

Impact of the adoption of chemical inputs on crop yield downside risk

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Electronic supplementary material (ESM)

Supplementary Tables S1–S5

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Table 1. Estimate for production function: Likelihood-ratio (LR) test and Akaike Information Criterion (AIC) results

Method	Estonia		Slovenia	
	Translog specification	Cobb–Douglas specification	Translog specification	Cobb–Douglas specification
Likelihood-ratio test	LR $\chi^2(21) = 190.22, P < 0.001$		LR $\chi^2(21) = 100.35, P < 0.001$	
Akaike Information Criterion (AIC)	5 414.5	5 562.7	2 509.1	2 567.5

The degrees of freedom (Df = 21) in a LR test represent the difference in the number of parameters (free variables) between the two models being compared.

Source: Authors' calculations

Table 2. Matching quality test: balancing property for Estonia

Statistic	Before matching	After matching		
		NNM	OM	Radius
R^2	0.086	0.062	0.008	0.010
Mean bias	0.169	0.155	0.056	0.074
LR χ^2	149.350***	95.980***	6.580	8.380

***significance level at 0.001; LR – likelihood-ratio; NNM – nearest neighbour matching; OM – optimal matching

Source: Authors' calculations

Table 3. Matching quality test: balancing property for Slovenia

Statistic	Before matching	After matching		
		NNM	OM	Radius
R^2	0.042	0.016	0.228	0.030
Mean bias	0.218	0.120	0.350	0.108
LR χ^2	17.420**	5.770	22.540***	2.750

*** and **significance at 0.001 and 0.01 levels, respectively; LR – likelihood-ratio; NNM – nearest neighbour matching; OM – optimal matching

Source: Authors' calculations

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Table 4. Heterogeneity treatment effect results for Estonia

Dependent variable:	Expected	Variance	Skewness
Adoption_status	0.510 (−0.130, 1.160)	−0.460 (−1.280, 0.360)	1.9800 (−0.9700, 4.9200)
Age	−0.001 (−0.010, 0.010)	0.010 (−0.010, 0.020)	−0.0040 (−0.0500, 0.0400)
Income-	0.005 (−0.004, 0.010)	0.004** (0.001, 0.010)	−0.0200*** (−0.0300, −0.0100)
Assets	−0.000*** (−0.000, −0.000)	−0.000*** (−0.000, −0.000)	0.0001** (0.0000, 0.0001)
Labour	5.500*** (3.920, 7.080)	−2.750*** (−3.530, −1.960)	9.0500*** (5.9000, 12.2000)
Tenure	0.220* (−0.020, 0.460)	0.050 (−0.230, 0.330)	0.1600 (−0.7600, 1.0800)
Interaction Adoption_status:Age	−0.004 (−0.010, 0.010)	−0.010 (−0.020, 0.010)	0.0100 (−0.0400, 0.0600)
Interaction Adoption_status:Income	−0.010 (−0.010, 0.004)	−0.004** (−0.010, −0.001)	0.0200*** (0.0100, 0.0300)
Interaction Adoption_status:Assets	−0.000 0 (−0.000, 0.000)	0.000*** (0.000, 0.000)	−0.0000 (−0.0001, 0.0000)
Interaction Adoption_status:Labour	−4.940*** (−6.530, −3.340)	2.760*** (1.970, 3.540)	−9.1600*** (−12.3200, −6.0000)
Interaction Adoption_status:Tenure	0.410* (−0.020, 0.840)	0.010 (−0.300, 0.310)	−0.0800 (−1.1000, 0.9400)
Constant	0.020 (−0.460, 0.510)	0.870** (0.090, 1.660)	−2.9300** (−5.8100, −0.0600)
Number of observations	2 643	2 643	2 643
Log Likelihood	−3 534.570	−3 224.740	−6 386.2200
Akaike Inf. Crit.	7 093.140	6 473.480	12 796.4400

***, ** and *significance at 0.01, 0.05 and 0.1 levels, respectively

Source: Authors' calculations

Table 5. Heterogeneity treatment effect results for Slovenia

Dependent variable:	Expected	Variance	Skewness
Adoption_status	−0.6200** (−1.2200, −0.0100)	−0.6200 (−1.3800, 0.1400)	3.5900** (0.2800, 6.9000)
Age	0.0020 (−0.0040, 0.0100)	0.0030 (−0.0100, 0.0200)	−0.0200 (−0.0700, 0.0300)
Income	0.0010 (−0.0020, 0.0030)	−0.0010 (−0.0100, 0.0100)	0.0100 (−0.0200, 0.0300)
Assets	−0.0001*** (−0.0002, −0.0001)	−0.0001*** (−0.0002, −0.0001)	0.0010*** (0.0004, 0.0010)
Labour	2.8700*** (2.1000, 3.6300)	−1.0900 (−2.4500, 0.2600)	5.6100* (−0.5600, 11.7800)
Tenure	0.1700 (−0.1700, 0.5000)	0.2000 (−0.5900, 0.9900)	−0.5100 (−3.7800, 2.7700)
Interaction Adoption_status:Age	−0.0010 (−0.0100, 0.0100)	−0.0030 (−0.0200, 0.0100)	0.0100 (−0.0400, 0.0700)
Interaction Adoption_status:Income	0.0010 (−0.0020, 0.0040)	−0.0003 (−0.0100, 0.0100)	−0.0030 (−0.0300, 0.0200)
Interaction Adoption_status:Assets	0.0001*** (0.0000, 0.0001)	0.0001*** (0.0000, 0.0002)	−0.0005*** (−0.0010, −0.0001)
Interaction Adoption_status:Labour	0.4900 (−0.4400, 1.4200)	1.3900** (0.0300, 2.7500)	−6.9700** (−13.1400, −0.8000)
Interaction Adoption_status:Tenure	0.4500* (−0.0050, 0.9000)	0.0200 (−0.7700, 0.8100)	−1.0200 (−4.3200, 2.2800)
Constant	0.0040 (−0.4900, 0.5000)	0.4600 (−0.2700, 1.2000)	2.8000* (−0.30, 5.9000)
Observations	1 384	1 384	1 384
Log Likelihood	−1 322.6700	−1 029.2100	−3 070.0400
Akaike Inf. Crit.	2 669.3500	2 082.4200	6 164.0800

***, ** and *significance at 0.01, 0.05 and 0.1 levels, respectively

Source: Authors' calculations