Online Appendix
Neighbourhood Effects and the Incidence of Child Labour*

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1 Introduction

Sections 2 and 3 of this online appendix offer two extensions to the main text. The first extension considers the SAR model with autoregressive disturbances using the approach developed in Kelejian and Prucha (1998). This enables us to control for possible spatial correlation in the errors. The second extension considers the role of seasonality. Seasonality does influence certain economic activities such as farming and may thus affect the incidence of child labour.

2 SARAR-LPM

Our focus here is to control for possible spatial correlation in the error terms using the same specifications of Table 4.1 in the main text. To this end, we specify the following spatial autoregressive linear probability model with autoregressive disturbances (SARAR-LPM)

$$\begin{aligned} Child\_Labour_i &= \rho \sum_{j=1}^{n} w_{ij} Child\_Labour_j + Poverty_i \beta_1 + X_{-1,i} \boldsymbol{\beta}_{-1} + u_i, \\ u_i &= \lambda \sum_{j=1}^{n} w_{ij} u_j + \varepsilon_i, \ \ i = 1, 2, \ldots, n. \end{aligned}$$

λ measures spatial correlation in the error terms; it is estimated using the first-two moment conditions suggested in Kelejian and Prucha (1998, p. 108). As the special case with spatial correlation allowed only in the error terms does not permit a study of the relationship between neighbours' and one's decision to engage in child labour, it is not separately considered.

Table 2.1 presents SARAR-LPM estimates using specifications of Table 4.1 in the main text and the full sample. The results are qualitatively similar to those reported in the main text. For example, the neighbourhood effect, ρ, is positive, and except in specification (3), is statistically significant at the 1% level. The coefficients corresponding to *Poverty*, *Rural*, *Employment*, *School Enrolment*, and *Female* exhibit little change with a few changes in significance levels.

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Table 2.1: Empirical Results - Full Sample - SARAR

Coefficients	(1)	(2)	(3)	(4)	(5)	(6)
ρ	0.548***	0.517***	0.099*	0.572***	0.771***	0.864***
	(0.041)	(0.041)	(0.060)	(0.041)	(0.037)	(0.050)
Poverty	0.016***	0.018***	0.002	0.017***	0.014**	0.005
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Rural	0.030***	0.031***	0.064***	0.032***	0.015**	0.004
	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.008)
Employment	0.283***	0.291***	0.533***	0.269***	0.172***	0.068
	(0.036)	(0.036)	(0.050)	(0.036)	(0.033)	(0.043)
School enrolment	-0.113***	-0.118***	-0.135***	-0.107***	-0.075***	-0.134***
	(0.022)	(0.022)	(0.023)	(0.022)	(0.023)	(0.023)
Female	-0.013**	-0.013***	-0.015***	-0.012**	-0.004	-0.003
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Religion	✓		✓	✓	✓	✓
H. Characteristics	✓	✓		✓	✓	✓
Ecological Zone	✓	✓	✓		✓	✓
Region	✓	✓	✓	✓		✓
Age	✓	✓	✓	✓	✓	
λ	0.495	0.562	0.877	0.433	-0.639	-1.000
# of obs.	21205	21205	21205	21205	21205	21205
R^2	0.736	0.735	0.528	0.763	0.754	0.639

The columns present specifications with different sets of fixed effects and controls. A quadratic term of *Age* is also included. Heteroskedasticity-robust standard errors are in parentheses. ✓ indicates the variable is included in the model. Significance level: *** 1%, ** 5%, * 10%.

The spatial correlation λ in the error terms appears to be sensitive to model specification; it is positive in specifications (1) through (4) and negative in specifications (5) and (6). Although the heteroskedasticity-robust standard errors in Table 2.1 are negligibly different from those in Table 4.1 in the main text, the goodness-of-fit coefficient, R^2, is smaller across specifications. In sum, controlling for spatial correlation in the error terms does not lead to qualitatively different results.

3 Seasonality

In order to control for seasonality in a child's decision to engage in child labour, we follow Galdo, Dammert, and Abebaw (2018) and Wooldridge (2015, Chapter 10) by augmenting model specifications with month-year fixed effects. Specifically, we augment specifications in Tables 4.1 and 4.2 of the main text with month-year fixed effects. A set of interaction terms, *Rural* × *Season*,

that interacts *Rural* and month-year dummies is introduced in Table 3.1 to account for a possibly differing relationship between seasonality and child labour in rural and urban areas.

Table 3.1: Empirical Results - Full Sample - Seasonality

Coefficients	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ρ	0.721***	0.776***	0.510***	0.746***	0.785***	0.877***	0.765***
	(0.040)	(0.040)	(0.059)	(0.040)	(0.035)	(0.048)	(0.039)
Poverty	0.008	0.007	0.018***	0.005	0.006	0.005	0.004
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Rural	0.027***	0.024***	0.050***	0.025***	0.023***	0.005	0.010
	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.008)	(0.014)
Employment	0.193***	0.155***	0.356***	0.176***	0.150***	0.047	0.162***
	(0.034)	(0.035)	(0.048)	(0.035)	(0.032)	(0.040)	(0.034)
School enrolment	-0.092***	-0.084***	-0.096***	-0.089***	-0.089***	-0.162***	-0.091***
	(0.022)	(0.022)	(0.023)	(0.022)	(0.023)	(0.023)	(0.022)
Female	-0.006	-0.006	-0.007	-0.007	-0.006	-0.004	-0.008*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)
Religion	✓		✓	✓	✓	✓	✓
H. Characteristics	✓	✓		✓	✓	✓	✓
Ecological Zone	✓	✓	✓		✓	✓	✓
Region	✓	✓	✓	✓		✓	✓
Age	✓	✓	✓	✓	✓		✓
# of obs.	21205	21205	21205	21205	21205	21205	21205
R^2	0.847	0.835	0.636	0.855	0.847	0.760	0.818
Rural x Season							
χ^2							12.9 (10)
p-value							0.230

The columns present specifications with different sets of fixed effects and controls. A quadratic term of *Age* is also included. Heteroskedasticity-robust standard errors are in parentheses. ✓ indicates the variable is included in the model. All specifications contain month-year fixed effects in order to control for seasonality. Significance level: *** 1%, ** 5%, * 10%.

The last two rows of Table 3.1 specification (7) conduct a Wald-test of joint significance of coefficients on the *Rural*× *Season* set of dummies. The p-value of 0.230 suggests that the role of seasonality on the incidence of Child labour is not statistically different between rural and urban areas. Like in the previous section, our results from specifications augmented with seasonality dummies (both Tables 3.1 and 3.2) are not qualitatively different from those reported in the main text.

Table 3.2: Empirical Results - Subsamples - Seasonality

	Ecological Zone			Gender		Location	
Coefficients	Coastal	Forest	Savannah	Male	Female	Rural	Urban
ρ	0.950***	0.795***	0.864***	0.794***	0.176**	0.810***	0.546***
	(0.059)	(0.058)	(0.050)	(0.041)	(0.075)	(0.044)	(0.050)
Poverty	-0.004	0.005	0.003	0.007	0.004	0.009	-0.003
	(0.012)	(0.010)	(0.008)	(0.007)	(0.013)	(0.007)	(0.011)
Rural	0.006	0.008	0.028**	0.018**	0.065***	-	-
	(0.010)	(0.011)	(0.011)	(0.008)	(0.014)	-	-
Employment	-0.001	0.160***	0.089*	0.149***	0.460***	0.124***	0.084**
	(0.034)	(0.060)	(0.048)	(0.037)	(0.064)	(0.043)	(0.035)
# of obs.	3943	8543	8719	15971	5115	13203	8002
R^2	0.928	0.838	0.942	0.855	0.456	0.931	0.402

All columns replicate specification (1) of Table 2.1 on the respective subsamples. Heteroskedasticity-robust standard errors are in parentheses. All specifications contain month-year fixed effects in order to control for seasonality. Significance levels: *** 1%, ** 5%, * 10%.

4 Conclusion

This online appendix considers extensions to the main text by controlling for spatial correlation in the errors and seasonality. Results from both extensions are qualitatively similar to those reported in the main text. The SARAR-LPM appears to fit the data more loosely compared to the SAR-LPM in the main text. We find that the relationship between seasonality and the incidence of child labour is not statistically different in rural vis-à-vis urban areas.

References

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[3] Wooldridge, Jeffrey M. *Introductory Econometrics: A modern approach*. Cengage learning, 2015.