



Research article

Green bond market boom: did environmental, social and governance criteria play a role in reducing health-related uncertainty?

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Appendix B

Appendix B.1. Detection of endogeneity in the POLS model

Table B1. Detection and correction of heteroscedasticity.

Dependent variable: VD2dInfCov	(1) Without correction of heteroscedasticity	(2) With correction of heteroscedasticity
VI1BusinInten	0.126*** (0.0364)	0.126** (0.0550)
VI2ATourismFlow	-0.128*** (0.0345)	-0.128** (0.0543)
VI3Mob	0.151*** (0.0330)	0.151** (0.0593)
VI4ForeignOpen	0.00889 (0.0191)	0.00889 (0.0101)
VI5IntConsump	0.461*** (0.0262)	0.461*** (0.0365)
VI6EldIPSS	0.0661*** (0.0140)	0.0661*** (0.0146)
Constant	-0.0103 (0.0197)	-0.0103 (0.0291)
Observations	1,946	1,946
R ²	0.453	0.453
Breush-Pagan test	$\chi^2(1) = 446.44***$	

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B2. Detection of endogeneity in the variable VI1BusinInten (Governance).

VARIABLES	(1) VD2dInfCov	(2) VI1BusinInten	(3) VD2dInfCov
VI1BusinInten	0.126** (0.0550)		0.709 (1.089)
VI2ATurismFlow	-0.128** (0.0543)	0.192*** (0.0664)	-0.228 (0.230)
VI3Mob	0.151** (0.0593)	-0.0387 (0.0453)	0.0340 (0.0915)
VI4ForeignOpen	0.00889 (0.0101)	-0.0647 (0.0482)	-0.0646 (0.0968)
VI5IntConsump	0.461*** (0.0365)	0.566*** (0.0298)	0.210 (0.615)
VI6EldIPSS	0.0661*** (0.0146)	-0.0861** (0.0353)	0.158 (0.105)
VI3Mob _{t-2}		0.0788* (0.0474)	
$\hat{v}_{\text{BusinInten}}$			-0.491 (1.094)
Constant	-0.0103 (0.0291)	0.119*** (0.0452)	-0.111 (0.160)
Observations	1,946	313	313
R ²	0.453	0.649	0.355
F (6, 306)		125.75***	
Wald test (H0: $\hat{v}_{\text{BusinInten}} = 0$)			F (1, 305) = 0.20 p-value = 0.6541

Notes: Robust standard errors in parentheses. (1) provides estimates of the structural equation model. (2) provides estimates of the reduced form model for VI1BusinInten. (3) provides the structural equation for the original dependent variable VD2dInfCov after including the predicted residuals $\hat{v}_{\text{BusinInten}}$. External or excluded instrument: mobility lagged in time by 2 periods (VI3Mob_{t-2}). *** p<0.01, ** p<0.05, * p<0.1

Table B3. Detection of endogeneity in the variable VI2ATourismFlow (Economic).

VARIABLES	(1) VD2dInfCov	(2) VI2ATourismFlow	(3) VD2dInfCov
VI1BusinInten	0.126** (0.0550)	0.0654 (0.0420)	0.122** (0.0563)
VI2ATourismFlow	-0.128** (0.0543)		-0.0933 (0.121)
VI3Mob	0.151** (0.0593)	-0.0572* (0.0336)	0.150** (0.0603)
VI4ForeignOpen	0.00889 (0.0101)	0.000564 (0.00693)	0.00802 (0.0101)
VI5IntConsump	0.461*** (0.0365)	0.0738*** (0.0263)	0.460*** (0.0374)
VI6EldIPSS	0.0661*** (0.0146)	-0.00591 (0.00785)	0.0650*** (0.0146)
VI2ATourismFlow _{t-7}		0.307*** (0.0299)	
$\hat{v}_{\text{TourismFlow}}$			-0.0395 (0.121)
Constant	-0.0103 (0.0291)	0.307*** (0.0162)	-0.0249 (0.0567)
Observations	1,946	1,939	1,939
R ²	0.453	0.167	0.454
F (6, 1932)		33.63***	
Wald test (H0: $\hat{v}_{\text{TourismFlow}} = 0$)			F (1, 1931) = 0.11 p-value = 0.7450

Notes: Robust standard errors in parentheses. (1) provides estimates of the structural equation model. (2) provides estimates of the reduced form model for VI2ATourismFlow. (3) provides the structural equation for the original dependent variable VD2dInfCov after including the predicted residuals $\hat{v}_{\text{TourismFlow}}$. External or excluded instrument: tourism flow lagged in time by 7 periods (VI2ATourismFlow_{t-7}). *** p<0.01, ** p<0.05, * p<0.1

Table B4. Detection of endogeneity in the variable VI3Mob (Environmental).

VARIABLES	(1) VD2dInfCov	(2) VI3Mob	(3) VD2dInfCov
VI1BusinInten	0.126** (0.0550)	-0.0466 (0.0548)	0.222** (0.108)
VI2ATourismFlow	-0.128** (0.0543)	0.00560 (0.0454)	-0.134 (0.0924)
VI3Mob	0.151** (0.0593)		0.0960 (0.184)
VI4ForeignOpen	0.00889 (0.0101)	-0.298*** (0.0750)	-0.0722 (0.0884)
VI5IntConsump	0.461*** (0.0365)	0.228*** (0.0455)	0.469*** (0.0837)
VI6EldIPSS	0.0661*** (0.0146)	-0.0241 (0.0385)	0.118** (0.0596)
VI3Mob _{t-2}		0.477*** (0.0618)	
\hat{v}_{Mob}			-0.0810 (0.181)
Constant	-0.0103 (0.0291)	0.0404 (0.0472)	-0.0561 (0.0656)
Observations	1,946	313	313
R ²	0.453	0.312	0.355
F (6, 306)		23.69***	
Wald test (H0: $\hat{v}_{Mob} = 0$)			F (1, 305) = 0.20 p-value = 0.6541

Notes: Robust standard errors in parentheses. (1) provides estimates of the structural equation model. (2) provides estimates of the reduced form model for VI3Mob. (3) provides the structural equation for the original dependent variable VD2dInfCov after including the predicted residuals \hat{v}_{Mob} . External or excluded instrument: mobility lagged in time by 2 periods (VI3Mob_{t-2}). *** p<0.01, ** p<0.05, * p<0.1

Table B5. Detection of endogeneity in the variable VI4ForeignOpen (Governance).

VARIABLES	(1) VD2dInfCov	(2) VI4ForeignOpen	(3) VD2dInfCov
VI1BusinInten	0.126** (0.0550)	-0.0212 (0.0323)	0.360*** (0.112)
VI2ATourismFlow	-0.128** (0.0543)	0.0354 (0.0226)	0.0161 (0.114)
VI3Mob	0.151** (0.0593)	-0.171*** (0.0426)	0.0371 (0.137)
VI4ForeignOpen	0.00889 (0.0101)		0.115 (0.697)
VI5IntConsump	0.461*** (0.0365)	-0.0777** (0.0357)	0.344*** (0.104)
VI6EldIPSS	0.0661*** (0.0146)	-0.0702* (0.0363)	0.149** (0.0673)
VI3Mob _{t-3}		0.114* (0.0688)	
$\hat{v}_{\text{ForeignOpen}}$			-0.157 (0.709)
Constant	-0.0103 (0.0291)	0.182*** (0.0395)	-0.170 (0.158)
Observations	1,946	312	312
R ²	0.453	0.118	0.372
F (6, 305)		4.28***	
Wald test (H0: $\hat{v}_{\text{ForeignOpen}} = 0$)			F (1, 304) = 0.05 p-value = 0.8252

Notes: Robust standard errors in parentheses. (1) provides estimates of the structural equation model. (2) provides estimates of the reduced form model for VI4ForeignOpen. (3) provides the structural equation for the original dependent variable VD2dInfCov after including the predicted residuals \hat{v}_{Mob} . External or excluded instrument: mobility lagged in time by 3 periods (VI3Mob_{t-3}). *** p<0.01, ** p<0.05, * p<0.1

Table B6. Detection of endogeneity in the variable VI5IntConsump (Social/Economic).

VARIABLES	(1) VD2dInfCov	(2) VI5IntConsump	(3) VD2dInfCov
VI1BusinInten	0.126** (0.0550)	0.913*** (0.0531)	0.376 (0.357)
VI2ATourismFlow	-0.128** (0.0543)	0.0121 (0.0730)	-0.131 (0.0924)
VI3Mob	0.151** (0.0593)	0.304*** (0.0645)	0.0676 (0.132)
VI4ForeignOpen	0.00889 (0.0101)	-0.0694 (0.0732)	-0.108 (0.0907)
VI5IntConsump	0.461*** (0.0365)		0.315 (0.384)
VI6EldIPSS	0.0661*** (0.0146)	-0.0499 (0.0431)	0.107 (0.0652)
VI3Mob _{t-2}		-0.224*** (0.0689)	
$\hat{v}_{IntConsump}$			0.173 (0.385)
Constant	-0.0103 (0.0291)	0.119* (0.0615)	-0.0322 (0.0667)
Observations	1,946	313	313
R ²	0.453	0.651	0.355
F (6, 306)		206.94***	
Wald test (H0: $\hat{v}_{IntConsump} = 0$)			F (1, 305) = 0.20 p-value = 0.6541

Notes: Robust standard errors in parentheses. (1) provides estimates of the structural equation model. (2) provides estimates of the reduced form model for VI5IntConsump. (3) provides the structural equation for the original dependent variable VD2dInfCov after including the predicted residuals $\hat{v}_{IntConsump}$. External or excluded instrument: mobility lagged in time by 2 periods (VI3Mob_{t-2}). *** p<0.01, ** p<0.05, * p<0.1

Table B7. Detection of endogeneity in the variable VI6EldIPSS (Social).

VARIABLES	(1) VD2dInfCov	(2) VI6EldIPSS	(3) VD2dInfCov
VI1BusinInten	0.126** (0.0550)	-0.0856** (0.0405)	0.125** (0.0552)
VI2ATourismFlow	-0.128** (0.0543)	0.0578* (0.0300)	-0.129** (0.0543)
VI3Mob	0.151** (0.0593)	0.0431 (0.0347)	0.150** (0.0594)
VI4ForeignOpen	0.00889 (0.0101)	-0.0399* (0.0212)	0.00856 (0.0101)
VI5IntConsump	0.461*** (0.0365)	-0.0526** (0.0266)	0.461*** (0.0366)
VI6EldIPSS	0.0661*** (0.0146)		0.0632*** (0.0210)
VI6EldIPSS _{t-2}		0.711*** (0.0193)	
\hat{v}_{IPSS}			0.00501 (0.0321)
Constant	-0.0103 (0.0291)	0.142*** (0.0172)	-0.00843 (0.0298)
Observations	1,946	1,944	1,944
R ²	0.453	0.528	0.453
F (6, 1937)		277.03***	
Wald test (H0: $\hat{v}_{IPSS} = 0$)			F (1, 1936) = 0.02 p-value = 0.8759

Notes: Robust standard errors in parentheses. (1) provides estimates of the structural equation model. (2) provides estimates of the reduced form model for VI6EldIPSS. (3) provides the structural equation for the original dependent variable VD2dInfCov after including the predicted residuals \hat{v}_{IPSS} . External or excluded instrument: IPSS lagged in time by 2 periods (VI6EldIPSS_{t-2}). *** p<0.01, ** p<0.05, * p<0.1

Table B8. Detection of endogeneity considering all explanatory variables.

VARIABLES	(1) VD2dInfCov
VI1BusinInten	0.310 (2.777)
VI2ATourismFlow	0.883 (7.465)
VI3Mob	-0.0371 (1.325)
VI4ForeignOpen	-0.312 (5.805)
VI5IntConsump	-0.498 (2.664)
VI6EldIPSS	-0.167 (3.692)
Constant	0.0128 (0.936)
Observations	123
R ²	-0.471
Endogeneity test for the joint significance of all regressors	$\chi^2(6) = 1.547$ p-value = 0.9563

Notes: Robust standard errors in parentheses. External instruments: mobility lagged in time between 2 and 7 periods (VI3Mob_{t-2}, ..., VI3Mob_{t-7}). *** p<0.01, ** p<0.05, * p<0.1

Finally, before moving into Appendix B.2, recall that the standard procedure to detect endogeneity consists of three steps:

1. The **first step** provides estimates of the structural equation model.
2. The **second step** provides estimates of the reduced form model for the endogenous variable.
3. The **third step** provides the structural equation for the original dependent variable after including the predicted residuals.

To the best of our knowledge, this is one of the first studies trying to inspect endogeneity in the context of a spatial econometrics model. The final decision is based on results of Wald tests.

Appendix B.2. Detection of endogeneity in the DSDM

Table B9. First step regarding the detection of endogeneity in the variable VI1BusinInten (Governance).

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	β vector	θ vector	Spatial	Variance	SR_Direct	SR_Indirect	SR_Total	LR_Direct	LR_Indirect	LR_Total
Time-lagged χ	0.346*** (0.0397)									
Spatial and time-lagged φ	-0.0785 (0.0525)									
VI1BusinInten	0.0363 (0.0480)	-0.0107 (0.0673)			0.0431 (0.0468)	0.0227 (0.117)	0.0658 (0.134)	0.0691 (0.0751)	0.0753 (0.259)	0.144 (0.296)
VI2ATourismFlow	-0.0289 (0.0560)	0.0720 (0.0741)			-0.0218 (0.0514)	0.111 (0.102)	0.0890 (0.0885)	-0.0288 (0.0783)	0.218 (0.205)	0.189 (0.195)
VI3Mob	-0.0385 (0.0648)	0.0722 (0.117)			-0.0299 (0.0654)	0.0957 (0.204)	0.0658 (0.228)	-0.0418 (0.106)	0.188 (0.451)	0.147 (0.502)
VI4ForeignOpen	0.0180* (0.0104)	0.0140 (0.0304)			0.0218* (0.0113)	0.0468 (0.0599)	0.0686 (0.0653)	0.0368* (0.0196)	0.115 (0.140)	0.152 (0.152)
VI5IntConsump	0.468*** (0.148)	-0.309** (0.152)			0.454*** (0.150)	-0.163 (0.236)	0.291 (0.277)	0.705*** (0.236)	-0.0788 (0.521)	0.626 (0.615)
VI6EldIPSS	-1.250 (5.675)	-7.283 (9.057)			-2.345 (5.372)	-13.85 (14.16)	-16.20 (13.74)	-4.360 (8.279)	-29.96 (29.31)	-34.32 (29.83)
ρ			0.487*** (0.0456)							
σ_e^2				0.0135*** (0.00128)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table B10. Second step regarding the detection of endogeneity in the variable VI1BusinInten (Governance).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.142*** (0.0354)									
Spatial and time-lagged φ	-0.0702 (0.0470)									
VI2ATourismFlow	0.0979 (0.0626)	-0.0116 (0.0728)			0.104* (0.0584)	0.00567 (0.0736)	0.110* (0.0625)	0.122* (0.0685)	-0.000861 (0.0839)	0.121* (0.0686)
VI3Mob	-0.108 (0.0674)	-0.126 (0.151)			-0.115* (0.0669)	-0.166 (0.176)	-0.281 (0.194)	-0.132* (0.0778)	-0.176 (0.195)	-0.308 (0.213)
VI4ForeignOpen	-0.00106 (0.00997)	-0.00151 (0.0326)			-0.00108 (0.00994)	-0.00343 (0.0372)	-0.00451 (0.0406)	-0.00122 (0.0115)	-0.00372 (0.0410)	-0.00494 (0.0445)
VI5IntConsump	0.423*** (0.127)	-0.217 (0.158)			0.417*** (0.119)	-0.162 (0.177)	0.254 (0.191)	0.487*** (0.139)	-0.209 (0.198)	0.278 (0.209)
VI6EldIPSS	-8.167* (4.931)	2.479 (7.497)			-8.047 (4.998)	0.487 (8.091)	-7.560 (6.865)	-9.374 (5.869)	1.090 (9.147)	-8.284 (7.529)
VI3Mob _{t-2}	-0.0893** (0.0413)	-0.0723 (0.0846)			-0.0932** (0.0380)	-0.104 (0.100)	-0.197* (0.102)	-0.107** (0.0444)	-0.109 (0.111)	-0.216* (0.112)
ρ			0.177*** (0.0401)							
σ_e^2				0.0101*** (0.000747)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. External or excluded instrument: mobility lagged in time by 2 periods (VI3Mob_{t-2}). *** p<0.01, ** p<0.05, * p<0.1

Table B11. Third step regarding the detection of endogeneity in the variable VI1BusinInten (Governance).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.345*** (0.0392)									
Spatial and time-lagged φ	-0.0707 (0.0527)									
VI1BusinInten	0.620** (0.255)	0.151 (0.446)			0.708*** (0.244)	0.887 (0.805)	1.595* (0.868)	1.167*** (0.398)	2.422 (2.032)	3.589 (2.206)
VI2ATourismFlow	-0.0751 (0.0614)	0.0647 (0.0859)			-0.0753 (0.0540)	0.0488 (0.126)	-0.0265 (0.111)	-0.116 (0.0821)	0.0512 (0.266)	-0.0648 (0.257)
VI3Mob	0.0150 (0.0666)	0.148 (0.127)			0.0394 (0.0689)	0.313 (0.254)	0.352 (0.280)	0.0804 (0.115)	0.719 (0.626)	0.800 (0.690)
VI4ForeignOpen	0.0161 (0.0104)	0.0118 (0.0305)			0.0190* (0.0114)	0.0351 (0.0568)	0.0541 (0.0626)	0.0321 (0.0199)	0.0936 (0.138)	0.126 (0.151)
VI5IntConsump	0.209 (0.185)	-0.269 (0.218)			0.176 (0.182)	-0.307 (0.348)	-0.131 (0.389)	0.259 (0.287)	-0.559 (0.785)	-0.300 (0.890)
VI6EldIPSS	4.481 (6.442)	-6.969 (10.69)			4.016 (5.943)	-8.700 (16.10)	-4.685 (14.98)	5.880 (9.056)	-15.40 (33.74)	-9.523 (33.40)
$\hat{v}_{\text{BusinInten}}$	-0.588** (0.242)	-0.178 (0.443)			-0.672*** (0.231)	-0.904 (0.794)	-1.576* (0.853)	-1.110*** (0.377)	-2.433 (1.994)	-3.542 (2.158)
ρ			0.482*** (0.0436)							
σ_e^2				0.0134*** (0.00127)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B12. Summary of Wald tests applied to the variable VI1BusinInten (Governance).

Null hypothesis of exogeneity of the regressor VI1BusinInten Let γ represent the coefficient associated with $\hat{v}_{\text{BusinInten}}$	$\chi^2_{\text{stat}}(1)$ (Observed p-value)	Decision (Critical p-value of 5%)
β vector: $\gamma = 0$	5.93 (0.0149)	Rej. H0
θ vector: $\gamma = 0$	0.16 (0.6887)	Do not rej. H0
SR (Direct): $\gamma = 0$	8.47 (0.036)	Rej. H0
SR (Indirect): $\gamma = 0$	1.30 (0.2546)	Do not rej. H0
SR (Total): $\gamma = 0$	3.41 (0.0641)	Do not rej. H0
LR (Direct): $\gamma = 0$	8.66 (0.0032)	Rej. H0
LR (Indirect): $\gamma = 0$	1.49 (0.2224)	Do not rej. H0
LR (Total): $\gamma = 0$	2.69 (0.1007)	Do not rej. H0

Conclusion: regressor is endogenous in the direct channel, but it is exogenous in the indirect channel and globally (at the aggregate level)

Table B13. First step regarding the detection of endogeneity in the variable VI2ATourismFlow (Economic).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.346*** (0.0397)									
Spatial and time-lagged φ	-0.0785 (0.0525)									
VI1BusinInten	0.0363 (0.0480)	-0.0107 (0.0673)			0.0431 (0.0468)	0.0227 (0.117)	0.0658 (0.134)	0.0691 (0.0751)	0.0753 (0.259)	0.144 (0.296)
VI2ATourismFlow	-0.0289 (0.0560)	0.0720 (0.0741)			-0.0218 (0.0514)	0.111 (0.102)	0.0890 (0.0885)	-0.0288 (0.0783)	0.218 (0.205)	0.189 (0.195)
VI3Mob	-0.0385 (0.0648)	0.0722 (0.117)			-0.0299 (0.0654)	0.0957 (0.204)	0.0658 (0.228)	-0.0418 (0.106)	0.188 (0.451)	0.147 (0.502)
VI4ForeignOpen	0.0180* (0.0104)	0.0140 (0.0304)			0.0218* (0.0113)	0.0468 (0.0599)	0.0686 (0.0653)	0.0368* (0.0196)	0.115 (0.140)	0.152 (0.152)
VI5IntConsump	0.468*** (0.148)	-0.309** (0.152)			0.454*** (0.150)	-0.163 (0.236)	0.291 (0.277)	0.705*** (0.236)	-0.0788 (0.521)	0.626 (0.615)
VI6EldIPSS	-1.250 (5.675)	-7.283 (9.057)			-2.345 (5.372)	-13.85 (14.16)	-16.20 (13.74)	-4.360 (8.279)	-29.96 (29.31)	-34.32 (29.83)
ρ			0.487*** (0.0456)							
σ_e^2				0.0135*** (0.00128)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B14. Second step regarding the detection of endogeneity in the variable VI2ATourismFlow (Economic).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.918*** (0.0465)									
Spatial and time-lagged φ	-0.670*** (0.0501)									
VI2ATourismFlow	-0.0204 (0.0331)	-0.0295 (0.0368)			-0.0242 (0.0339)	-0.0981 (0.0934)	-0.122 (0.112)	-0.188 (0.689)	-0.178 (1.505)	-0.366 (1.283)
VI3Mob	-0.160* (0.0886)	-0.0430 (0.163)			-0.191* (0.0988)	-0.373 (0.463)	-0.564 (0.523)	-2.355 (1.945)	0.704 (9.962)	-1.651 (10.04)
VI4ForeignOpen	0.00353 (0.00676)	-0.0281 (0.0173)			-0.00123 (0.00771)	-0.0663 (0.0424)	-0.0676 (0.0471)	0.110 (0.172)	-0.319 (0.329)	-0.210 (0.307)
VI5IntConsump	0.270*** (0.0844)	0.00214 (0.164)			0.301*** (0.0859)	0.439 (0.394)	0.740* (0.431)	3.724 (3.231)	-1.344 (4.207)	2.380 (3.157)
VI6EldIPSS	-8.140 (5.016)	15.02* (8.834)			-6.448 (4.615)	23.59 (15.42)	17.14 (14.13)	-138.9 (132.0)	186.4 (230.4)	47.55 (192.8)
VI2ATourismFlow _{t-7}	0.0492 (0.0401)	0.0985 (0.0878)			0.0720 (0.0509)	0.335 (0.249)	0.407 (0.286)	0.446 (1.547)	0.627 (7.001)	1.073 (7.070)
ρ			0.622*** (0.0556)							
σ_e^2				0.00605*** (0.000731)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. External or excluded instrument: tourism flow lagged in time by 7 periods (VI2ATourismFlow_{t-7}). *** p<0.01, ** p<0.05, * p<0.1

Table B15. Third step regarding the detection of endogeneity in the variable VI2ATourismFlow (Economic).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.349*** (0.0405)									
Spatial and time-lagged φ	-0.0850 (0.0533)									
VI1BusinInten	0.0308 (0.0483)	-0.0135 (0.0696)			0.0369 (0.0466)	0.0107 (0.122)	0.0477 (0.136)	0.0590 (0.0747)	0.0468 (0.268)	0.106 (0.300)
VI2ATourismFlow	0.0530 (0.0600)	0.0272 (0.0857)			0.0585 (0.0540)	0.0980 (0.128)	0.156 (0.117)	0.0971 (0.0830)	0.238 (0.271)	0.336 (0.268)
VI3Mob	-0.0277 (0.0649)	0.0679 (0.117)			-0.0177 (0.0658)	0.116 (0.223)	0.0986 (0.248)	-0.0216 (0.108)	0.244 (0.502)	0.222 (0.557)
VI4ForeignOpen	0.0177* (0.0102)	0.0165 (0.0305)			0.0214* (0.0112)	0.0456 (0.0587)	0.0670 (0.0643)	0.0364* (0.0198)	0.114 (0.142)	0.151 (0.155)
VI5IntConsump	0.406*** (0.152)	-0.285* (0.159)			0.394** (0.154)	-0.140 (0.258)	0.255 (0.304)	0.616** (0.245)	-0.0590 (0.587)	0.557 (0.691)
VI6EldIPSS	0.696 (5.695)	-11.05 (8.774)			-0.860 (5.316)	-20.13 (12.92)	-20.99* (12.01)	-2.348 (8.165)	-42.62 (27.43)	-44.96* (27.18)
$\hat{v}_{\text{TourismFlow}}$	-0.144** (0.0604)	0.0832 (0.0888)			-0.136** (0.0565)	0.0224 (0.152)	-0.114 (0.160)	-0.214** (0.0894)	-0.0321 (0.330)	-0.246 (0.356)
ρ			0.487*** (0.0450)							
σ_e^2				0.0134*** (0.00128)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B16. Summary of Wald tests applied to the variable VI2ATourismFlow (Economic).

Null hypothesis of exogeneity of the regressor VI2ATourismFlow Let γ represent the coefficient associated with $\hat{v}_{\text{TourismFlow}}$	$\chi^2_{\text{stat}}(1)$ (Observed p-value)	Decision (Critical p-value of 5%)
β vector: $\gamma = 0$	5.66 (0.0174)	Rej. H0
θ vector: $\gamma = 0$	0.88 (0.3491)	Do not rej. H0
SR (Direct): $\gamma = 0$	5.80 (0.0160)	Rej. H0
SR (Indirect): $\gamma = 0$	0.02 (0.8826)	Do not rej. H0
SR (Total): $\gamma = 0$	0.50 (0.4781)	Do not rej. H0
LR (Direct): $\gamma = 0$	5.71 (0.0168)	Rej. H0
LR (Indirect): $\gamma = 0$	0.01 (0.9224)	Do not rej. H0
LR (Total): $\gamma = 0$	0.48 (0.4896)	Do not rej. H0

Conclusion: regressor is endogenous in the direct channel, but it is exogenous in the indirect channel and globally (at the aggregate level)

Table B17. First step regarding the detection of endogeneity in the variable VI3Mob (Environmental).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.346*** (0.0397)									
Spatial and time-lagged φ	-0.0785 (0.0525)									
VI1BusinInten	0.0363 (0.0480)	-0.0107 (0.0673)			0.0431 (0.0468)	0.0227 (0.117)	0.0658 (0.134)	0.0691 (0.0751)	0.0753 (0.259)	0.144 (0.296)
VI2ATourismFlow	-0.0289 (0.0560)	0.0720 (0.0741)			-0.0218 (0.0514)	0.111 (0.102)	0.0890 (0.0885)	-0.0288 (0.0783)	0.218 (0.205)	0.189 (0.195)
VI3Mob	-0.0385 (0.0648)	0.0722 (0.117)			-0.0299 (0.0654)	0.0957 (0.204)	0.0658 (0.228)	-0.0418 (0.106)	0.188 (0.451)	0.147 (0.502)
VI4ForeignOpen	0.0180* (0.0104)	0.0140 (0.0304)			0.0218* (0.0113)	0.0468 (0.0599)	0.0686 (0.0653)	0.0368* (0.0196)	0.115 (0.140)	0.152 (0.152)
VI5IntConsump	0.468*** (0.148)	-0.309** (0.152)			0.454*** (0.150)	-0.163 (0.236)	0.291 (0.277)	0.705*** (0.236)	-0.0788 (0.521)	0.626 (0.615)
VI6EldIPSS	-1.250 (5.675)	-7.283 (9.057)			-2.345 (5.372)	-13.85 (14.16)	-16.20 (13.74)	-4.360 (8.279)	-29.96 (29.31)	-34.32 (29.83)
ρ			0.487*** (0.0456)							
σ_e^2				0.0135*** (0.00128)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B18. Second step regarding the detection of endogeneity in the variable VI3Mob (Environmental).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.176*** (0.0387)									
Spatial and time-lagged φ	-0.0225 (0.0676)									
VI2ATourismFlow	-0.0315 (0.0237)	0.0443 (0.0361)			-0.0281 (0.0225)	0.0462 (0.0376)	0.0181 (0.0359)	-0.0342 (0.0274)	0.0560 (0.0453)	0.0218 (0.0432)
VI1BusinInten	-0.01000 (0.0115)	-0.00808 (0.0246)			-0.00986 (0.0115)	-0.00722 (0.0253)	-0.0171 (0.0271)	-0.0119 (0.0140)	-0.00852 (0.0305)	-0.0205 (0.0326)
VI4ForeignOpen	-0.000331 (0.00169)	0.00854 (0.0197)			-0.000146 (0.00155)	0.00866 (0.0204)	0.00852 (0.0203)	-0.000194 (0.00189)	0.0104 (0.0246)	0.0102 (0.0244)
VI5IntConsump	0.0104 (0.0379)	-0.0894 (0.0878)			0.00844 (0.0362)	-0.0965 (0.0933)	-0.0881 (0.0976)	0.0104 (0.0439)	-0.116 (0.113)	-0.106 (0.118)
VI6EldIPSS	0.568 (1.412)	-0.168 (2.493)			0.607 (1.457)	-0.302 (2.653)	0.305 (2.086)	0.738 (1.771)	-0.367 (3.206)	0.371 (2.509)
VI3Mob $_{t-3}$	0.00704 (0.0195)	-0.0339 (0.0376)			0.00594 (0.0196)	-0.0381 (0.0417)	-0.0321 (0.0429)	0.00727 (0.0238)	-0.0460 (0.0503)	-0.0387 (0.0516)
ρ			0.0869*** (0.0309)							
σ_e^2				0.00189*** (0.000344)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. External or excluded instrument: mobility lagged in time by 3 periods (VI3Mob $_{t-3}$).

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

Table B19. Third step regarding the detection of endogeneity in the variable VI3Mob (Environmental).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.346*** (0.0397)									
Spatial and time-lagged φ	-0.0797 (0.0521)									
VI1BusinInten	0.0420 (0.0490)	0.0192 (0.0727)			0.0528 (0.0477)	0.0786 (0.132)	0.131 (0.148)	0.0873 (0.0769)	0.202 (0.299)	0.289 (0.335)
VI2ATourismFlow	-0.0386 (0.0604)	0.0917 (0.0818)			-0.0299 (0.0550)	0.133 (0.113)	0.103 (0.0926)	-0.0402 (0.0833)	0.262 (0.227)	0.221 (0.208)
VI3Mob	0.00340 (0.309)	1.372** (0.652)			0.192 (0.330)	2.666** (1.347)	2.857* (1.492)	0.444 (0.561)	5.842* (3.452)	6.286* (3.787)
VI4ForeignOpen	0.0151 (0.0107)	0.00992 (0.0306)			0.0178 (0.0116)	0.0309 (0.0576)	0.0487 (0.0634)	0.0299 (0.0200)	0.0814 (0.136)	0.111 (0.149)
VI5IntConsump	0.491*** (0.153)	-0.289* (0.162)			0.482*** (0.155)	-0.0699 (0.253)	0.413 (0.290)	0.755*** (0.245)	0.147 (0.595)	0.902 (0.689)
VI6EldIPSS	-1.284 (5.693)	-7.263 (9.165)			-2.448 (5.345)	-14.64 (13.49)	-17.09 (12.43)	-4.574 (8.152)	-31.98 (27.95)	-36.55 (27.47)
\hat{v}_{Mob}	-0.0396 (0.300)	-1.306** (0.650)			-0.215 (0.318)	-2.571* (1.324)	-2.785* (1.459)	-0.474 (0.541)	-5.647* (3.354)	-6.121* (3.673)
ρ			0.484*** (0.0452)							
σ_e^2				0.0135*** (0.00128)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B20. Summary of Wald tests applied to the variable VI3Mob (Environmental).

Null hypothesis of exogeneity of the regressor VI3Mob Let γ represent the coefficient associated with \hat{v}_{Mob}	$\chi^2_{stat}(1)$ (Observed p-value)	Decision (Critical p-value of 5%)
β vector: $\gamma = 0$	0.02 (0.8950)	Do not rej. H0
θ vector: $\gamma = 0$	4.04 (0.0444)	Rej. H0
SR (Direct): $\gamma = 0$	0.45 (0.5000)	Do not rej. H0
SR (Indirect): $\gamma = 0$	3.77 (0.0522)	Do not rej. H0
SR (Total): $\gamma = 0$	3.64 (0.0563)	Do not rej. H0
LR (Direct): $\gamma = 0$	0.77 (0.3805)	Do not rej. H0
LR (Indirect): $\gamma = 0$	2.83 (0.0923)	Do not rej. H0
LR (Total): $\gamma = 0$	2.78 (0.0956)	Do not rej. H0

Conclusion: regressor is exogenous in the direct channel, indirect channel and globally (at the aggregate level)

Table B21. First step regarding the detection of endogeneity in the variable VI4ForeignOpen (Governance).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.346*** (0.0397)									
Spatial and time-lagged φ	-0.0785 (0.0525)									
VI1BusinInten	0.0363 (0.0480)	-0.0107 (0.0673)			0.0431 (0.0468)	0.0227 (0.117)	0.0658 (0.134)	0.0691 (0.0751)	0.0753 (0.259)	0.144 (0.296)
VI2ATourismFlow	-0.0289 (0.0560)	0.0720 (0.0741)			-0.0218 (0.0514)	0.111 (0.102)	0.0890 (0.0885)	-0.0288 (0.0783)	0.218 (0.205)	0.189 (0.195)
VI3Mob	-0.0385 (0.0648)	0.0722 (0.117)			-0.0299 (0.0654)	0.0957 (0.204)	0.0658 (0.228)	-0.0418 (0.106)	0.188 (0.451)	0.147 (0.502)
VI4ForeignOpen	0.0180* (0.0104)	0.0140 (0.0304)			0.0218* (0.0113)	0.0468 (0.0599)	0.0686 (0.0653)	0.0368* (0.0196)	0.115 (0.140)	0.152 (0.152)
VI5IntConsump	0.468*** (0.148)	-0.309** (0.152)			0.454*** (0.150)	-0.163 (0.236)	0.291 (0.277)	0.705*** (0.236)	-0.0788 (0.521)	0.626 (0.615)
VI6EldIPSS	-1.250 (5.675)	-7.283 (9.057)			-2.345 (5.372)	-13.85 (14.16)	-16.20 (13.74)	-4.360 (8.279)	-29.96 (29.31)	-34.32 (29.83)
ρ			0.487*** (0.0456)							
σ_e^2				0.0135*** (0.00128)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B22. Second step regarding the detection of endogeneity in the variable VI4ForeignOpen (Governance).

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	β vector	θ vector	Spatial	Variance	SR_Direct	SR_Indirect	SR_Total	LR_Direct	LR_Indirect	LR_Total
Time-lagged χ	0.0143 (0.0591)									
Spatial and time-lagged φ	0.0379 (0.0928)									
VI3Mob	-0.00676 (0.0263)	-0.0836 (0.225)			-0.00441 (0.0250)	-0.0767 (0.228)	-0.0811 (0.223)	-0.00506 (0.0250)	-0.0808 (0.239)	-0.0858 (0.236)
VI2ATourismFlow	0.00384 (0.0270)	0.0153 (0.0444)			0.00460 (0.0264)	0.0172 (0.0460)	0.0218 (0.0324)	0.00480 (0.0266)	0.0183 (0.0475)	0.0231 (0.0343)
VI1BusinInten	0.0116 (0.0240)	0.0181 (0.0602)			0.0123 (0.0233)	0.0176 (0.0588)	0.0298 (0.0600)	0.0126 (0.0236)	0.0190 (0.0616)	0.0316 (0.0635)
VI5IntConsump	0.118 (0.0724)	-0.142 (0.140)			0.123* (0.0727)	-0.135 (0.145)	-0.0127 (0.130)	0.123* (0.0733)	-0.137 (0.151)	-0.0134 (0.138)
VI6EldIPSS	-0.950 (7.190)	-3.261 (9.914)			-0.907 (7.366)	-3.975 (9.904)	-4.882 (8.899)	-0.951 (7.439)	-4.215 (10.25)	-5.166 (9.414)
VI3Mob _{t-3}	0.0192 (0.0410)	-0.130 (0.0872)			0.0184 (0.0426)	-0.128 (0.0927)	-0.110 (0.0979)	0.0177 (0.0432)	-0.134 (0.0973)	-0.116 (0.104)
ρ			0.0408 (0.0366)							
σ_e^2				0.0238*** (0.00303)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. External or excluded instrument: mobility lagged in time by 3 periods (VI3Mob_{t-3}).

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

Table B23. Third step regarding the detection of endogeneity in the variable VI4ForeignOpen (Governance).

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	β vector	θ vector	Spatial	Variance	SR_Direct	SR_Indirect	SR_Total	LR_Direct	LR_Indirect	LR_Total
Time-lagged χ	0.346*** (0.0396)									
Spatial and time-lagged φ	-0.0787 (0.0529)									
VI1BusinInten	0.0330 (0.0477)	-0.0188 (0.0688)			0.0383 (0.0460)	-0.000469 (0.120)	0.0378 (0.134)	0.0603 (0.0735)	0.0239 (0.265)	0.0841 (0.296)
VI2ATourismFlow	-0.0296 (0.0550)	0.0739 (0.0734)			-0.0228 (0.0504)	0.109 (0.102)	0.0862 (0.0882)	-0.0304 (0.0767)	0.215 (0.206)	0.184 (0.196)
VI3Mobwith	-0.0305 (0.0651)	0.119 (0.134)			-0.0137 (0.0667)	0.219 (0.269)	0.206 (0.295)	-0.00892 (0.111)	0.476 (0.628)	0.467 (0.690)
VI4ForeignOpen	0.402 (0.533)	0.457 (0.754)			0.518 (0.582)	1.211 (1.647)	1.729 (2.032)	0.889 (0.977)	3.071 (4.169)	3.960 (4.879)
VI5IntConsump	0.432** (0.188)	-0.283 (0.199)			0.416** (0.186)	-0.108 (0.269)	0.308 (0.283)	0.648** (0.290)	0.0209 (0.576)	0.669 (0.647)
VI6EldIPSS	-0.498 (5.601)	-3.885 (10.40)			-1.134 (5.217)	-7.738 (17.26)	-8.872 (17.10)	-2.102 (8.080)	-15.70 (36.57)	-17.81 (37.56)
$\hat{v}_{\text{ForeignOpen}}$	-0.384 (0.532)	-0.445 (0.747)			-0.496 (0.581)	-1.171 (1.629)	-1.668 (2.015)	-0.852 (0.974)	-2.970 (4.116)	-3.822 (4.825)
ρ			0.484*** (0.0446)							
σ_e^2				0.0135*** (0.00128)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B24. Summary of Wald tests applied to the variable VI4ForeignOpen (Governance).

Null hypothesis of exogeneity of the regressor VI4ForeignOpen Let γ represent the coefficient associated with $\hat{v}_{\text{ForeignOpen}}$	$\chi^2_{\text{stat}}(1)$ (Observed p-value)	Decision (Critical p-value of 5%)
β vector: $\gamma = 0$	0.52 (0.4704)	Do not rej. H0
θ vector: $\gamma = 0$	0.36 (0.5512)	Do not rej. H0
SR (Direct): $\gamma = 0$	0.73 (0.3926)	Do not rej. H0
SR (Indirect): $\gamma = 0$	0.52 (0.4722)	Do not rej. H0
SR (Total): $\gamma = 0$	0.68 (0.4080)	Do not rej. H0
LR (Direct): $\gamma = 0$	0.77 (0.3817)	Do not rej. H0
LR (Indirect): $\gamma = 0$	0.52 (0.4705)	Do not rej. H0
LR (Total): $\gamma = 0$	0.63 (0.4283)	Do not rej. H0

Conclusion: regressor is exogenous in the direct channel, indirect channel and globally (at the aggregate level)

Table B25. First step regarding the detection of endogeneity in the variable VI5IntConsump (Social/Economic).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.346*** (0.0397)									
Spatial and time-lagged φ	-0.0785 (0.0525)									
VI1BusinInten	0.0363 (0.0480)	-0.0107 (0.0673)			0.0431 (0.0468)	0.0227 (0.117)	0.0658 (0.134)	0.0691 (0.0751)	0.0753 (0.259)	0.144 (0.296)
VI2ATourismFlow	-0.0289 (0.0560)	0.0720 (0.0741)			-0.0218 (0.0514)	0.111 (0.102)	0.0890 (0.0885)	-0.0288 (0.0783)	0.218 (0.205)	0.189 (0.195)
VI3Mob	-0.0385 (0.0648)	0.0722 (0.117)			-0.0299 (0.0654)	0.0957 (0.204)	0.0658 (0.228)	-0.0418 (0.106)	0.188 (0.451)	0.147 (0.502)
VI4ForeignOpen	0.0180* (0.0104)	0.0140 (0.0304)			0.0218* (0.0113)	0.0468 (0.0599)	0.0686 (0.0653)	0.0368* (0.0196)	0.115 (0.140)	0.152 (0.152)
VI5IntConsump	0.468*** (0.148)	-0.309** (0.152)			0.454*** (0.150)	-0.163 (0.236)	0.291 (0.277)	0.705*** (0.236)	-0.0788 (0.521)	0.626 (0.615)
VI6EldIPSS	-1.250 (5.675)	-7.283 (9.057)			-2.345 (5.372)	-13.85 (14.16)	-16.20 (13.74)	-4.360 (8.279)	-29.96 (29.31)	-34.32 (29.83)
ρ			0.487*** (0.0456)							
σ_e^2				0.0135*** (0.00128)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B26. Second step regarding the detection of endogeneity in the variable VI5IntConsump (Social/Economic).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.659*** (0.0354)									
Spatial and time-lagged φ	-0.214*** (0.0340)									
VI3Mob	0.0211 (0.0274)	-0.0151 (0.0426)			0.0235 (0.0260)	-0.00784 (0.0596)	0.0157 (0.0648)	0.0692 (0.0776)	-0.0169 (0.232)	0.0523 (0.254)
VI2ATourismFlow	0.0988*** (0.0271)	-0.0591* (0.0322)			0.0963*** (0.0264)	-0.0322 (0.0415)	0.0641 (0.0464)	0.284*** (0.0785)	-0.0636 (0.153)	0.220 (0.175)
VI1BusinInten	0.0474*** (0.0151)	-0.0137 (0.0230)			0.0476*** (0.0146)	0.00392 (0.0330)	0.0515 (0.0390)	0.142*** (0.0444)	0.0424 (0.154)	0.184 (0.175)
VI4ForeignOpen	0.00121 (0.00322)	-0.00572 (0.0108)			0.001000 (0.00336)	-0.00679 (0.0169)	-0.00579 (0.0183)	0.00258 (0.0106)	-0.0228 (0.0678)	-0.0203 (0.0733)
VI6EldIPSS	4.263 (2.594)	1.176 (3.664)			4.499* (2.606)	3.941 (4.627)	8.439* (4.408)	13.56* (7.760)	16.21 (17.35)	29.77* (18.10)
VI3Mob _{t-2}	-0.00232 (0.0107)	-0.00882 (0.0287)			-0.00338 (0.0101)	-0.0133 (0.0418)	-0.0167 (0.0453)	-0.0112 (0.0309)	-0.0521 (0.162)	-0.0632 (0.175)
ρ			0.367*** (0.0498)							
σ_e^2				0.00111*** (9.88e-05)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. External or excluded instrument: mobility lagged in time by 2 periods (VI3Mob_{t-2}).

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

Table B27. Third step regarding the detection of endogeneity in the variable VI5IntConsump (Social/Economic).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.338*** (0.0398)									
Spatial and time-lagged φ	-0.0746 (0.0523)									
VI1BusinInten	0.0196 (0.0474)	-0.00315 (0.0683)			0.0260 (0.0453)	0.0175 (0.116)	0.0435 (0.128)	0.0413 (0.0710)	0.0520 (0.250)	0.0933 (0.276)
VI2ATourismFlow	-0.0608 (0.0593)	0.0974 (0.0802)			-0.0529 (0.0543)	0.122 (0.113)	0.0690 (0.0985)	-0.0763 (0.0817)	0.219 (0.226)	0.143 (0.215)
VI3Mob	-0.0434 (0.0639)	0.0768 (0.118)			-0.0331 (0.0642)	0.122 (0.229)	0.0889 (0.250)	-0.0445 (0.103)	0.247 (0.508)	0.203 (0.558)
VI4ForeignOpen	0.0164 (0.0103)	0.0146 (0.0302)			0.0199* (0.0114)	0.0420 (0.0577)	0.0618 (0.0637)	0.0333* (0.0196)	0.105 (0.137)	0.138 (0.150)
VI5IntConsump	0.733*** (0.228)	-0.482* (0.285)			0.717*** (0.227)	-0.182 (0.480)	0.536 (0.533)	1.107*** (0.354)	0.0763 (1.118)	1.183 (1.245)
VI6EldIPSS	-2.288 (5.687)	-7.640 (9.349)			-3.597 (5.200)	-16.61 (14.10)	-20.20 (13.29)	-6.431 (7.868)	-36.80 (29.89)	-43.23 (29.88)
$\hat{v}_{IntConsump}$	-0.365* (0.219)	0.239 (0.316)			-0.351* (0.210)	0.0672 (0.530)	-0.284 (0.586)	-0.544* (0.330)	-0.108 (1.197)	-0.652 (1.325)
ρ			0.485*** (0.0448)							
σ_e^2				0.0134*** (0.00127)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B28. Summary of Wald tests applied to the variable VI5IntConsump (Social/Economic).

Null hypothesis of exogeneity of the regressor VI5IntConsump Let γ represent the coefficient associated with $\hat{v}_{\text{IntConsump}}$	$\chi^2_{\text{stat}}(1)$ (Observed p-value)	Decision (Critical p-value of 5%)
β vector: $\gamma = 0$	2.76 (0.0964)	Do not rej. H0
θ vector: $\gamma = 0$	0.57 (0.4501)	Do not rej. H0
SR (Direct): $\gamma = 0$	2.79 (0.0951)	Do not rej. H0
SR (Indirect): $\gamma = 0$	0.02 (0.8991)	Do not rej. H0
SR (Total): $\gamma = 0$	0.23 (0.6285)	Do not rej. H0
LR (Direct): $\gamma = 0$	2.72 (0.0993)	Do not rej. H0
LR (Indirect): $\gamma = 0$	0.01 (0.9280)	Do not rej. H0
LR (Total): $\gamma = 0$	0.24 (0.6227)	Do not rej. H0

Conclusion: regressor is exogenous in the direct channel, indirect channel and globally (at the aggregate level)

Table B29. First step regarding the detection of endogeneity in the variable VI6EldIPSS (Social).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.346*** (0.0397)									
Spatial and time-lagged φ	-0.0785 (0.0525)									
VI1BusinInten	0.0363 (0.0480)	-0.0107 (0.0673)			0.0431 (0.0468)	0.0227 (0.117)	0.0658 (0.134)	0.0691 (0.0751)	0.0753 (0.259)	0.144 (0.296)
VI2ATourismFlow	-0.0289 (0.0560)	0.0720 (0.0741)			-0.0218 (0.0514)	0.111 (0.102)	0.0890 (0.0885)	-0.0288 (0.0783)	0.218 (0.205)	0.189 (0.195)
VI3Mobwith	-0.0385 (0.0648)	0.0722 (0.117)			-0.0299 (0.0654)	0.0957 (0.204)	0.0658 (0.228)	-0.0418 (0.106)	0.188 (0.451)	0.147 (0.502)
VI4ForeignOpen	0.0180* (0.0104)	0.0140 (0.0304)			0.0218* (0.0113)	0.0468 (0.0599)	0.0686 (0.0653)	0.0368* (0.0196)	0.115 (0.140)	0.152 (0.152)
VI5IntConsump	0.468*** (0.148)	-0.309** (0.152)			0.454*** (0.150)	-0.163 (0.236)	0.291 (0.277)	0.705*** (0.236)	-0.0788 (0.521)	0.626 (0.615)
VI6EldIPSS	-1.250 (5.675)	-7.283 (9.057)			-2.345 (5.372)	-13.85 (14.16)	-16.20 (13.74)	-4.360 (8.279)	-29.96 (29.31)	-34.32 (29.83)
ρ			0.487*** (0.0456)							
σ_e^2				0.0135*** (0.00128)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B30. Second step regarding the detection of endogeneity in the variable VI6EldIPSS (Social).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LRTotal
Time-lagged χ	1.046*** (0.00899)									
Spatial-time-lagged φ	-0.297*** (0.0452)									
VI3Mob	-0.000317* (0.000175)	7.58e-05 (0.000241)			-0.000297* (0.000168)	1.42e-05 (0.000312)	-0.000283 (0.000365)	0.00941 (0.0489)	-0.00443 (0.0880)	0.00498 (0.0732)
VI2ATourismFlow	0.000223*** (5.06e-05)	-0.000488*** (8.41e-05)			0.000198*** (4.58e-05)	-0.000559*** (0.000108)	-0.000361*** (9.85e-05)	-0.00577 (0.0313)	0.00620 (0.0745)	0.000435 (0.0678)
VI1BusinInten	-7.55e-05 (7.14e-05)	3.61e-06 (0.000110)			-7.45e-05 (6.97e-05)	-1.97e-05 (0.000148)	-9.42e-05 (0.000177)	0.00311 (0.0254)	-0.00325 (0.0345)	-0.00015 (0.0233)
VI4ForeignOpen	-2.55e-05 (5.09e-05)	0.000141 (9.93e-05)			-1.40e-05 (5.07e-05)	0.000188 (0.000138)	0.000174 (0.000152)	-0.000427 (0.0304)	-0.000857 (0.0456)	-0.00128 (0.0342)
VI5IntConsump	- 0.000669*** (0.000124)	0.000116 (0.000251)			- 0.000672*** (0.000126)	-9.94e-05 (0.000325)	-0.000771** (0.000350)	0.0231 (0.158)	-0.0203 (0.220)	0.00284 (0.153)
VI6EldIPSS _{t-2}	-6.29e-06 (2.17e-05)	-6.75e-05 (4.62e-05)			-1.17e-05 (2.07e-05)	-8.77e-05 (5.88e-05)	-9.93e-05 (6.31e-05)	0.000794 (0.0201)	-8.90e-05 (0.0292)	0.000705 (0.0211)
ρ			0.275*** (0.0478)							
σ_e^2				7.07e-08*** (5.81e-09)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. External or excluded instrument: IPSS lagged in time by 2 periods (VI6EldIPSS_{t-2}).

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

Table B31. Third step regarding the detection of endogeneity in the variable VI6EldIPSS (Social).

VARIABLES	(1) β vector	(2) θ vector	(3) Spatial	(4) Variance	(5) SR_Direct	(6) SR_Indirect	(7) SR_Total	(8) LR_Direct	(9) LR_Indirect	(10) LR_Total
Time-lagged χ	0.348*** (0.0396)									
Spatial-time-lagged φ	-0.0792 (0.0525)									
VI1BusinInten	0.0364 (0.0481)	-0.0109 (0.0673)			0.0431 (0.0464)	0.0194 (0.118)	0.0625 (0.132)	0.0693 (0.0744)	0.0710 (0.263)	0.140 (0.296)
VI2ATourismFlow	-0.0286 (0.0559)	0.0722 (0.0741)			-0.0219 (0.0512)	0.106 (0.104)	0.0839 (0.0903)	-0.0290 (0.0783)	0.211 (0.217)	0.182 (0.207)
VI3Mob	-0.0383 (0.0648)	0.0724 (0.116)			-0.0280 (0.0652)	0.119 (0.225)	0.0913 (0.247)	-0.0372 (0.107)	0.251 (0.515)	0.214 (0.567)
VI4ForeignOpen	0.0180* (0.0104)	0.0139 (0.0302)			0.0214* (0.0114)	0.0418 (0.0581)	0.0632 (0.0640)	0.0364* (0.0202)	0.109 (0.144)	0.146 (0.158)
VI5IntConsump	0.469*** (0.148)	-0.307** (0.153)			0.457*** (0.150)	-0.125 (0.242)	0.332 (0.283)	0.714*** (0.238)	0.0226 (0.576)	0.737 (0.675)
VI6EldIPSS	-1.342 (5.657)	-7.568 (9.098)			-2.536 (5.284)	-15.34 (13.42)	-17.87 (12.48)	-4.794 (8.089)	-34.06 (28.52)	-38.85 (28.23)
\hat{v}_{IPSS}	-8.554 (7.885)	1.730 (15.28)			-8.245 (8.050)	-3.873 (29.01)	-12.12 (32.09)	-13.27 (13.26)	-14.39 (65.78)	-27.66 (72.72)
ρ			0.487*** (0.0457)							
σ_e^2				0.0135*** (0.00128)						
Observations	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668
R ²	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Units	278	278	278	278	278	278	278	278	278	278

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B32. Summary of Wald tests applied to the variable VI6EldIPSS (Social).

Null hypothesis of exogeneity of the regressor VI6EldIPSS Let γ represent the coefficient associated with \hat{v}_{IPSS}	$\chi^2_{stat}(1)$ (Observed p-value)	Decision (Critical p-value of 5%)
β vector: $\gamma = 0$	1.18 (0.2780)	Do not rej. H0
θ vector: $\gamma = 0$	0.01 (0.9099)	Do not rej. H0
SR (Direct): $\gamma = 0$	1.05 (0.3057)	Do not rej. H0
SR (Indirect): $\gamma = 0$	0.02 (0.8938)	Do not rej. H0
SR (Total): $\gamma = 0$	0.14 (0.7057)	Do not rej. H0
LR (Direct): $\gamma = 0$	1.00 (0.3168)	Do not rej. H0
LR (Indirect): $\gamma = 0$	0.05 (0.8269)	Do not rej. H0
LR (Total): $\gamma = 0$	0.14 (0.7037)	Do not rej. H0

Conclusion: regressor is exogenous in the direct channel, indirect channel and globally (at the aggregate level)



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