SUPPLEMENT TO "MULTINATIONALS, MONOPSONY, AND LOCAL DEVELOPMENT: EVIDENCE FROM THE UNITED FRUIT COMPANY"
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APPENDIX A: HISTORICAL DETAILS

A.1. *The UFCo in Costa Rica*

THIS SECTION provides more details on the role and decay of the UFCo in Costa Rica and complements the historical background presented in Section 2.

Figure A.1 shows how, after 1880, banana production in Costa Rica increased in volume and importance. By 1905, bananas had reached the same place in Costa Rica's exporting value than coffee (Costa Rica's main export product at the time).

Figure A.2 illustrates the evolution of UFCo employment in Costa Rica: on average, between 1912 and 1931 the UFCo employee around 7.96% of the total agricultural workers in the country and 4.82% of the entire labor force. Between 1946 and 1976, the numbers were 6.93% and 3.50%, respectively. However, due to a series of hurricanes that destroyed the plantations in several countries along with expropriations and scandals of corruption that lowered the price of the UFCo's stock (none of these natural disasters or scandals in
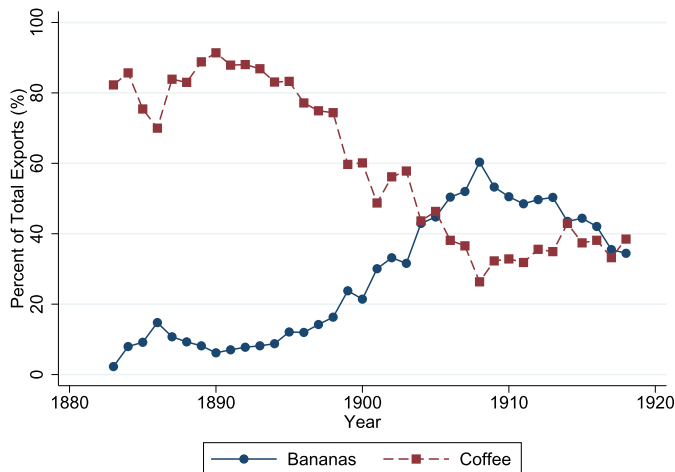

FIGURE A.1.—Banana and Coffee (Percentage of Total Costa Rican Exports), 1883–1918. *Source*: Authors' calculations based on the "Statistical Summary, years 1883 to 1910: trade, agriculture, industry" (*"Resúmenes estadísticos, años 1883 a 1910: comercio, agricultura, industria"*), and 1911 to 1918 Costa Rican Statistic Yearbooks.

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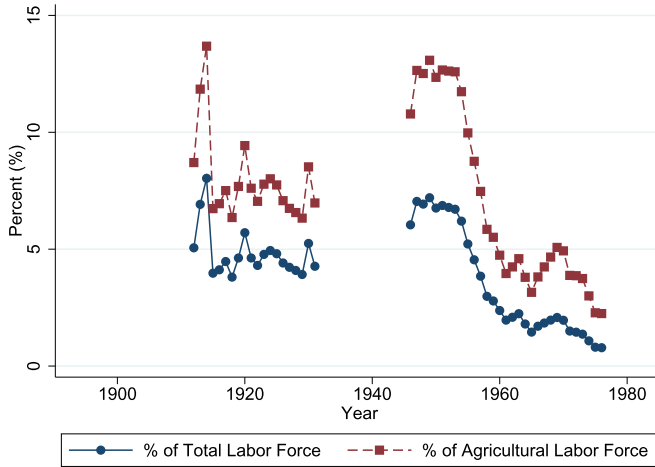Diana Van Patten: diana.vanpatten@yale.edu

FIGURE A.2.—UFCo Employees as Percentage of Costa Rican Labor Force, 1912–1976. *Source*: Authors' calculations based on United Fruit Company Medical Department Annual Report for 1912–1931, Ellis (1983) for 1946–1976, and 1892, 1927, 1950, 1963, 1973, and 1984 Costa Rican Population Censuses.

Costa Rica, but in other Latin American countries), the company went bankrupt. Further, as its successor, today known as Chiquita, followed a corporate strategy that divested in the production process to focus on marketing, the UFCo abandoned banana production in Costa Rica in 1984.

APPENDIX B: UNSATISFIED BASIC NEEDS (UBN) INDEX

To specify the set of basic needs that we consider in the paper and the threshold for attaining those needs, we follow the methodology proposed by Méndez Fonseca and Trejos Solórzano (2004) for Costa Rica, who constructed the index based on information from the 2000 Population Census and household surveys that included data on income. The method can be applied straightforwardly to the 2011 Census, given the similarity of the questions between the 2000 and 2011 censuses (Méndez and Bravo (2014)). To adapt the method to the 1973 and 1984 censuses, we maintain the 2000 structure and use only the subset of the components for which similar variables are available in all four censuses.[53]

TABLE B.1

DEFINITION AND CLASSIFICATION OF BASIC NEEDS.

Dimension	Component	Variable from Census
Housing	House Quality	Household living in a temporary shelter or slum. Household living in a dwelling with waste material in wall, roof or dirt floor. Household living in a dwelling with bad conditions in roof, wall, and floor simultaneously.
	Overcrowding	Household with more than two persons per room.

(*Continues*)

[53]For earlier years, surveys with income and household data do not exist, however, we ensure that questions from the census remain perfectly comparable across time.

TABLE B.1

Continued.

Dimension	Component	Variable from Census
Health		Urban household where the sanitary service is connected to ditch, trench, river, estuary, cesspit, or latrine, or without sanitary service. Rural household where the sanitary service is connected to direct connection to ditch, trench, river, estuary, or without sanitary service.
Education	School Attendance School Achievement	Household with at least one member from 7 to 17 years old not attending school. Household with at least one member from 7 to 17 years old attending school regularly, but with a school backwardness higher than 2 years.
Consumption	Consumption Capacity	Household without regular income recipients (employed, pensioners, or rentiers) and whose head is 50 years old or older and with: • 3.59 years of schooling or less for 1973 census. • 5 years of schooling or less for 1984 census. • 6 years of schooling or less for 2000 census. • 6.39 years of schooling or less for 2011 census. Urban household with three or more dependents and one income recipient with less than: • 3.59 years of schooling for 1973 census. • 5 years of schooling for 1984 census. • 6 years of schooling for 2000 census. • 6.39 years of schooling for 2011 census. Urban household with three or more dependents and two income recipients whose on average have less than: • 2.59 years of schooling for 1973 census. • 4 years of schooling for 1984 census. • 5 years of schooling for 2000 census. • 5.39 years of schooling for 2011 census. Urban household with three or more dependents and three or more income recipients whose on average have less than: • 1.59 years of schooling for 1973 census. • 3 years of schooling for 1984 census. • 4 years of schooling for 2000 census. • 4.39 years of schooling for 2011 census. Rural household with three or more dependents and one income recipient with less than: • 1.59 years of schooling for 1973 census. • 3 years of schooling for 1984 census. • 4 years of schooling for 2000 census. • 4.39 years of schooling for 2011 census. Rural household with three or more dependents and two income recipients whose on average have less than: • 0.59 years of schooling for 1973 census. • 2 years of schooling for 1984 census. • 3 years of schooling for 2000 census. • 3.39 years of schooling for 2011 census. Rural household with three or more dependents and three or more income recipients whose on average have: • 0 years of schooling for 1973 census. • Less than 1 years of schooling for 1984 census. • Less than 2 years of schooling for 2000 census. • Less than 2.39 years of schooling for 2011 census.

Table B.1 shows which census variables constitute each basic need, and describes the standards under which the need is considered unsatisfied.

Appendix L shows that the main results of the paper are preserved if we use the index only for the 2000 and 2011 censuses, including all its original components.

APPENDIX C: ADDITIONAL FIGURES

Figure C.4 shows an example of how the study boundary follows a natural landmark (the river) closely, but not exactly, as it was jointly determined by the river and preexisting plots. In 1904, the government forbid, by law, to sell the plots in orange back to the company (or any foreigner), therefore this boundary was kept constant during the company's tenure.
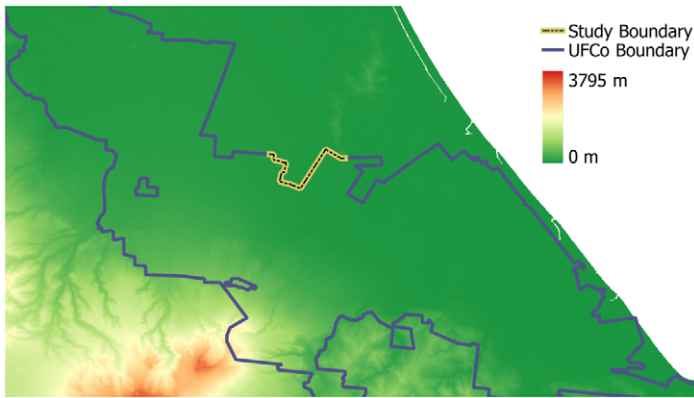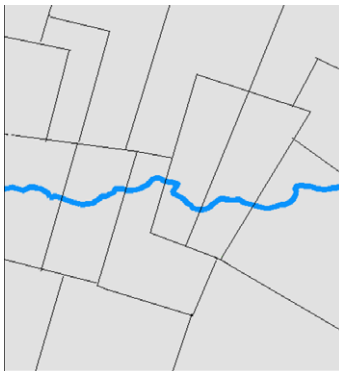

FIGURE C.3.—Study Boundary. *Notes*: Elevation is shown in the background. The figure shows the boundary segment along which (i) there is evidence of a land assignment that is as good as random, and (ii) geographic characteristics balance. Further details are discussed in Section 2.2.

(a) River and Preexisting Plots in 1904
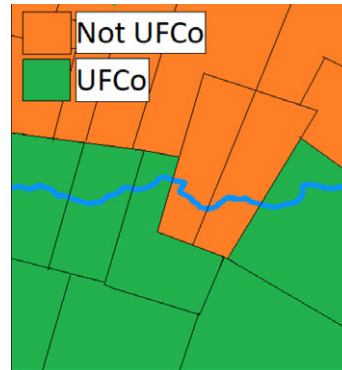
(b) Final Boundary

FIGURE C.4.—The UFCo Boundary Follows the River Closely but not Exactly. *Notes*: The figure shows an example of how the boundary follows a natural landmark (the river) closely, but not exactly, which is consistent with the straight lines that form the border.

FIGURE C.5.—One of the Original Maps from the Costa Rican National Archive. *Notes*: The figure provides an example of one of the original maps from the Costa Rican National Archive (*Archivo Nacional de Costa Rica*) that we collected, scanned, and digitized. (*Source*: Fondo: Mapa. Signatura: 17849).

APPENDIX D: ADDITIONAL RESULTS

TABLE D.2

SEGMENTS ALONG ALL THE BORDER WHERE GEOGRAPHIC CHARACTERISTICS BALANCE.

| | Sample falls within | | | | | |
| | <4 km of UFCo boundary | | | <10 km of UFCo boundary | | |
	Inside	Outside	s.e	Inside	Outside	s.e
Elevation	31.273	45.636	(10.144) [17.430]	33.108	58.949	(9.173) [21.474]
Slope	0.098	0.434	(0.249) [0.345]	0.339	0.511	(0.158) [0.251]
Temperature	26.121	26.061	(0.050) [0.083]	26.117	25.991	(0.046) [0.108]
Observations	101	104		190	234	

Note: The table corresponds to areas along the entire border where features balance. The unit of observation is 1×1 km grid cells. Robust standard errors for the difference in means between UFCo and non-UFCo observations are in parentheses, and Conley standard errors in brackets.

TABLE D.3

BALANCE ON GEOGRAPHIC CHARACTERISTICS FOR REDRAWN BORDER.

	Sample falls within					
	<5 km of UFCo boundary			<10 km of UFCo boundary		
	Inside	Outside	s.e	Inside	Outside	s.e
Elevation	38.552	38.235	(1.330)	50.893	37.759	(2.273)
			[3.530]			[6.514]
Slope	0.256	0.312	(0.072)	0.493	0.328	(0.063)
			[0.140]			[0.154]
Temperature	26.087	26.097	(0.006)	26.028	26.097	(0.011)
			[0.014]			[0.031]
Observations	96	85		168	141	

Note: The table corresponds to areas along the exogenously redrawn border segment. The unit of observation is 1×1 km grid cells. Robust standard errors for the difference in means between UFCo and non-UFCo observations are in parentheses. Conley standard errors for the difference in means are in brackets.

TABLE D.4

AVERAGE UFCO EFFECT ALONG ALL BORDER SEGMENTS WHERE CHARACTERISTICS BALANCE.

	Probability of UBN in				Probability of Being Poor	Total number of UBN
	Housing (1)	Health (2)	Education (3)	Consumption (4)	(5)	(6)
UFCo	−0.052	−0.009	−0.030	−0.065	−0.103	−0.157
	(0.016)	(0.011)	(0.013)	(0.015)	(0.020)	(0.035)
	[0.017]	[0.007]	[0.013]	[0.015]	[0.017]	[0.032]
Adjusted R^2	0.082	0.093	0.261	0.017	0.113	0.170
Observations	13,850	13,850	13,850	13,850	13,850	13,850
Clusters	348	348	348	348	348	348
Mean	0.152	0.048	0.221	0.179	0.449	0.599

Note: UBN = Unsatisfied Basic Need. The unit of observation is the household. Robust standard errors, adjusted for clustering by census block, are in parentheses. Conley standard errors are in brackets. All regressions include geographic controls (slope, elevation, temperature); demographic controls for the number of adults, children, and infants in the household; census fixed effects, and a linear polynomial in latitude and longitude.

TABLE D.5

UFCo-EFFECT ACROSS YEARS ALONG ALL BORDER SEGMENTS WHERE CHARACTERISTICS BALANCE.

	Probability of UBN in				Probability of Being Poor	Total number of UBN
	Housing (1)	Health (2)	Education (3)	Consumption (4)	(5)	(6)
$UFCo_{1973}$	−0.057 (0.055) [0.048]	0.011 (0.077) [0.083]	−0.056 (0.028) [0.020]	−0.069 (0.039) [0.042]	−0.102 (0.051) [0.045]	−0.171 (0.154) [0.154]
$UFCo_{1984}$	−0.052 (0.032) [0.028]	−0.003 (0.018) [0.016]	−0.041 (0.021) [0.022]	−0.067 (0.025) [0.023]	−0.091 (0.031) [0.027]	−0.163 (0.060) [0.048]
$UFCo_{2000}$	−0.053 (0.021) [0.023]	−0.016 (0.012) [0.012]	−0.047 (0.018) [0.013]	−0.073 (0.019) [0.019]	−0.122 (0.027) [0.023]	−0.189 (0.043) [0.036]
$UFCo_{2011}$	−0.049 (0.019) [0.018]	−0.012 (0.008) [0.008]	−0.008 (0.016) [0.021]	−0.058 (0.021) [0.034]	−0.095 (0.026) [0.031]	−0.127 (0.038) [0.050]
Adjusted R^2	0.081	0.093	0.262	0.016	0.113	0.170
Observations	13,850	13,850	13,850	13,850	13,850	13,850
Clusters	348	348	348	348	348	348
$Mean_{1973}$	0.393	0.234	0.399	0.154	0.713	1.179
$Mean_{1984}$	0.176	0.058	0.370	0.173	0.571	0.776
$Mean_{2000}$	0.140	0.036	0.218	0.159	0.429	0.551
$Mean_{2011}$	0.100	0.014	0.124	0.202	0.359	0.440

Note: UBN = Unsatisfied Basic Need. The unit of observation is the household. Robust standard errors, adjusted for clustering by census block, are in parentheses. Conley standard errors are in brackets. All regressions include geographic controls (slope, elevation, temperature); demographic controls for the number of adults, children, and infants in the household; census fixed effects, and a linear polynomial in latitude and longitude.

(a) Probability of Being Poor   (b) Total Number of UBN   (c) Housing Dimensions

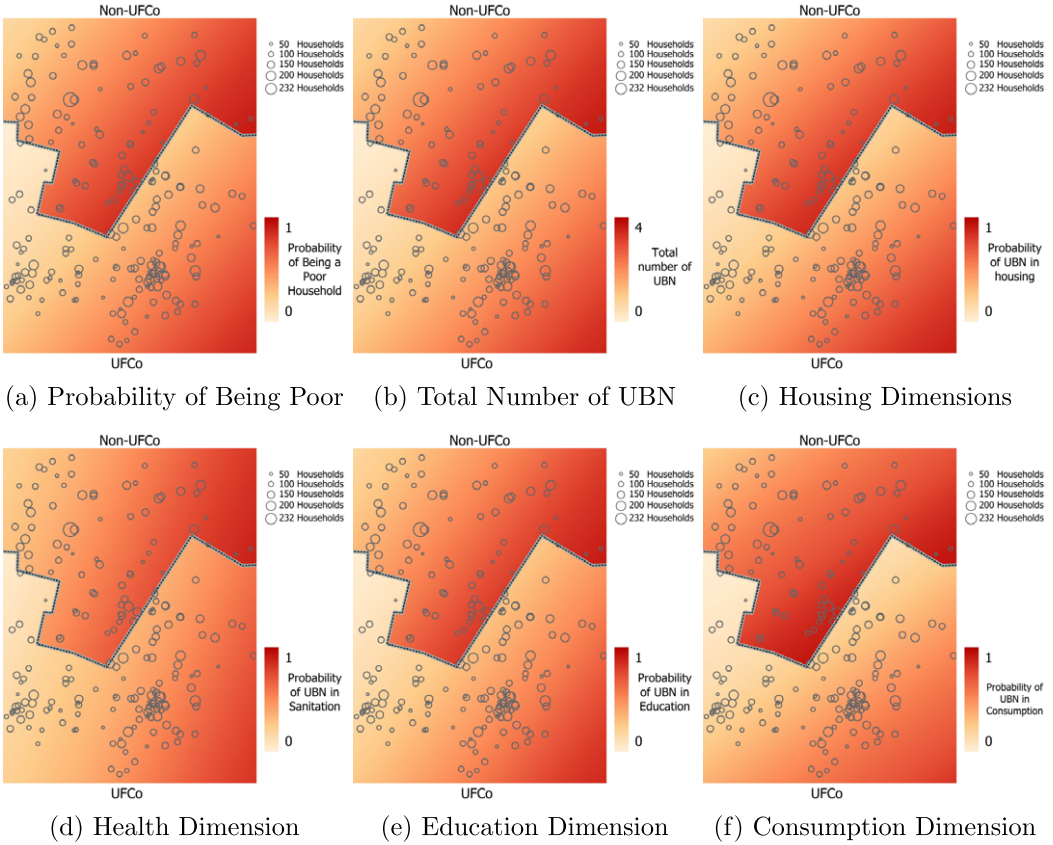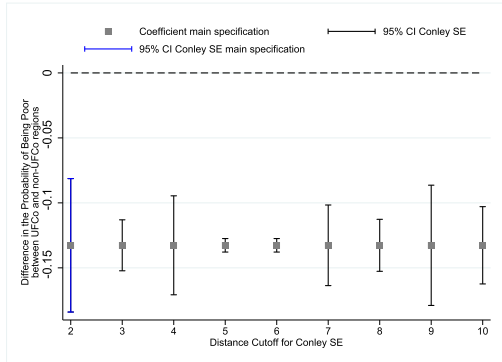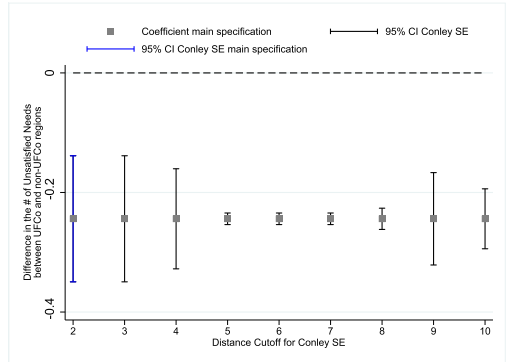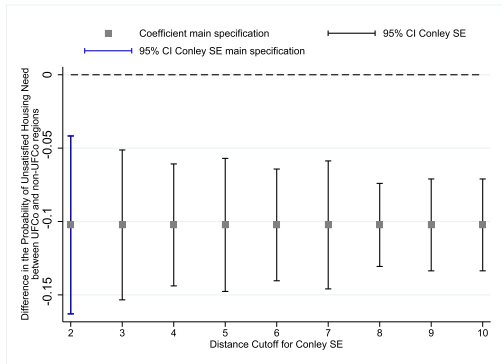(d) Health Dimension   (e) Education Dimension   (f) Consumption Dimension

FIGURE D.6.—Plots of the UFCo Effect on Contemporary Household Outcomes. *Notes*: The figure shows the study boundary, with UFCo territories being south. Each dot represents a census-block's centroid. Dot-size represents the number of households in each census-block. The background in each subfigure shows predicted values, for a finely spaced grid of longitude-latitude coordinates, from a regression of the outcome variable under consideration on the UFCo dummy and a linear polynomial in latitude and longitude. The predicted jump across the UFCo boundary is clear in all the subfigures, and lighter areas (better outcomes) coincide with former UFCo regions.
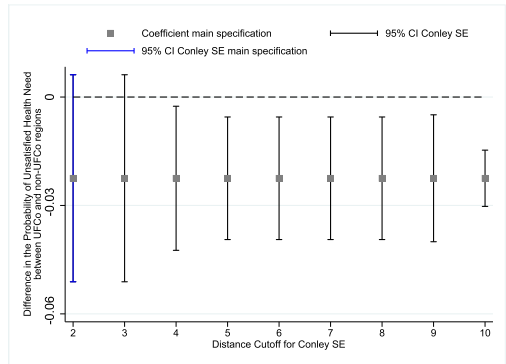
(a) Probability of Being Poor

(b) Total Number of Unsatisfied Needs

(c) Housing Dimension

(d) Health Dimension
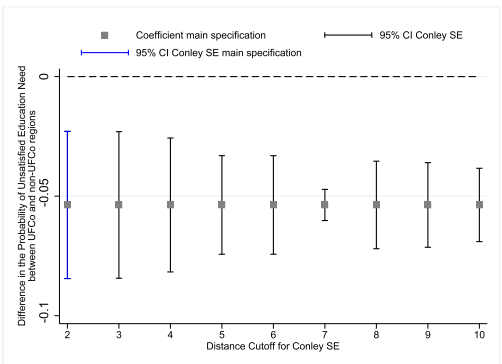
(e) Education Dimension
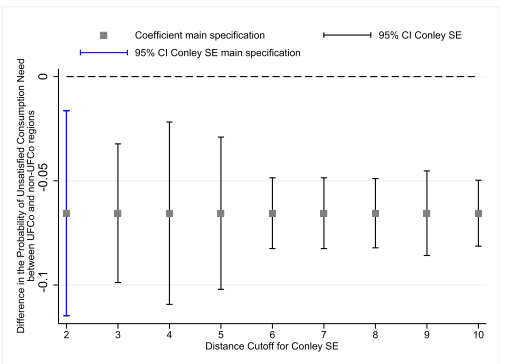
(f) Consumption Dimension

FIGURE D.7.—Alternative Cutoffs for Conley Standard Errors and Main Results. *Notes*: We compute Conley standard errors at alternative cutoff distances. For our main results, we choose 2 km as the cutoff because it is the distance that *maximizes* standard errors for all outcomes, as shown in this figure. In general, all results are robust to alternative cutoffs ranging from 2 to 10 km (the maximum allowed by the plantation's size), and to the placebo tests reported in Table F.6.
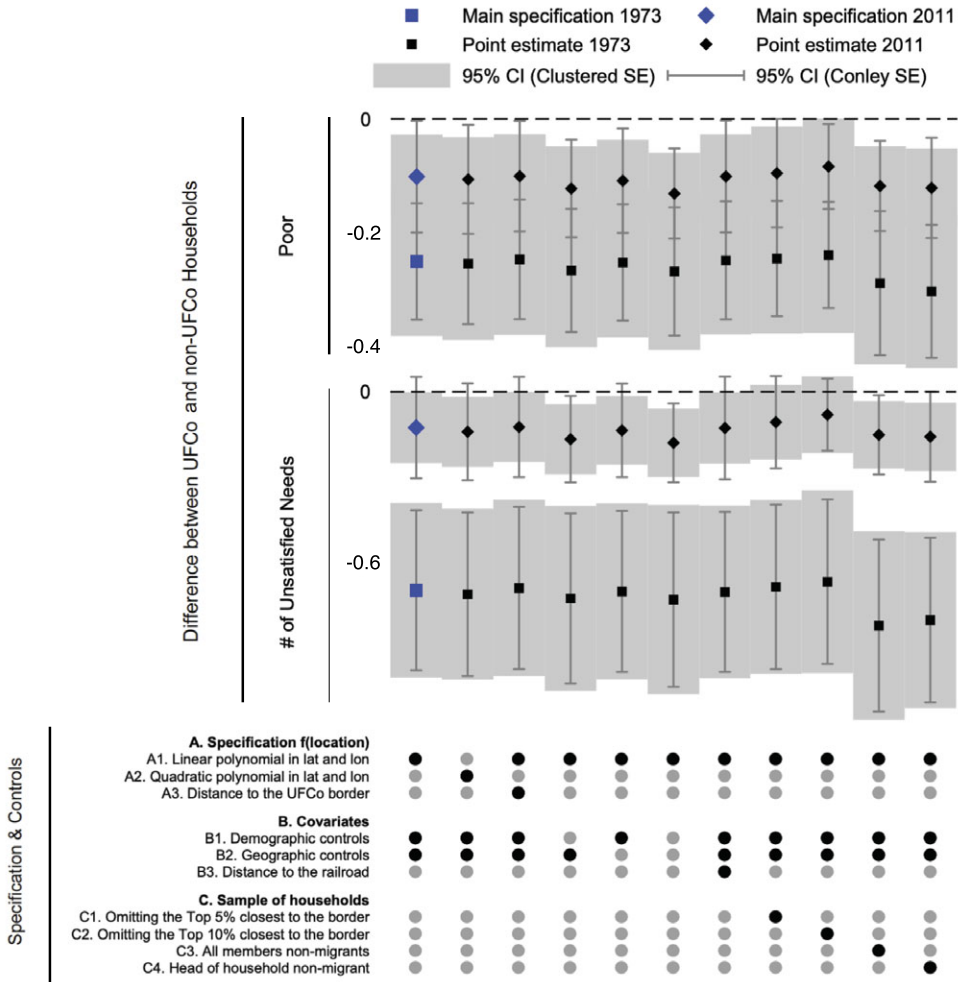
FIGURE D.8.—Robustness checks, Main Specification, Dynamic UFCo Effect (Part 1/2). *Notes*: For each outcome, we plot two series corresponding with 1973 and 2011 differences between UFCo and non-UFCo regions. In the bottom panel, black dots indicate the controls added in each regression that is vertically aligned with these dots. Figure 5 shows similar checks for UFCo's *average* effect. Individual tables with these regressions are reported in the supplementary Online Appendix for the authors' websites.

FIGURE D.9.—Robustness checks, Main Specification, Dynamic UFCo Effect (Part 2/2). *Notes*: For each outcome, we plot two series corresponding with 1973 and 2011 differences between UFCo and non-UFCo regions. In the bottom panel, black dots indicate the controls added in each regression that is vertically aligned with these dots. Figure 5 shows similar checks for UFCo's *average* effect. Individual tables with these regressions are reported in the Supplementary Online Appendix for the authors' websites.

APPENDIX E: DETAILS ON ROBUSTNESS CHECKS

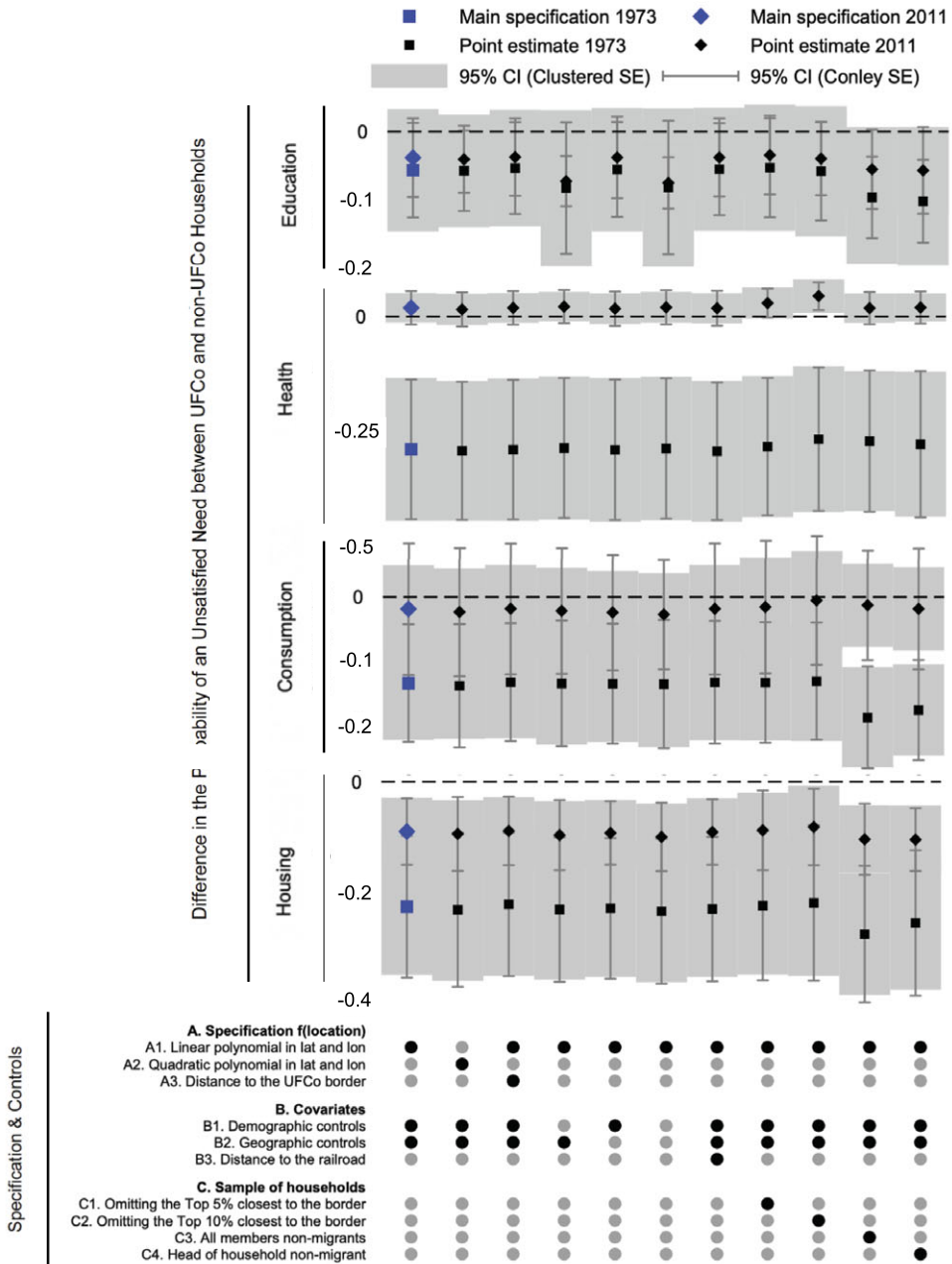*Falsification Test.*   As a falsification test, we rerun the analysis using placebo borders. In particular, we draw fake borders at a distance of 2 km and 4 km both inwards and outwards of the actual UFCo border, so the analysis compares households on the same side of the boundary.[54] Table F.6 presents the results, showing that our placebo tests deliver insignificant coefficients in every case, both economically and statistically. Hence, our main regression is capturing an effect that only appears as we cross the actual UFCo boundary, and not just spatial autocorrelation, as warned by Kelly (2019).

Effect of the River.   A possible concern is that the presence of a river close to our boundary is driving our result. To address this issue, we run our main specification restricting the sample to units "on the wrong side" of the river (1937 units), that is, units that are north of the river and belonged to the UFCo, and units that are south the river and did not belong to the company (see Figure C.4), panel D1 in Figure 5 presents the results. In this limited sample, we are comparing only households located very close to each other (1 km from the boundary, at most), and we still find estimates that are consistent with our main results. As with the falsification test results, this finding is also reassuring that what we are capturing is an effect that shows up precisely as we cross the boundary and not spatial autocorrelation.

Different Bandwidth and Polynomials.   As an additional robustness check, we eliminate observations close to the boundary in case there might have been some negative spillover from the company to the area outside. Note that, when exploring the river's effect, we do the opposite, we limit the analysis to observations close to the boundary. Results are presented in panels D2 and D3 in Figure 5, and panels C1 and C2 in Figures D.8 and D.9. Overall, the coefficients are very similar to the ones of our main regression.

Similarly, although in Tables 1 and 2 we use a linear polynomial in latitude and longitude, our results are robust to alternative specifications of the RD polynomial. Panel A in Figures 5, D.8, and D.9 shows how our results are robust to different specifications of $f(location)$.

Different Control Variables and Distance to a Railroad.   Besides the specification of the RD polynomial, we also analyze how the results change to varying the control variables. Panels B1 and B2 in Figures 5, D.8, and D.9 show that the results are robust to excluding demographic controls, geographic controls, or both. Our results are also robust to controlling for distance to a railroad, which we do in panel B3 in the same figures.[55]

Alternative Income Measures: Nighttime Lights Data and Small Area Estimation Methodology of Elbers, Lanjouw, and Lanjouw (2003).   We use nighttime lights data as a proxy of income to confirm our findings through an alternative measure of economic development. Figure G.10 in Appendix G shows a satellite image in which areas inside the former UFCo landholdings display higher luminosity. Results in Table G.9 in Appendix G confirms this difference in luminosity, by showing that nighttime light intensity is 21% higher in the

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[54]More precisely, for instance, we shift the border 4 km North, and rerun our RD within 4 km of the placebo border—such that all observations are on one side of the true border. We show four of these shifts North and South, and in magnitudes of 2 and 4 km.

[55]Distance to a railroad is an important control to check, as access to railroads might itself increase real income (Donaldson, 2018).

former UFCo plantations (statistically significant at the 1% level). Assuming an elasticity between nighttime light intensity and GDP of 0.3 (consistent with the findings in Henderson, Storeygard, and Weil (2012) and Hodler and Raschky (2014)), the 21% difference in nighttime light intensity implies that the output in the former UFCo plantations is about 6.37% higher.

Similarly, Appendix R computes income through a small area estimation methodology. This method imputes income and consumption for each household in the population census, using a prediction model obtained from household surveys. We show that the per capita net income is 9.6% higher for households within the UFCo borders, which is consistent with the estimate using luminosity data, and that their probability of having earnings below the poverty line is 10.7 pp lower, which is in line with our main results.

Alternative Index of UBN. Our Unsatisfied Basic Needs (UBN) are a modified version of the ones proposed by Méndez Fonseca and Trejos Solórzano (2004). Because Méndez Fonseca and Trejos Solórzano constructed the index using information from the 2000 and 2011 censuses, our modification consists of selecting the variables whose information is available in each of the 1973, 1984, 2000, and 2011 censuses. Therefore, as a robustness test, we rerun the estimation restricting the analysis to the 2000 and 2011 censuses and using the Unsatisfied Basic Needs (UBN) as proposed by Méndez Fonseca and Trejos Solórzano. Table L.14 in Appendix L shows that our main message is robust to this alternative definition of UBN.

APPENDIX F: FALSIFICATION TESTS

TABLE F.6
AVERAGE UFCO EFFECT: PLACEBO TESTS 2 KM AND 4 KM.

	Probability of UBN in				Probability of Being Poor	Total number of UBN
	Housing (1)	Health (2)	Education (3)	Consumption (4)	(5)	(6)
	Panel A: Placebo at +2 km					
UFCo	0.013	−0.011	0.022	−0.010	−0.002	0.014
	(0.035)	(0.019)	(0.017)	(0.030)	(0.038)	(0.064)
	[0.041]	[0.017]	[0.019]	[0.022]	[0.030]	[0.065]
Adjusted R^2	0.097	0.168	0.237	0.013	0.111	0.193
	Panel B: Placebo at −2 km					
UFCo	−0.040	0.003	−0.003	−0.002	−0.016	−0.042
	(0.026)	(0.019)	(0.020)	(0.024)	(0.029)	(0.055)
	[0.031]	[0.019]	[0.019]	[0.029]	[0.029]	[0.055]
Adjusted R^2	0.098	0.168	0.237	0.013	0.111	0.193
	Panel C: Placebo at +4 km					
UFCo	0.007	−0.011	−0.003	−0.010	−0.019	−0.017
	(0.033)	(0.028)	(0.017)	(0.025)	(0.032)	(0.060)
	[0.041]	[0.018]	[0.011]	[0.021]	[0.027]	[0.053]
Adjusted R^2	0.097	0.168	0.237	0.013	0.111	0.193
	Panel D: Placebo at −4 km					
UFCo	−0.017	−0.006	−0.011	0.009	0.006	−0.025
	(0.020)	(0.016)	(0.016)	(0.021)	(0.023)	(0.045)
	[0.017]	[0.008]	[0.010]	[0.019]	[0.020]	[0.038]
Adjusted R^2	0.097	0.168	0.237	0.013	0.111	0.193

Note: All regressions include 9179 observations and 206 clusters. +2 km and +4 km refer to shifting the boundary 2 km and 4 km North, respectively; while -2 km and -4 km refer to shifting the boundary 2 km and 4 km South. UBN = Unsatisfied Basic Need. The unit of observation is the household. Robust standard errors, adjusted for clustering by census block, are in parentheses. Conley standard errors are in brackets. All regressions include geographic controls (slope, elevation, temperature); demographic controls for the number of adults, children, and infants in the household; census fixed effects, and a linear polynomial in latitude and longitude.

TABLE F.7
HUMAN CAPITAL ACCUMULATION: NONMIGRANTS 1973–2011.

	Years of schooling (1)	Primary (2)	Secondary (3)
UFCo	0.223	0.048	0.001
	(0.124)	(0.017)	(0.008)
	[0.146]	[0.018]	[0.006]
Adjusted R^2	0.244	0.210	0.043
Mean	4.587	0.461	0.056

Note: Observations: 26,179; clusters: 206. The unit of observation is the individual. Robust standard errors, adjusted for clustering by census block, are in parentheses. Conley standard errors are in brackets. All regressions include geographic and individual controls, census fixed effects, and a linear polynomial in latitude and longitude.

TABLE F.8

HUMAN CAPITAL ACCUMULATION: 1973 MIGRANTS.

	Years of schooling (1)	Primary (2)	Secondary (3)
UFCo	−0.117	0.017	−0.015
	(1.103)	(0.175)	(0.021)
	[0.655]	[0.114]	[0.016]
Adjusted R^2	0.099	0.063	0.015
Mean	2.928	0.195	0.016

Note: Observations: 1551; clusters: 14. We follow Cameron and Miller (2015) using the bias-adjusted cluster-robust standard errors, and the degrees of freedom adjustment in Imbens and Kolesár (2016). The unit of observation is the individual. Robust standard errors, adjusted for clustering by census block, are in parentheses. Conley standard errors are in brackets. All regressions include geographic and individual controls; and a linear polynomial in latitude and longitude.

APPENDIX G: LUMINOSITY DATA

We use satellite-recorded data on nighttime lights as a proxy for income and economic activity (e.g., Chen and Nordhaus (2011), Henderson, Storeygard, and Weil (2012), Michalopoulos and Papaioannou (2014), Hodler and Raschky (2014)).[56] The data spans 1992 to 2013 at a spatial resolution of 30 arc-seconds. For each grid cell, an integer between 0 (no light) and 63 represents its light intensity. Figure G.10 shows the satellite image near the study boundary in 1992 and 2012, and suggests higher luminosity in areas inside the former UFCo area. Column (1) in Table G.9 confirms this difference in luminosity: nighttime light intensity is 21% ($\exp(0.193) - 1 = 0.212$) higher in the former UFCo. If we assume an elasticity between nighttime light intensity and GDP of 0.3 (Henderson, Storeygard, and Weil (2012), Hodler and Raschky (2014)), the 21% difference implies that output in the former UFCo areas is about 6.37% higher. Column (2) shows that luminosity per capita is 18% ($\exp(0.165) - 1 = 0.18$) higher in the former UFCo plantations. Column (3) shows that the annual growth rate of luminosity per capita is 2.064 percentage points higher in former UFCo areas. In Columns (4) and (5) we account for
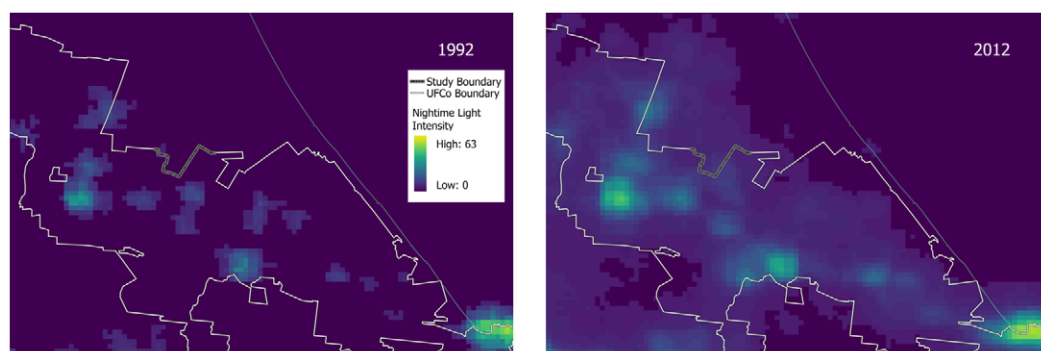
FIGURE G.10.—Nighttime Lights and the Study Boundary. *Notes*: The figure shows the UFCo's concession's boundary and how satellite nighttime lights data shows a much higher luminosity inside the former UFCo, both in 1992 and 2012.

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[56]The data on nighttime light is collected by the US Air Force Defense Meteorological Satellite Program's Operational Linescan System, and is processed by the National Geophysical Data Center.

TABLE G.9

UFCo EFFECT USING LUMINOSITY DATA.

	ln Light (1)	ln Light/Pop (2)	Gr. Rate Light/Pop (3)	ln(0.01 + Light) (4)	ln(0.01 + Light/Pop) (5)
UFCo	0.193	0.165	2.064	0.342	0.215
	(0.006)	(0.051)	(0.781)	(0.035)	(0.046)
	[0.017]	[0.065]	[0.953]	[0.072]	[0.059]
Adjusted R^2	0.377	0.036	0.282	0.463	0.122
Observations	5588	2061	1679	6154	2210

Note: The unit of observation is 1×1 km grid cells located within 5 km of UFCo boundary. Robust standard errors are in parentheses. Conley standard errors are in brackets. Regressions include year fixed effects.

9.2% of observations that are zero by adding 0.01 to the luminosity data (or luminosity per capita) before taking the logarithm. In general, the results are consistent with our main estimates, providing evidence that suggests significantly higher levels of income and economic activity in the former UFCo areas.

APPENDIX H: MIGRANT COMPARISON, 1927 POPULATION CENSUS

We use the 1927 Population Census microdata to analyze early waves of migration to the UFCo. The microdata is available for a representative sample. The cantons are the strata, and households are the primary sample unit. Within a household, the data record all members. We estimate a variant of equation (1). Considering that the extension of a canton might be relatively large compared to the UFCo's concession in that canton, we proxy the company's presence as the fraction of canton's land that was part of the UFCo. As outcome variables, we consider the probability of owning private property (real estate), of having any primary education, of having any secondary education, and of being able to read and write.

TABLE H.10

NEGATIVELY SELECTED MIGRANTS TO UFCo REGIONS: 1927 POPULATION CENSUS.

	Probability of				Probability of			
	Owning property (1)	Primary education (2)	Secondary education (3)	Literacy (4)	Owning property (5)	Primary education (6)	Secondary education (7)	Literacy (8)
	Migrants to UFCo cantons compared with migrants to							
	non-UFCo cantons				neighboring non-UFCo cantons			
UFCo	−0.381	−0.253	−0.061	−0.174	−0.489	−0.252	0.008	−0.119
	(0.033)	(0.044)	(0.022)	(0.047)	(0.033)	(0.048)	(0.026)	(0.052)
R^2	0.303	0.078	0.024	0.056	0.358	0.134	0.014	0.083
Obs.	6431	18,851	18,851	26,048	2939	6087	6087	9762
Mean	0.369	0.946	0.074	0.682	0.251	0.936	0.057	0.706

Note: The unit of observation is the individual. Regressions are weighted using sample weights. Robust standard errors, adjusted for clustering by PSUs and stratification at the canton level, in parentheses. UFCo corresponds to the fraction of canton's area that belonged to the UFCo landholdings. All regressions include individual controls (age, age squared, gender), and a linear polynomial in latitude and longitude.

Table H.10 shows that migrants to the UFCo were negatively selected in education and property ownership, as compared with migrants to other Costa Rican regions. The left panel of Table H.10 shows the difference in outcomes for migrants to UFCo cantons compared to migrants in all the remaining Costa Rican cantons. To gauge their magnitude, consider the average UFCo landholding fraction in a canton where the company was present (0.27). The migrants in the UFCo regions were on average 10.3 percentage points (pp) less likely to own real estate, 6.8 pp less likely of having any primary education, 1.6 pp less likely of having any secondary education, and 4.7 pp less likely of being able to read and write. All the estimates are significant at the 1% level. The right panel of Table H.10 shows that the results are robust after comparing outcomes of migrants to UFCo cantons with outcomes of migrants to cantons neighboring UFCo locations (meaning they share at least one boundary).

APPENDIX I: CONTROL REGION VERSUS OTHER RURAL REGIONS

In this section, we study the control region outside the UFCo in 2 ways, asking: (i) was there a negative spillover from the company to this region?, and related, (ii) were migrants to the control ex ante better in some dimension than migrants to the UFCo? First, we compare the control group with other non-UFCo regions on a belt around it in 1973, while the company was still operating, considering households that are beyond 20 km from the UFCo's border.[57] We consider:

$$y_{ig1973} = \gamma control_g + f(\text{geographic location}_g) + \mathbf{X}_{ig1973}\beta + \mathbf{X}_g\Gamma + \varepsilon_{ig1973}, \qquad (4)$$

where y_{ig1973} is an outcome of individual or household i in census-block g in 1973; and $control_g$ is a dummy that is equal to 1 if census-block g's centroid lies within the counterfactual region (within 5 km from the boundary shown in Figure C.3). Other variables follow a the same notation as in equation (1). Table I.11 displays the results. Given concerns about having few clusters that also are unbalanced, we follow Cameron and Miller

TABLE I.11

MAIN OUTCOMES: CONTROL REGION OUTSIDE UFCO VERSUS OTHER RURAL REGIONS.

| | Probability of UBN in | | | | Probability of Being Poor | Total number of UBN |
	Housing (1)	Health (2)	Education (3)	Consumption (4)	(5)	(6)
Control Region	−0.514	−0.612	0.124	−0.221	−0.420	−1.222
	(0.026)	(0.029)	(0.029)	(0.029)	(0.006)	(0.056)
	[0.025]	[0.026]	[0.028]	[0.027]	[0.006]	[0.054]
Adjusted R^2	0.082	0.183	0.404	0.055	0.058	0.150
Observations	494	494	494	494	494	494
Clusters	7	7	7	7	7	7
Mean	0.672	0.656	0.437	0.235	0.923	2.000

Note: UBN = Unsatisfied Basic Need. The unit of observation is the household. Robust standard errors, adjusted for clustering by census block, are in parentheses. Due to number of unbalanced clusters, we follow Cameron and Miller (2015) using the bias-adjusted cluster-robust standard errors, and the data determined degrees of freedom adjustment in Imbens and Kolesár (2016). Conley standard errors in brackets. All regressions include geographic controls (slope, elevation, temperature); demographic controls for the number of adults, children, and infants in the household; and a linear polynomial in latitude and longitude.

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[57] Results using larger distances are also robust and available upon request.

TABLE I.12

HUMAN CAPITAL: CONTROL REGION OUTSIDE UFCO VS. OTHER NON-UFCO RURAL REGIONS.

	Migrants			All population		
	Years of Schooling (1)	Primary (2)	Secondary (3)	Years of Schooling (4)	Primary (5)	Secondary (6)
Control Region	1.208 (1.530) [0.022]	0.171 (0.090) [0.003]	0.016 (0.022) [0.000]	1.453 (0.667) [0.033]	0.259 (0.099) [0.003]	0.029 (0.015) [0.000]
Adjusted R^2	0.073	0.014	0.004	0.078	0.029	0.008
Observations	1091	1091	1091	2067	2067	2067
Clusters	7	7	7	7	7	7
Mean	2.448	0.111	0.007	2.425	0.107	0.006

Note: The unit of observation is the individual. Robust standard errors clustered by census block, are in parentheses. Due to number of unbalanced clusters, we follow Cameron and Miller (2015) using the bias-adjusted cluster-robust standard errors, and the data determined degrees of freedom adjustment in Imbens and Kolesár (2016). Conley standard errors in brackets. All regressions include geographic and individual controls, and a linear polynomial in latitude and longitude.

(2015) using the bias-adjusted cluster-robust standard errors, and the data determined degrees of freedom adjustment in Imbens and Kolesár (2016). The effects suggest that direct negative spillovers from the UFCo to the control group are unlikely.

Comparing Migrants' Human Capital Accumulation in Control Region vs. in Other Non-UFCo Rural Regions. We compare the human capital accumulation of migrants to our control region with the migrants to other nearby rural regions. We estimate equation (4) using educational attainment as the outcome variable restricting the sample to migrants. The left panel of Table I.12 shows that the control group attracted relatively high skilled migrants, compared with migrants to other nearby regions. Considering the entire population in the control region vs all other non-UFCo rural regions (right panel of Table I.12), we find households within the control group have more years of schooling and a higher probability of completing primary and secondary education.

APPENDIX J: DETAILS ON GOVERNMENT EXPENDITURES

This section discusses how government spending in regions around the UFCo was not different from the spending in the rest of the country. We gathered data on government spending per municipality from annual reports from the Comptroller General of the Republic of Costa Rica (*Contraloría General de la República de Costa Rica*) published between 1955 and 1984,[58] and estimate spending per capita. Table J.13 compares government spending per capita between UFCo municipalities and all other rural municipalities in the country, and do not find significant differences.

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[58]Although the publication was annual, the records on government spending per municipality appear for 15 years between 1951 (the first publication year) and 1984 (when the UFCo ended operations).

TABLE J.13

COMPARISON OF GOVERNMENT SPENDING PER CAPITA ACROSS MUNICIPALITIES.

	ln Government Spending per Capita	
	(1)	(2)
UFCo	0.007	−0.008
	(0.078)	(0.082)
Year FE	No	Yes
Adjusted R^2	−0.001	0.316

Note: Observations: 690. Clusters: 50. The unit of observation is the municipality. Robust standard errors clustered by municipality, in parentheses.

APPENDIX K: THE CARIBBEAN COAST, THE PACIFIC COAST, AND THE ROLE OF RACE

This section explores whether outside options differ for workers near the Costa Rican Caribbean Coast and the Pacific Coast. Table K.14 documents how, indeed, UFCo households near the Pacific Coast have better living standards than their neighbors, although these differences are not significant for most outcomes. There are a few reasons why differences between households living on both coasts might emerge. First, consistent with Table 4, households near the Pacific are closer to areas that are highly suitable to grow coffee, which increases their outside option and would lead to better living standards through the lens of our mechanism.

Second, Afro-Costa Rican communities were mainly near the Caribbean area and faced mobility restrictions that prevented them from moving to the Pacific Coast. Although Afro-Costaricans represented a minority in the area, this lower mobility might have affected their outcomes. To explore this, we run regressions that include an interaction term between the UFCo dummy and a dummy variable equal to one if the household is clas-

TABLE K.14

AVERAGE UFCO EFFECT-COMPARISON BETWEEN HOUSEHOLDS ON THE PACIFIC COAST AND THE CARIBBEAN COAST.

	Probability of UBN in				Probability of Being Poor	Total number of UBN
	Housing (1)	Health (2)	Education (3)	Consumption (4)	(5)	(6)
UFCo × Pacific	−0.049	−0.018	−0.001	−0.010	−0.013	−0.078
	(0.009)	(0.008)	(0.005)	(0.005)	(0.009)	(0.020)
	[0.021]	[0.016]	[0.015]	[0.014]	[0.029]	[0.056]
UFCo	−0.027	−0.013	−0.009	−0.013	−0.031	−0.062
	(0.004)	(0.004)	(0.003)	(0.003)	(0.005)	(0.010)
Pacific	−0.047	−0.015	−0.040	−0.008	−0.060	−0.110
	(0.027)	(0.023)	(0.016)	(0.016)	(0.028)	(0.066)
Adjusted R^2	0.088	0.084	0.217	0.015	0.101	0.170
Observations	377,099	377,099	377,099	377,099	377,099	377,099
Clusters	9928	9928	9928	9928	9928	9928

Note: UBN = Unsatisfied Basic Need. The unit of observation is the household. Robust standard errors, adjusted for clustering by census block, are in parentheses. Conley standard errors are in brackets. All regressions include geographic controls (slope, elevation, temperature); demographic controls for the number of adults, children, and infants in the household; census fixed effects, and a linear polynomial in latitude and longitude.

TABLE K.15

AVERAGE UFCo EFFECT-HOUSEHOLDS WHERE ANY MEMBER IS CLASSIFIED AS BLACK OR OF AFRICAN DESCENT, FOR YEARS 2000 AND 2011.

| | Probability of UBN in | | | | Probability of Being Poor | Total number of UBN |
	Housing (1)	Health (2)	Education (3)	Consumption (4)	(5)	(6)
UFCo × Black	0.084	0.020	0.067	−0.006	0.071	0.165
	(0.047)	(0.017)	(0.039)	(0.045)	(0.068)	(0.080)
	[0.031]	[0.015]	[0.038]	[0.037]	[0.055]	[0.054]
UFCo	−0.096	−0.006	−0.046	−0.058	−0.140	−0.206
	(0.026)	(0.009)	(0.024)	(0.029)	(0.033)	(0.047)
Black	−0.052	0.001	−0.039	0.015	−0.025	−0.075
	(0.033)	(0.011)	(0.032)	(0.039)	(0.055)	(0.055)
Adjusted R^2	0.018	0.010	0.141	0.010	0.055	0.071
Observations	6673	6673	6673	6673	6673	6673
Clusters	166	166	166	166	166	166

Note: UBN = Unsatisfied Basic Need. The unit of observation is the household. Robust standard errors, adjusted for clustering by census block, are in parentheses. Conley standard errors are in brackets. All regressions include geographic controls (slope, elevation, temperature); demographic controls for the number of adults, children, and infants in the household; census fixed effects, and a linear polynomial in latitude and longitude.

sified as black, and zero otherwise. Table K.15 shows that the gap between UFCo and non-UFCo households is smaller conditional on a household member being classified as black or of African descent in the censuses. It is worth noting that ethnicity is available only in the 2000 and 2011 censuses and not before that. Thus, results in this table consider only these 2 years.

APPENDIX L: LABOR MOVEMENTS IN COSTA RICA DURING THE UFCo's TENURE

According to LaBarge (1959), before 1943, labor organization in Costa Rica was centered around the Costa Rican Communist Party (*Partido Comunista de Costa Rica*), which was founded in the 1930s. The party had several successes, which led to higher minimum wages and better living conditions for workers across industries (including both banana and coffee). After 1944, a Labor Code which gave legal status to unions, and gave them the right to negotiate collective contracts was created. Regardless, little attention was devoted to the creation of unions between 1945 and 1949. Up until this period, "there was no effective organization of workers in the banana zones (LaBarge (1959, p. 310))."[59]

On December 3rd, 1949, the Labor Union of Workers of the Banana Industry from Quepos was formed, but it led only to minor concessions by the UFCo, and it had only 104 members by 1952. After this year, the labor union managed settlements of individual minor grievances only. In the Pacific area, two relatively important strikes occurred. The first one (1953) collapsed without concessions from the UFCo. During the second one (1955), minor concessions were given to the workers, mostly related to improved housing conditions. Compared with the activities staged on the Pacific Coast, there were almost no organized labor movements on the Caribbean side of the country. The area did not

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[59]The Labor Union of Workers from Quepos, "Rerum Novarum," was founded in 1944, but it was small and inactive until the 1950s, while other unions established were even smaller. While some labor agitation took place in the late 1940s, formal requests were presented and there were no strikes.

witness major strikes after the 1940s and labor relations "revolved almost entirely about the presentation and settlement of highly individualized complaints" (LaBarge (1959, p. 324)).

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