Annex C. Impact of innovation, by regional characteristics

Table A C.1. Innovation and outcomes in rural versus more densely populated areas, fixed effects regressions on relatively rural regions (>= 75th percentile of degree of rurality)

Impact of ratio of patents to labour force on employment, productivity, household income, growth in value-added per worker and the Gini index, 2000-19

	(1)	(2)	(3)	(4)	(5)	(6)
Variable	First-step	Employment (log)	Productivity	Household income (log)	Growth in value-added per work	Gini
Ratio of patents to labour force, per 1 000		**2.099*** **	**0.913*** **	**0.859*** **	**0.220** **	**0.111*** **
		(0.215)	**(0.244)**	**(0.189)**	**(0.096)**	**(0.010)**
Productivity growth (1y lag)	0.006					
	(0.006)					
HH real income (1y lag)	0.000***					
	(0.000)					
Share of educated workers (1y lag)	0.000					
	(0.000)					
Elderly dependency ratio (1y lag)	0.002***					
	(0.000)					
Population density (1y lag)	-0.000					
	(0.000)					
Population density growth (1y lag)	0.000***					
	(0.000)					
Gender difference in labour market participation rate (1y lag)	-0.014					
	(0.011)					
Constant	-0.035***					
	(0.009)					
Observations	3 768	3 766	3 766	2 929	3 766	3 766
R-squared	0.107	0.440	0.434	0.390	0.204	-0.201
Number of clusters	221	221	221	169	221	221
F-test	60.90	166.4	124.1	86.67	40.48	29.46
Standard errors	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects

Note: Predominantly rural regions refer to regions that are characterised as regions above the 25th percentile of the TL2 rurality index. More densely populated areas are TL2 regions with a degree of rurality that is less than the 25th percentile. Values include linear projections for years with missing values. The first-step estimation model is a fixed effects model on the level of TL2 with lagging independent variables. The second-step estimation includes controls for sectoral employment and value-added per worker. Controls include lags and shares in gross value added and employment in each major NACE sector. Regression is a two-stage least-squared fixed effects model. F-tests are all statistically significant to the 0.001 level. Standard errors are in parentheses.

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

Source: OECD Regional Demography (database) (OECD[5]).

Table A C.2. Innovation and outcomes in rural versus more densely populated areas, fixed effects regression on more densely populated regions (< 25th percentile of degree of rurality)

Impact of ratio of patents to labour force on employment, productivity, household income, growth in value-added per worker and the Gini index, 2000-19

	(7)	(8)	(9)	(10)	(11)	(12)
Variables	First-step	Employment (log)	Productivity	HH income (log)	Growth in VAPW	Gini
Ratio of patents to labour force, per 1 000		**0.380*** **	**0.539*** **	**0.296***	**0.126** **	**0.027*** **
		(0.094)	**(0.140)**	**(0.156)**	**(0.059)**	**(0.007)**
Productivity growth (1y lag)	0.019					
	(0.043)					
HH real income (1y lag)	0.000***					
	(0.000)					
Share of educated workers (1y lag)	0.000					
	(0.001)					
Elderly dependency ratio (1y lag)	0.002**					
	(0.001)					
Population density (1y lag)	0.000***					
	(0.000)					
Population density growth (1y lag)	-0.000					
	(0.000)					
Gender difference in LM participation rate (1y lag)						
Constant	-0.018					
	(0.029)					
Observations	1 271	1 271	1 271	1 231	1 271	1 271
R-squared	0.099	0.604	0.367	0.446	0.151	0.175
Number of clusters	80	80	80	70	80	80
F-test	21.59	83.41	35.67	41.89	11.18	17.27
Standard errors	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects

Note: Predominantly rural regions refer to regions that are characterised as regions above the 25th percentile of the TL2 rurality index. More densely populated areas are TL2 regions with a degree of rurality that is less than the 25th percentile. Values include linear projections for years with missing values. The first-step estimation model is a fixed effects model on the level of TL2 with lagging independent variables. The second-step estimation includes controls for sectoral employment and value-added per worker. Controls include lags and shares in gross value added and employment in each major NACE sector. Regression is a two-stage least-squared fixed effects model. F-tests are all statistically significant to the 0.001 level. Standard errors are in parentheses.

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

Source: OECD Regional Demography (database) (OECD[5]).