Online Appendix

Telework and internal migration in Latin America

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This appendix reports the coefficients plotted in the three figures with standard errors from which their confidence intervals are drawn. Standard errors are clustered on occupation throughout.

OA-A Event-study and first-stage tables behind the figures

Tables OA.1 to OA.5 report the full event studies behind Figure 3, under three specifications: the naive baseline with controls, the primary specification (education-decile × year fixed effects), and the same adding region × year fixed effects. Table OA.6 reports the full specification ladder for the Brazilian first stage, Table OA.7 its event study, Tables OA.8 and OA.9 the Chilean and Brazilian panels of Figure 4, and Table OA.10 the Peruvian, Mexican and Colombian income-gap event studies. The pooled migration and income-gap estimates under the covariate ladder are in Appendix B.

Table OA.1: Chile: event study on urban residence, base year 2017

	(1) base	(2) educ-dec × yr	(3) + region × yr
Telework × 2015	-0.0023	-0.0006	-0.0017
	(0.0061)	(0.0057)	(0.0051)
Telework × 2020	-0.0145***	-0.0086*	-0.0115**
	(0.0050)	(0.0049)	(0.0045)
Telework × 2022	-0.0034	-0.0019	-0.0052
	(0.0052)	(0.0048)	(0.0045)
Telework × 2024	-0.0091**	-0.0009	-0.0011
	(0.0046)	(0.0048)	(0.0042)
Observations	446,552	446,552	446,552

Standard errors clustered at the occupation level in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table OA.2: Perú: event study on urban residence, base year 2019

	(1) base	(2) educ-dec × yr	(3) + region × yr
Telework × 2018	-0.0033	-0.0098	-0.0107**
	(0.0038)	(0.0062)	(0.0053)
Telework × 2020	-0.0259***	-0.0143***	-0.0113**
	(0.0043)	(0.0051)	(0.0054)
Telework × 2022	-0.0257***	-0.0013	-0.0019
	(0.0064)	(0.0054)	(0.0049)
Telework × 2024	-0.0279***	-0.0105	-0.0105*
	(0.0063)	(0.0070)	(0.0059)
Observations	329,472	329,412	328,713

Standard errors clustered at the occupation level in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table OA.3: México: event study on urban residence, base year 2019

	(1) base	(2) educ-dec × yr	(3) + region × yr
Telework × 2017	0.0082**	-0.0029	-0.0088*
	(0.0037)	(0.0054)	(0.0051)
Telework × 2018	0.0062*	0.0019	-0.0035
	(0.0037)	(0.0052)	(0.0046)
Telework × 2020	-0.0054*	0.0006	-0.0030
	(0.0030)	(0.0052)	(0.0049)
Telework × 2021	-0.0051	0.0046	0.0011
	(0.0042)	(0.0074)	(0.0073)
Telework × 2022	-0.0045	0.0027	0.0001
	(0.0037)	(0.0071)	(0.0068)
Telework × 2023	0.0019	-0.0064	-0.0091
	(0.0039)	(0.0071)	(0.0069)
Telework × 2024	0.0023	-0.0059	-0.0104
	(0.0042)	(0.0076)	(0.0073)
Observations	4,740,100	4,740,100	4,740,100

Standard errors clustered at the occupation level in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table OA.4: Brazil: event study on urban residence, base year 2019

	(1) base	(2) educ-dec × yr	(3) + region × yr
Telework × 2017	-0.0022	-0.0004	-0.0001
	(0.0020)	(0.0036)	(0.0036)
Telework × 2018	-0.0009	0.0004	0.0003
	(0.0019)	(0.0021)	(0.0021)
Telework × 2020	-0.0016	0.0014	0.0014
	(0.0027)	(0.0021)	(0.0022)
Telework × 2021	-0.0051*	0.0029	0.0024
	(0.0029)	(0.0032)	(0.0030)
Telework × 2022	0.0010	0.0029	0.0028
	(0.0025)	(0.0042)	(0.0041)
Telework × 2023	0.0006	0.0005	0.0009
	(0.0023)	(0.0043)	(0.0041)
Telework × 2024	0.0012	0.0016	0.0020
	(0.0024)	(0.0046)	(0.0041)
Observations	5,576,620	5,576,617	5,576,617

Standard errors clustered at the occupation level in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table OA.5: Colombia: event study on urban residence, base year 2019

	(1) base	(2) educ-dec × yr	(3) + region × yr
Telework × 2018	-0.0022	-0.0031	-0.0028
	(0.0022)	(0.0030)	(0.0027)
Telework × 2020	-0.0217***	-0.0078	-0.0081
	(0.0073)	(0.0053)	(0.0053)
Telework × 2021	-0.0211***	-0.0068	-0.0072
	(0.0067)	(0.0051)	(0.0054)
Telework × 2022	0.0002	0.0111	0.0091
	(0.0081)	(0.0069)	(0.0067)
Telework × 2023	0.0014	0.0140	0.0121
	(0.0081)	(0.0092)	(0.0089)
Observations	1,278,640	1,278,640	1,278,640

Standard errors clustered on the two-digit CNO-70 occupation group in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table OA.6: First stage: working from home (self-reported), Brazil, full ladder

	(1) base	(2) + controls	(3) educ-dec × yr	(4) + region × yr	(5) educ band
Telework × During	0.0846***	0.0820***	0.0155	0.0159	0.0477**
	(0.0261)	(0.0256)	(0.0134)	(0.0131)	(0.0185)
Telework × After	0.1163***	0.1122***	0.0261	0.0265	0.0854***
	(0.0347)	(0.0341)	(0.0189)	(0.0186)	(0.0275)
Observations	1,155,619	1,155,619	1,155,619	1,155,619	170,762

Note: The outcome is an indicator of working primarily from home, recorded for about a fifth of the Brazilian sample each year from 2018. Occupation fixed effects and occupation-level clustering throughout; columns (3) to (5) add education-decile × year fixed effects, column (4) adds region × year, and column (5) restricts to the education overlap band. Teleworkability is close to a function of education at the occupation level, so the decile × year effects in columns (3) and (4) absorb most of the first stage. Column (5) keeps only the deciles where both groups are present, and there the first stage returns and is significant. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table OA.7: Brazil: first-stage event study, base year 2019

	(1) base	(2) educ-dec × yr	(3) + region × yr
Telework × 2018	-0.0042	-0.0001	-0.0006
	(0.0049)	(0.0054)	(0.0054)
Telework × 2020	0.0478***	0.0140	0.0144
	(0.0156)	(0.0106)	(0.0104)
Telework × 2021	0.1087***	0.0169	0.0168
	(0.0323)	(0.0159)	(0.0153)
Telework × 2022	0.1097***	0.0258	0.0255
	(0.0326)	(0.0177)	(0.0172)
Telework × 2023	0.1172***	0.0313	0.0315
	(0.0349)	(0.0199)	(0.0197)
Telework × 2024	0.1053***	0.0216	0.0220
	(0.0323)	(0.0179)	(0.0176)
Observations	1,155,619	1,155,619	1,155,619

Standard errors clustered at the occupation level in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table OA.8: Chile: income-gap event study, base year 2017

	(1) base	(2) educ-dec × yr	(3) + region × yr
Telework × Urban × 2015	0.0043	0.0092	0.0170
	(0.0363)	(0.0368)	(0.0361)
Telework × Urban × 2020	0.0325	0.0461	0.0552
	(0.0435)	(0.0416)	(0.0411)
Telework × Urban × 2022	-0.0116	-0.0110	0.0019
	(0.0337)	(0.0310)	(0.0303)
Telework × Urban × 2024	-0.0511*	-0.0377	-0.0179
	(0.0282)	(0.0275)	(0.0262)
Observations	416,930	416,930	416,930

Standard errors clustered at the occupation level in parentheses. Constituent double interactions included. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table OA.9: Brazil: income-gap event study, base year 2019

	(1) base	(2) educ-dec × yr	(3) + region × yr
Telework × Urban × 2017	0.0122	0.0012	-0.0003
	(0.0154)	(0.0146)	(0.0129)
Telework × Urban × 2018	0.0236**	0.0171	0.0091
	(0.0111)	(0.0107)	(0.0089)
Telework × Urban × 2020	0.0369**	0.0388**	0.0402***
	(0.0152)	(0.0150)	(0.0141)
Telework × Urban × 2021	0.0745***	0.0698***	0.0635***
	(0.0176)	(0.0179)	(0.0160)
Telework × Urban × 2022	0.0564***	0.0370**	0.0350**
	(0.0214)	(0.0184)	(0.0169)
Telework × Urban × 2023	0.0410*	0.0370*	0.0368**
	(0.0222)	(0.0198)	(0.0185)
Telework × Urban × 2024	0.0199	0.0264	0.0237
	(0.0203)	(0.0198)	(0.0196)
Observations	5,411,205	5,411,202	5,411,202

Standard errors clustered at the occupation level in parentheses. Constituent double interactions included. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table OA.10: Income-gap event studies, Perú, México and Colombia

	educ-dec × yr	+ region × yr
Panel A: Perú (base year 2019)		
Telework × Urban × 2018	0.0049	0.0203
	(0.0498)	(0.0483)
Telework × Urban × 2020	0.1951**	0.1685**
	(0.0816)	(0.0828)
Telework × Urban × 2022	0.3603***	0.3371***
	(0.1105)	(0.1164)
Telework × Urban × 2024	0.1791**	0.1886**
	(0.0818)	(0.0808)
Observations	251,128	250,698
Panel B: México (base year 2019)		
Telework × Urban × 2017	−0.0222**	−0.0218**
	(0.0111)	(0.0098)
Telework × Urban × 2018	−0.0138	−0.0100
	(0.0104)	(0.0097)
Telework × Urban × 2020	0.0183*	0.0145
	(0.0101)	(0.0098)
Telework × Urban × 2021	0.0072	0.0044
	(0.0113)	(0.0111)
Telework × Urban × 2022	0.0053	0.0060
	(0.0121)	(0.0118)
Telework × Urban × 2023	0.0122	0.0152
	(0.0113)	(0.0104)
Telework × Urban × 2024	0.0178*	0.0184*
	(0.0105)	(0.0097)
Observations	3,256,734	3,256,734
Panel C: Colombia (base year 2019)		
Telework × Urban × 2018	−0.0151	−0.0166
	(0.0435)	(0.0481)
Telework × Urban × 2020	0.1256	0.1250*
	(0.0816)	(0.0738)
Telework × Urban × 2021	0.0572	0.0496
	(0.1043)	(0.0959)
Telework × Urban × 2022	0.1073	0.0935
	(0.1242)	(0.1161)
Telework × Urban × 2023	0.0793	0.0749
	(0.1329)	(0.1256)
Observations	1,179,732	1,179,732

Note: Coefficients on Telework × Urban × year for log income, with the constituent double interactions, occupation fixed effects, controls, and occupation-level clustering. Perú's income-gap pre-period coefficient is small and insignificant. México's is −0.022 in 2017 and significant at 5%, so part of its post-pandemic movement may be recovery from a pre-period dip (Section 5). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

OA-B The Chilean classification change

Section 3 describes the change from CIUO-88 to CIUO-08 in CASEN's occupation coding after 2020 and the harmonization we apply. This appendix documents it. CASEN 2020 carries both codes for its 70,576 employed respondents. For each of the 455 CIUO-08 codes in that wave we take the CIUO-88 code with the most respondents. The assignment is not a deterministic recoding: 267 codes have a single CIUO-88 partner and the other 188 split across two or more, and the modal cell holds 94.5% of the double-coded workers. The 2022 and 2024 codes are mapped to their modal CIUO-88 code and then through the ILO correspondence table that the 2015, 2017 and 2020 waves already take, so all five waves sit on the same crosswalked CIUO-08 basis. The crosswalk covers 99.98% of post-2020 workers, and 99.96% of them land in a CIUO-88 code that the 2015 and 2017 waves also carry.

Table OA.11 shows what the harmonization does. Under the native coding, the post-pandemic waves carry 425 and 437 codes against 274 to 276 before, and a third of their workers sit in codes with no pre-pandemic rows, which the primary specification discards because they have no education decile. Under the harmonized coding they carry 257 and 260 codes, fewer than 1% of their workers sit in such codes, and the teleworkable share runs 0.250, 0.256, 0.302, 0.263 and 0.279 across the five waves instead of dropping to 0.220 in 2022. The elevated 2020 value reflects the telephone survey's composition (Section 4). The cost is measurement error in the two post-pandemic waves: about 5% of their workers are assigned a neighboring CIUO-88 code by the modal rule, and 7% change teleworkability relative to their native code. This error is misclassification of a binary treatment, so its direction is not known and we do not sign the bias; the After standard errors are 0.004 to 0.005.

Table OA.12 reports the estimates when all five waves are instead kept in CIUO-88, the native code for 2015 to 2020 and the modal code for 2022 and 2024, with the same teleworkability as in the paper. The occupation unit is finer (399 codes against 282), and no crosswalk step touches the pre-pandemic waves. The 2015 coefficient and the After coefficients are zero under both codings. The During estimate is smaller under native CIUO-88 codes, -0.0053 (0.0039) against -0.0083 (0.0045), and significant at 10% only when region $\times$ year effects are added. The finer unit, with education deciles computed at that level, absorbs part of the pandemic-year movement. The income-gap estimates of Table B.2 move by less than 0.005 under this coding.

A coarser repair does not work. Collapsing occupations to ISCO-08 sub-major groups (two digits) also restores continuity, but the 2015 placebo coefficient becomes -0.0090 against a 2020 coefficient of -0.0077 under the primary specification. Education-decile fixed effects separate education levels only when occupations are narrow, so we do not use it.

Table OA.11: Chile: occupation codes and teleworkable share across the classification change

	2015	2017	2020	2022	2024
Panel A: distinct occupation codes					
Native coding	274	276	275	425	437
Harmonized (paper)	274	276	275	257	260
CIUO-88 throughout	379	380	372	296	301
Panel B: workers in codes with no 2015 or 2017 presence (%)					
Native coding			0.0	32.7	34.2
Harmonized (paper)			0.0	0.0	0.7
CIUO-88 throughout			0.3	0.0	0.7
Panel C: teleworkable share of workers					
Native coding	0.250	0.256	0.302	0.220	0.236
Harmonized (paper)	0.250	0.256	0.302	0.263	0.279

Note: All rows of the Chilean extract with an occupation code (Panels A and B) or a teleworkability value (Panel C), unweighted. "Native coding" is CIUO-88 crosswalked forward for 2015 to 2020 and native CIUO-08 for 2022 and 2024. "Harmonized" maps the 2022 and 2024 codes to their modal CIUO-88 code in the CASEN 2020 double coding and then through the same ILO correspondence as the earlier waves. "CIUO-88 throughout" keeps the native CIUO-88 code for 2015 to 2020 and the modal code for 2022 and 2024. The treatment is identical under the last two codings.

Table OA.12: Chile with all waves in CIUO-88: the ladder and the event study

	(1) educ-dec × yr	(2) + region × yr	(3) weighted
Panel A: During and After			
Telework × During	−0.0053	−0.0069*	−0.0036
	(0.0039)	(0.0039)	(0.0037)
Telework × After	+0.0010	+0.0004	+0.0009
	(0.0046)	(0.0041)	(0.0037)
Panel B: event study, base year 2017			
Telework × 2015	+0.0012	−0.0011	−0.0001
	(0.0055)	(0.0048)	(0.0039)
Telework × 2020	−0.0046	−0.0075*	−0.0036
	(0.0046)	(0.0041)	(0.0047)
Telework × 2022	+0.0019	−0.0019	+0.0012
	(0.0053)	(0.0048)	(0.0045)
Telework × 2024	+0.0015	+0.0012	+0.0006
	(0.0053)	(0.0048)	(0.0047)
Observations	446,360	446,360	446,360

Note: Urban-residence regressions with all five waves in CIUO-88 (399 occupation codes): occupation fixed effects, education deciles, supports and clustering all use the CIUO-88 code. Column (1) is the primary specification, (2) adds region × year fixed effects, and (3) weights column (1) by the survey expansion factor. Standard errors clustered on the occupation code. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

OA-C The Colombian occupation bridge

Section 3 describes the change in the GEIH occupation coding from the two-digit CNO-70 (2018 to 2021) to the four-digit CIUO-08 (2022 and 2023) and the bridge that puts the later waves on the CNO-70 basis. This appendix gives the steps and the coverage. A CNO-70 group is teleworkable when at least half of its constituent CIUO-08 codes are teleworkable under Dingel and Neiman (2020), through the same CIUO-88 and CIUO-08 correspondences as in the other countries; the constituent codes come from DANE's correspondence between CNO-70 and CIUO-88 (DANE, 2005) and the ILO correspondence between CIUO-88 and CIUO-08. For 2022 and 2023, each CIUO-08 code is linked to its CIUO-88 codes by the ILO table (670 pairs) and each CIUO-88 code to the CNO-70 groups that DANE's table lists for it. Each link is one vote for a CNO-70 group. The group with the most votes receives the code; 181 of the 412 codes with a result are ties, settled by the group's 2021 employment. The bridge assigns a group to 94.7% of workers in 2022 and 94.4% in 2023. The largest gap is two Colombian national codes (8323 and 8324) with no counterpart in the ILO table. The teleworkable share is 0.30, 0.30, 0.30, 0.29, 0.29, and 0.28 from 2018 to 2023, and the bridged flag agrees with a direct Dingel and Neiman (2020) classification of the CIUO-08 codes for 89% of 2022 and 2023 workers. Fifteen of the 83 CNO-70 groups present before 2022 receive no worker afterward; they hold 4.5% of pre-2022 workers. The two-digit group is also the clustering unit, 82 groups in the estimation sample.

References

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