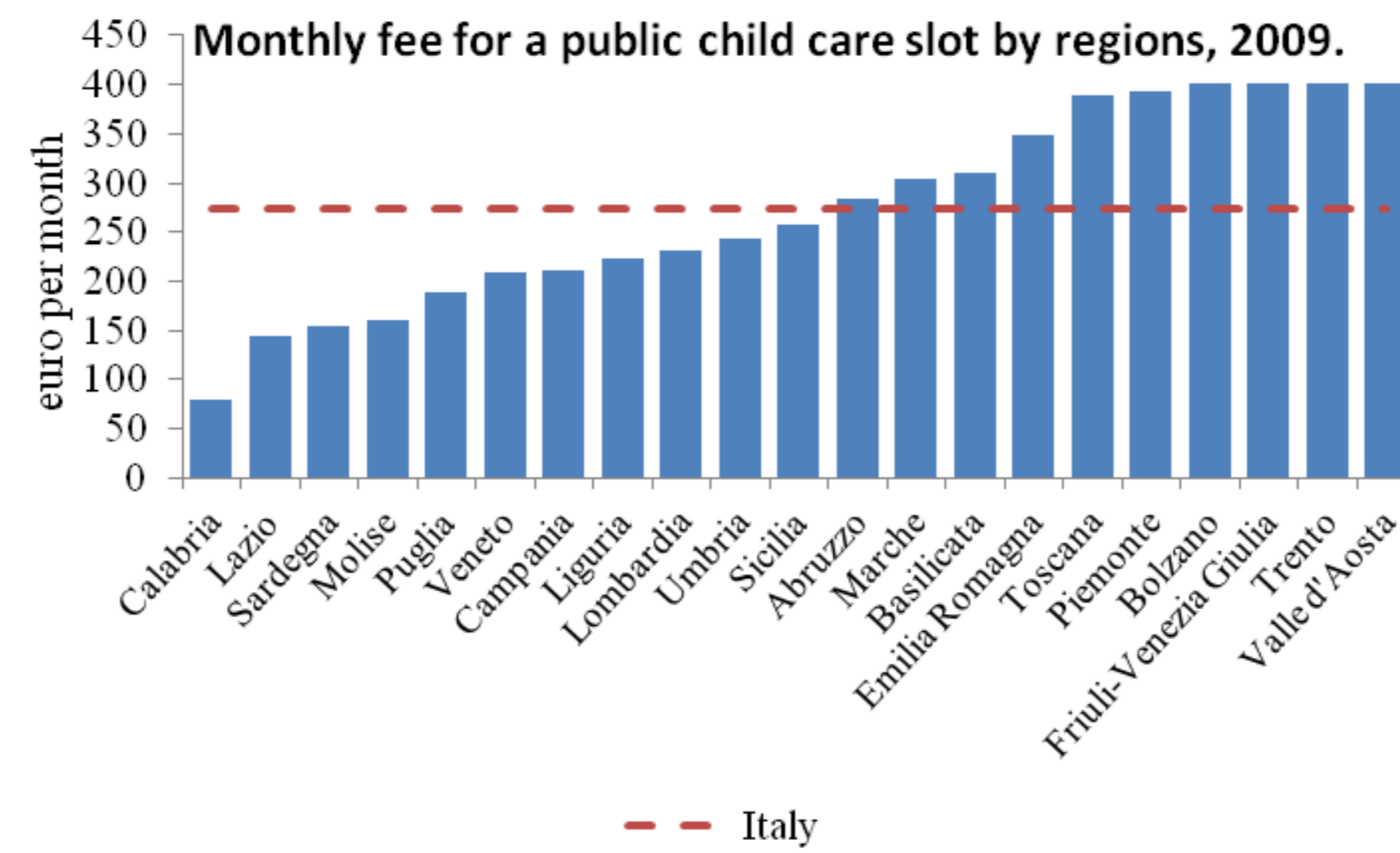
- First attempt to estimate a joint **structural model of labour supply and childcare** decisions applied to Italy.
- low female labour market participation
- low public childcare coverage rate and high fees
- increasing share of children with a disadvantaged background
- Previous studies on Italy. Child care and...
  - children's cognitive ability (Brilli et al., 2013)
  - labor market participation of mothers (Del Boca 2002, Del Boca and Vuri 2007, Del Boca et al., 2009)
  - determinants of child care choice (Del Boca et al., 2005)
- However, a structural approach is particularly informative given that allows one to estimate the changes in family choices under different policy simulation scenarios.

- We do consider public, private and informal childcare, with related imputed availability and costs and the interactions with the whole tax-benefit system
- Data issues!

## Data

- **IT-SILC 2010**
  - 774 mothers with (at least) a child 0-2 and a partner working full time.
- Imputed expected child care cost at regional level: rationing and differentiated fees
- Grandparents proximity
  - Info on grandmothers in good health living within 16km predicted from Multiscopo data (Del Boca, Locatelli and Vuri, 2005)
- **EUROMOD**
  - EU-wide tax-benefit microsimulation model to calculate disposable income in each choice
  - Public childcare fees (out of pocket) and costs
  - Tax concessions for childcare

## Institutional background



## Modelling framework

Static structural discrete choice model of labour supply and childcare

- Labour supply choice set B: not working, short PT, long PT, FT
- Childcare choice set S: maternal care, formal child care, informal child care
- We assume a «fixed link» (Ilmakunnas, 1997) between labour supply and child care: only 9 choices considered

Utility function, with error term IID extreme vail distributed

$$U(f(wh, I), h, k, s) = v(f(wh, I), h, k, s) \varepsilon(j)$$

Choice probability function

$$\varphi(h, w, k, s) \equiv \Pr(U((f(wh, I), h, k, s) = \max(U(f(xy, I), y, z)) = \frac{v(w, h, s)p(w, h, s)}{\int \int v(w, h, s)p(w, h, s) dx dy dz}$$

Systematic part of the utility function

$$\log v(C, h, s) = \alpha \frac{C^\lambda - 1}{\lambda} + \beta \frac{L^\delta - 1}{\delta} + \rho \frac{(C^\lambda - 1)(L^\delta - 1)}{\lambda \delta}$$

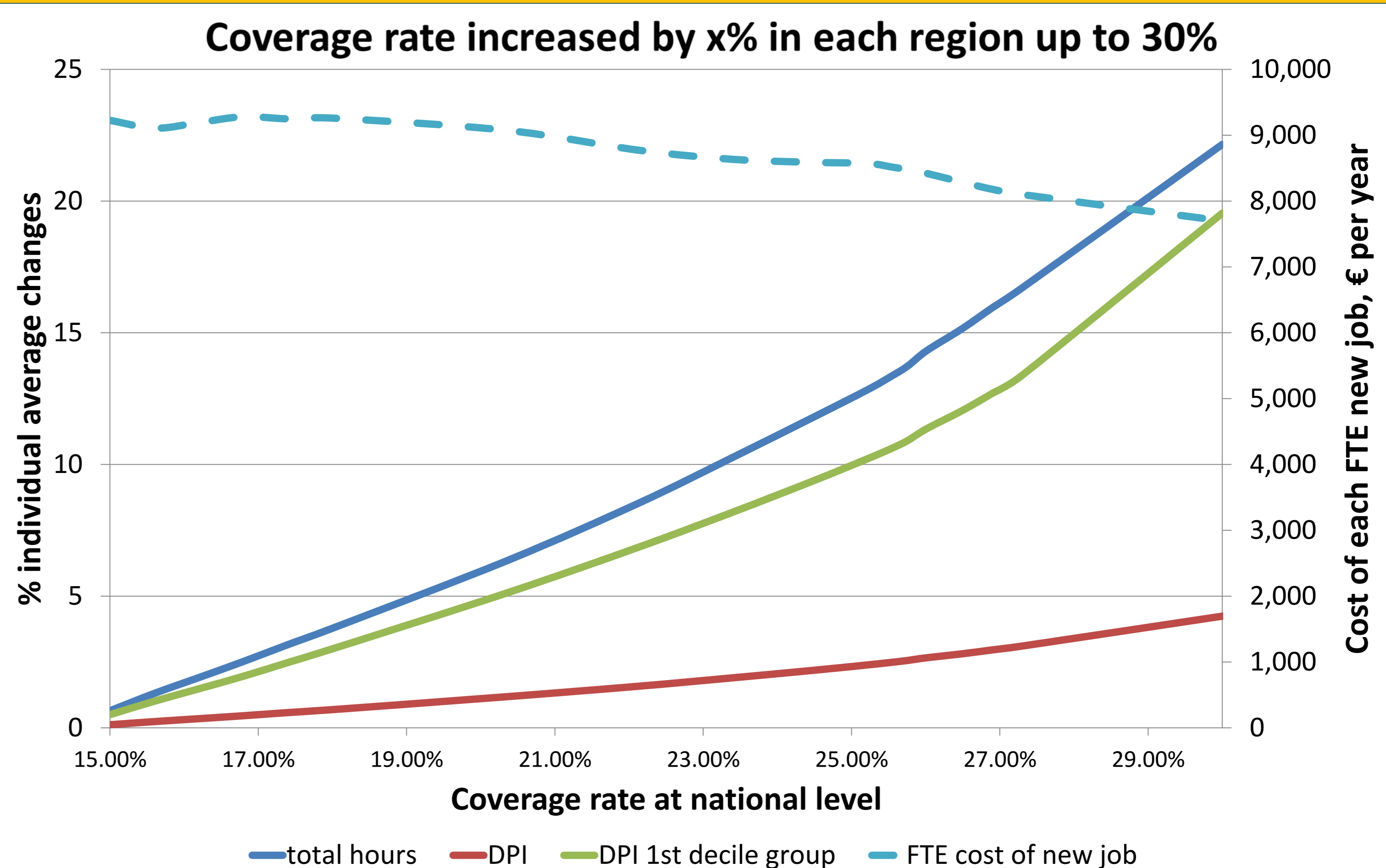
Disposable income net of expected child care cost

$$E(xcc) = COST_{public} x \frac{COVER_{public}}{FORMAL RATE} + COST_{private} x (1 - \frac{COVER_{public}}{FORMAL RATE})$$

## Preference estimates

	Estimate	Standard error		Estimate	Standard error
<b>Preferences</b>					
<b>Income</b>					
Constant	$\alpha_0$	2.733	1.132 ***		
log(age/10)	$\alpha_1$	-2.085	0.895 ***		
Children	$\alpha_2$	0.475	0.217 ***		
Formal Care	$\alpha_3$	0.085	0.052		
Exponent	$\gamma$	1.466	0.180 ***		
<b>Leisure</b>					
Constant	$\beta_0$	4.202	0.86 ***		
log(age/10)	$\beta_1$	-1.077	0.674 *		
Children	$\beta_2$	0.626	0.183 ***		
Formal Care	$\beta_3$	0.077	0.197		
Exponent	$\delta$	0.408	0.072 ***		
Leisure*Income	$\rho$	0.049	0.048		
<b>Density of offered hours</b>					
Part Time	$\pi_1$	-5.922	0.406 ***		
Full Time	$\pi_2$	-3.17	0.256 ***		
<b>Density of offered hours</b>					
<b>Density of Formal Child Care</b>					
02	$\theta_2$	-0.335	0.546		
Foreign	$\mu_{12}$	-0.851	0.289 ***		
Coverage	$\mu_{22}$	4.352	1.234 ***		
Having brother	$\mu_{32}$	0.481	0.209 ***		
$\mu_2$	$\mu_2$	5.611	0.77 ***		
<b>Density of Informal Child Care</b>					
03	$\theta_3$	-1.369	0.167 ***		
South	$\mu_{13}$	-1.291	0.235 ***		
Grandparents proximity	$\mu_{23}$	4.361	0.509 ***		
$\mu_3$	$\mu_3$	3.636	0.749 ***		
<b>Log-likelihood</b>					
-1368.83					
<b>Number of observations</b>					
774					
<b>Wald chi2</b>					
9.64					
<b>Prob&gt;chi2</b>					
0.022					

## Simulation results



### Coverage rate increased up to 30% in each region – by macro area

Area	% change in labour supply		% change in Disposable income
	Intensive margin	Extensive margin	
North West	11.44	11.56	2.48
North East	13.9	14.02	2.32
Centre	13.8	13.9	2.09
South	46.62	46.91	8.7
Islands	34.32	34.54	8.98