Trade, Slavery, and State Coercion of Labor

Egypt During the First Globalization Era

Mohamed Saleh[1]

Online Appendix

A Additional Figures and Tables

This section presents additional figures and tables.

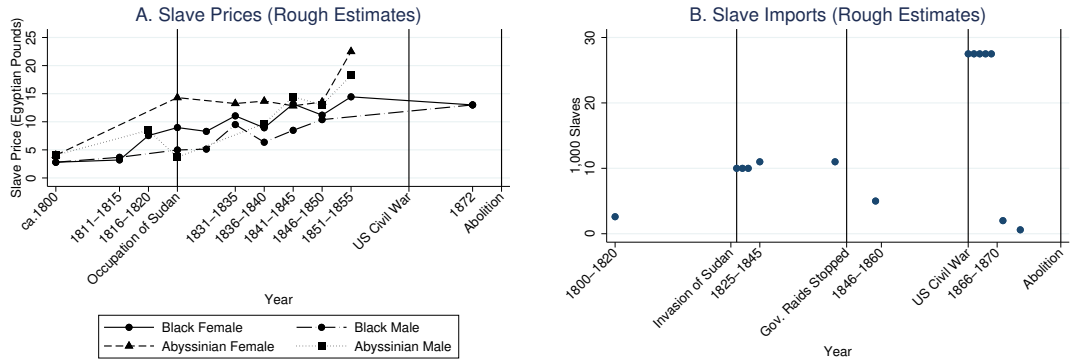

Figure A.1: Slave Prices and Imports in Egypt in 1800–1877

Sources: Prices: Fredriksen (1977, pp. 70-71). Imports: 1800–1820: Mowafi (1981, pp. 32-34); 1821–1860: Fredriksen (1977, pp. 50-57); 1861–1877: Baer (1967).

[1]London School of Economics and Political Science, Houghton Street, London WC2A 2AE, United Kingdom, m.saleh@lse.ac.uk.

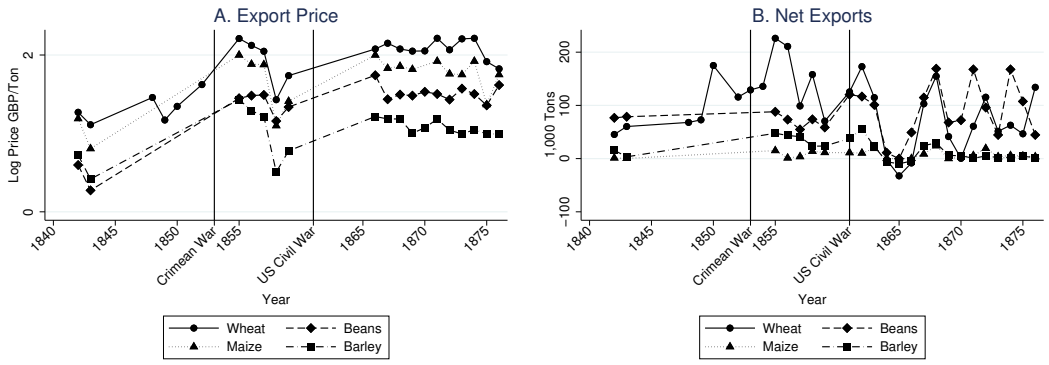

Figure A.2: Prices and Exports of Egyptian Cereals in 1842–1876

Notes: Original quantities are reported in *ardabbs*. I converted *ardabbs* of wheat in Owen (1969) into tons according to the rate: 1 *ardabb* = 133.6 kilograms, in the 1873 Statistical Yearbook (p. 2). *Ardabbs* of wheat and maize in the other sources were first converted into bushels according to the rate: 1 *ardabb* = 5 bushels = 135 kilograms, in U.K. Parliamentary Papers, Vol. 53 (1849) (p. 359), Fowler, T. K. (1861). *Report on the Cultivation of Cotton in Egypt*. J. J. Sale, Printer, Manchester (p. 12), and U.S. House of Representatives Papers (1877) (p. 905). Bushels were then converted into tons using Iowa State University's conversion rate: https://www.extension.iastate.edu/agdm/. *Ardabbs* of beans and barley were converted into tons according to the rate: 1 *ardabb* = 197.7 kilograms, in the 1873 Statistical Yearbook (p. 2). Original prices are reported in Egyptian piasters, which I converted into British pounds (GBP) according to the conversion rate in Owen (1969, pp. 381-385) and https://www.measuringworth.com.
Sources: 1842–1843: U.K. Parliamentary Papers, Vol. 53 (1849) (pp. 359-367); 1848–1850 and 1852–1854 (wheat only), 1861–1865: Owen (1969, pp. 80, 103); 1855–1858 (no information on imports): U.S. House of Representatives Papers (1860) (p. 358); 1859: Fowler, T. K. (1861). *Report on the Cultivation of Cotton in Egypt*. J. J. Sale, Printer, Manchester (p. 12); 1866–1876: U.S. House of Representatives Papers (1877) (pp. 918-933).

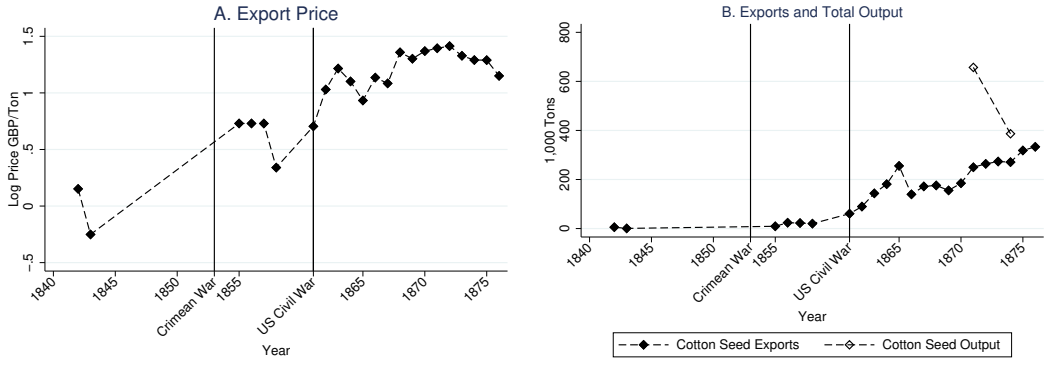

Figure A.3: Prices, Exports, and Production of Egyptian Cotton Seed in 1842–1876

Notes: Original quantities are reported in *ardabbs*. I converted *ardabbs* into tons according to the conversion rate: 1 *ardabb* = 197.7 kilograms, in the 1873 Statistical Yearbook (p. 2). Original prices are reported in Egyptian piasters, which I converted into British pounds (GBP) according to the conversion rate in Owen (1969, pp. 381-385) and https://www.measuringworth.com.
Sources: Owen (1969, pp. 34, 73, 90-91, 123, 126). Price in 1860: the 1873 Statistical Yearbook (pp. 172-173).

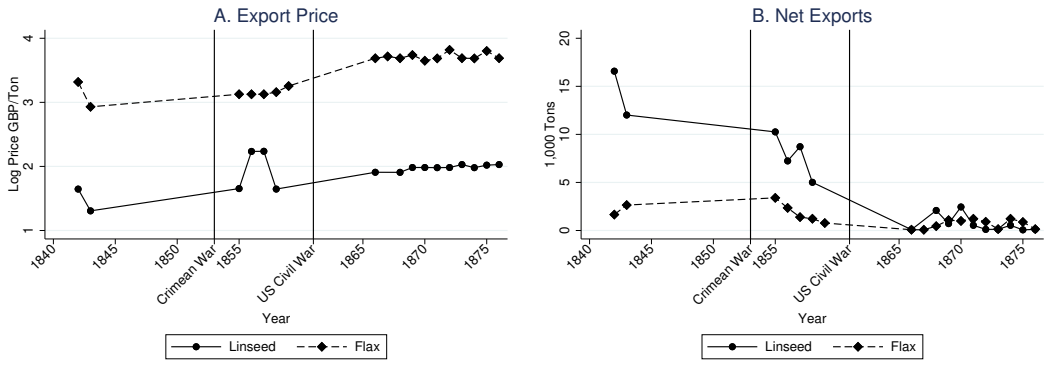

Figure A.4: Prices and Exports of Egyptian Linseed and Flax in 1842–1876

Notes: Original quantities are reported in *ardabbs* for linseed and in *cantars*/*quintals* for flax. I converted *ardabbs* into tons according to the conversion rate: 1 *ardabb* = 197.7 kilograms, in the 1873 Statistical Yearbook (p. 2). I converted *cantars*/*quintals* into tons according to the conversion rate in Owen (1969, pp. 381-385). Original prices are reported in Egyptian piasters, which I converted into British pounds (GBP) according to the conversion rate in Owen (1969, pp. 381-385) and https://www.measuringworth.com.
Sources: 1842–1843: U.K. Parliamentary Papers, Vol. 53 (1849) (pp. 359-367); 1855–1858 (no information on imports): U.S. House of Representatives Papers (1860) (p. 358); 1859 (flax only): Fowler, T. K. (1861). *Report on the Cultivation of Cotton in Egypt*. J. J. Sale, Printer, Manchester (p. 12); 1866–1876: U.S. House of Representatives Papers (1877) (pp. 918-933).

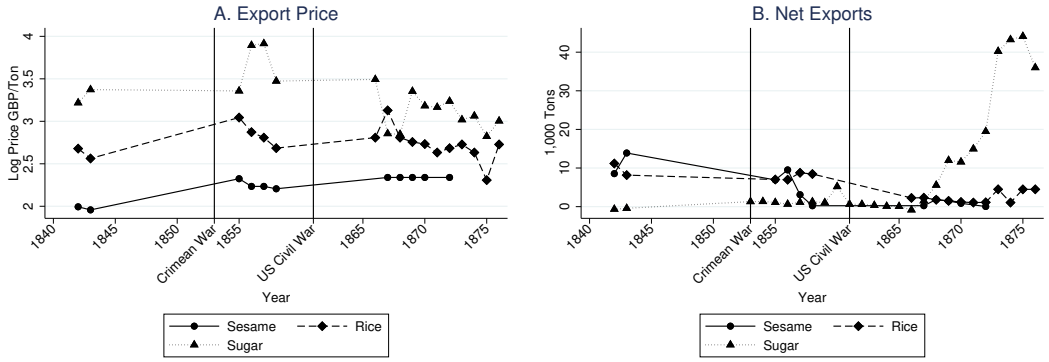

Figure A.5: Prices and Exports of Egyptian Sesame, Rice, and Sugar in 1842–1876

Notes: Original quantities are reported in *ardabbs*, which I converted into tons according to the conversion rate: 1 *ardabb* = 197.7 kilograms for sesame and sugar, and 1 *ardabb* = 185.6 kilograms for rice, in the 1873 Statistical Yearbook (p. 2). Original prices are reported in Egyptian piasters, which I converted into British pounds (GBP) according to the conversion rate in Owen (1969, pp. 381-385) and https://www.measuringworth.com.
Sources: 1842–1843: U.K. Parliamentary Papers, Vol. 53 (1849) (pp. 359-367); 1855–1858 (no information on imports): U.S. House of Representatives Papers (1860) (p. 358); 1859–1865 (sugar exports only): the 1873 Statistical Yearbook (pp. LXXV-LXXVI); 1866–1876: U.S. House of Representatives Papers (1877) (pp. 918-933).

Figure A.6: Production of Egyptian Major Export Crops (Ex. Cotton and Cotton Seed) in 1844 and 1874

Sources: 1844: Rivlin (1961, pp. 258-260); 1874: U.S. House of Representatives Papers (1877) (pp. 918-933).

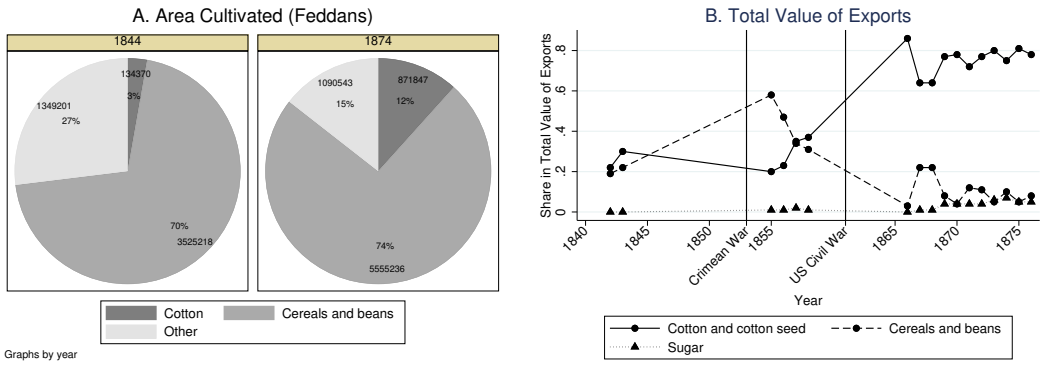

Figure A.7: Relative Land and Exports Shares of Egyptian Major Export Crops in 1842–1876

Notes: 1 *feddan* = 6,368 square meters.
Sources: Cropped area: 1844: Rivlin (1961, pp. 258-260); 1874: U.S. House of Representatives Papers (1877) (p. 905). Total value of exports: 1842–1843: U.K. Parliamentary Papers, Vol. 53 (1849) (pp. 359-367); 1855–1858 (no information on imports): U.S. House of Representatives Papers (1860) (p. 358); 1866–1876: U.S. House of Representatives Papers (1877) (pp. 918-933).

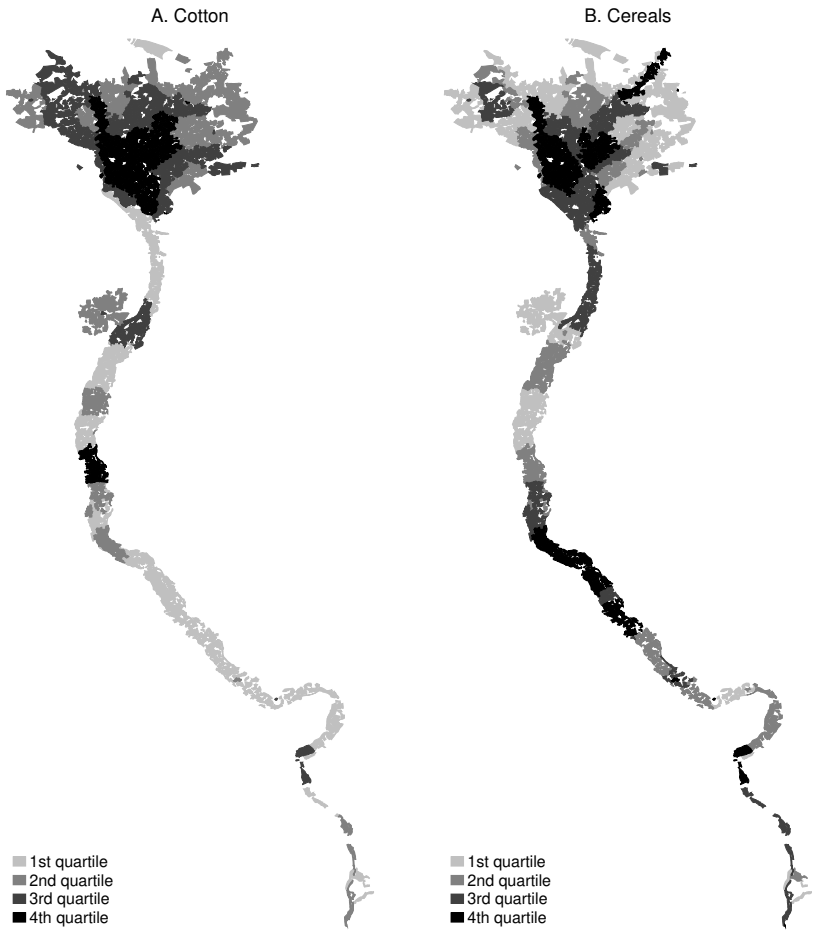

Figure A.8: Cotton and Cereals Productivity in 1877 in All Rural Districts

Notes: Cotton productivity is the cotton yield in *qintars* per *feddan*, and cereals productivity is the yield of wheat, barley, and beans in *ardabbs* per *feddan*, where 1 *feddan* = 6,368 square meters, 1 *qintar* = 44.5 kilograms, and 1 *ardabb* = 135 kilograms. The maps show the spatial distribution at the district level for all rural districts.
Sources: The 1877 Statistical Yearbook.

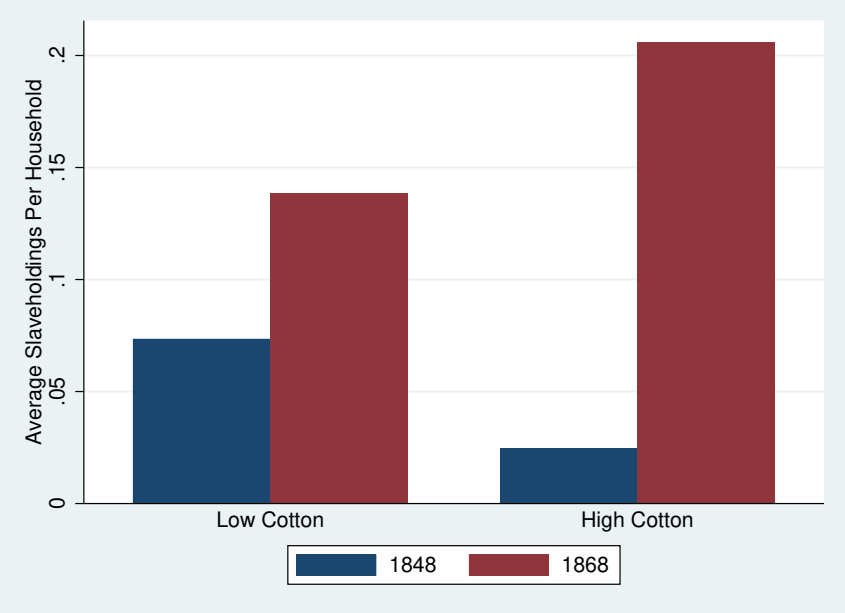

Figure A.9: The Cotton Boom and Slavery

Notes: High cotton-suitability districts are those at the 75th percentile or above (≥ 1.473201) in the cross-district distribution of the cotton yield in *qintars* per *feddan* in 1877.
Sources: See the sources of Table 2.

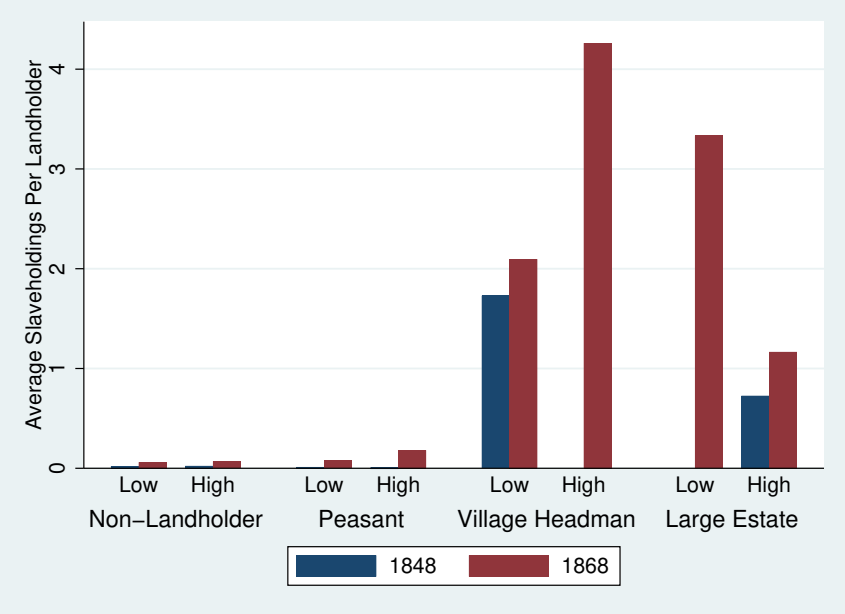

Figure A.10: The Cotton Boom and Slavery by Landholder Class

Notes: High cotton-suitability districts are those at the 75th percentile or above (≥ 1.473201) in the cross-district distribution of the cotton yield in *qintars* per *feddan* in 1877.
Sources: See the sources of Table 2.

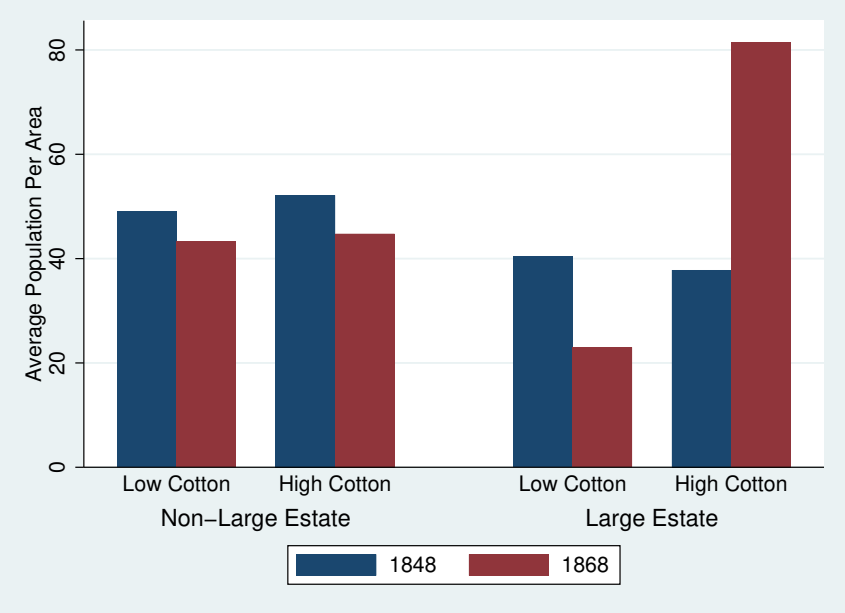

Figure A.11: The Cotton Boom and State Coercion of Labor

Notes: High cotton-suitability districts are those at the 75th percentile or above (≥ 1.473201) in the cross-district distribution of the cotton yield in *qintars* per *feddan* in 1877.
Sources: See the sources of Table 3.

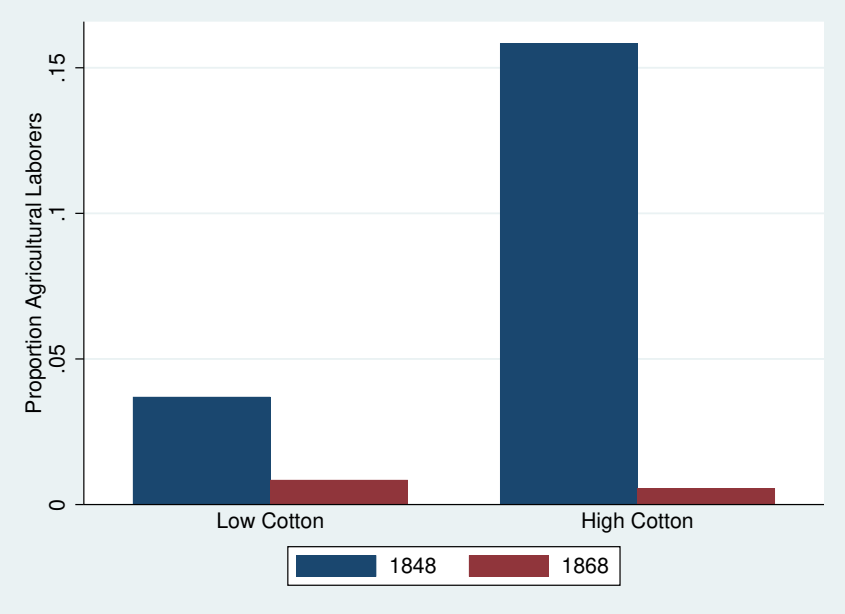

Figure A.12: The Cotton Boom and Wage Employment

Notes: High cotton-suitability districts are those at the 75th percentile or above (≥ 1.473201) in the cross-district distribution of the cotton yield in *qintars* per *feddan* in 1877.
Sources: See the sources of Table 3.

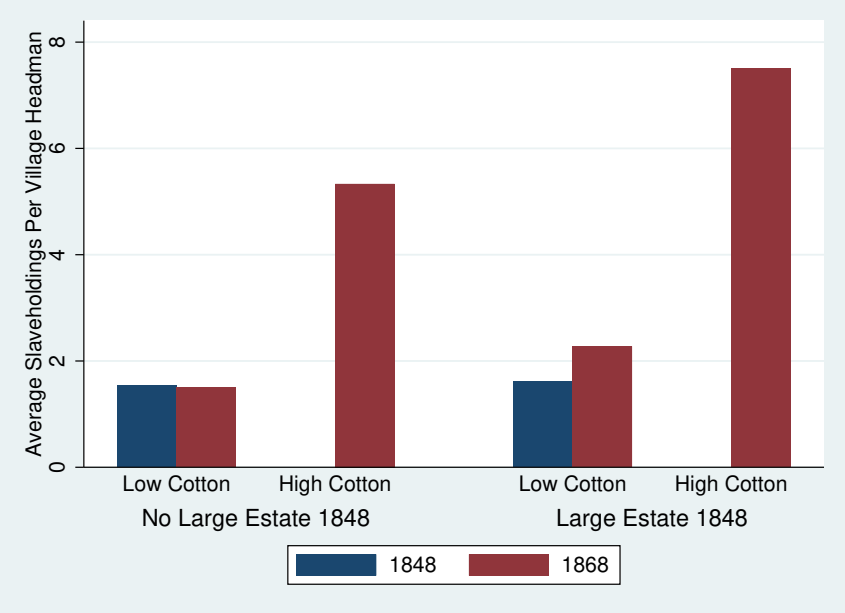

Figure A.13: State Coercion Reinforced Slavery During the Cotton Boom

Notes: High cotton-suitability districts are those at the 90th percentile or above ($\geq$ 1.7737) in the cross-district distribution of the cotton yield in *qintars* per *feddan* in 1877.
Sources: See the sources of Table 4.

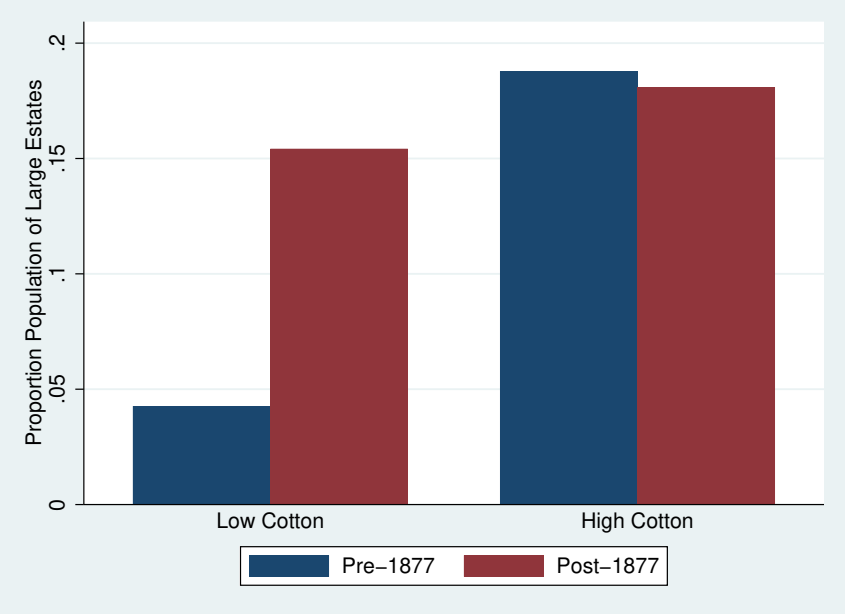

Figure A.14: Impact of the Abolition of Slavery on State Coercion

Notes: High cotton-suitability districts are those at the 75th percentile or above ($\geq$ 1.473201) in the cross-district distribution of the cotton yield in *qintars* per *feddan* in 1877.
Sources: See the sources of Table 5.

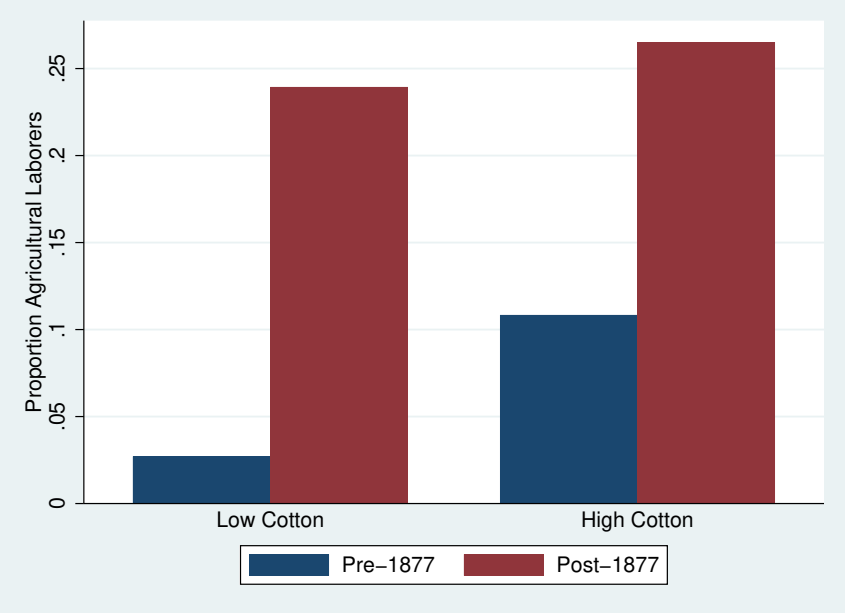

Figure A.15: Impact of the Abolition of Slavery on Wage Employment

Notes: High cotton-suitability districts are those at the 75th percentile or above ($\geq$ 1.473201) in the cross-district distribution of the cotton yield in *qintars* per *feddan* in 1877.
Sources: See the sources of Table 5.

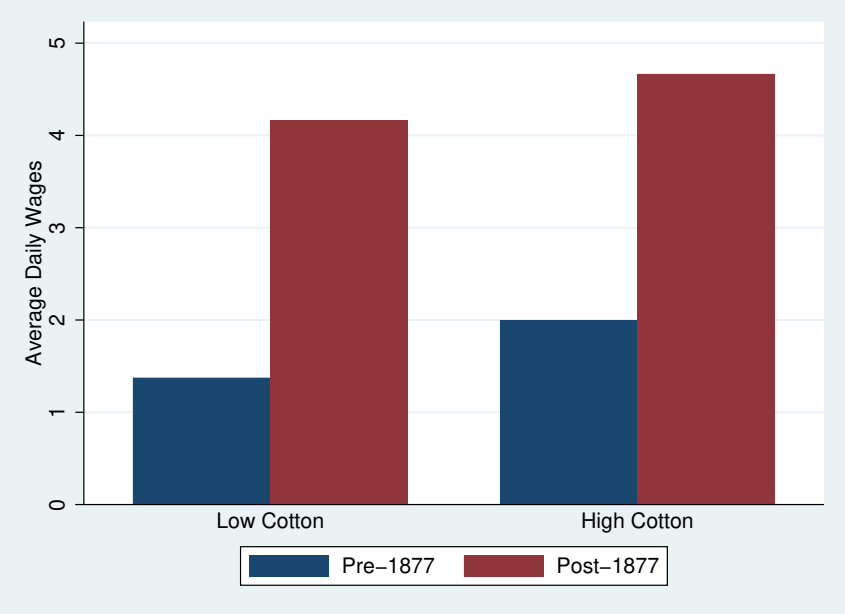

Figure A.16: Impact of the Abolition of Slavery on Wages

Notes: High cotton-suitability provinces are those at the 50th percentile or above ($\geq$ 1.151582) in the cross-province distribution of the cotton yield in *qintars* per *feddan* in 1877.
Sources: See the sources of Table 5.

Table A.1: Baseline Differences across Matched and Non-matched Districts in 1848

	Non-matched			Matched			
	N	Mean	SD	N	Mean	SD	Diff
Number of slaves and blacks in HH	4860	0.04	0.42	2469	0.06	0.64	0.019
=1 if slave-owning free-headed HH	4853	0.01	0.12	2459	0.01	0.11	-0.001
Number of slaves and blacks in free-headed HH	4853	0.03	0.40	2459	0.05	0.62	0.015
=1 if slave-headed HH	4860	0.00	0.04	2469	0.00	0.06	0.003**
=1 if HH head peasant	3700	0.57	0.50	1661	0.57	0.50	0.002
=1 if HH head landless agr. laborer	3700	0.12	0.32	1661	0.08	0.26	-0.044
=1 if HH head village headman	3700	0.03	0.18	1661	0.03	0.17	-0.005
=1 if HH head white-collar worker	3700	0.07	0.25	1661	0.07	0.26	0.006
=1 if HH head artisan	3700	0.07	0.26	1661	0.09	0.28	0.016
=1 if HH head unskilled non-agr. laborer	3700	0.14	0.35	1661	0.17	0.38	0.032
Cotton yield (qintars) per feddan in 1877	4860	1.80	1.20	2469	0.88	0.86	-0.869***
Cereals and beans yield (ardabbs) per feddan in 1877	4860	2.44	0.74	2469	1.92	0.98	-0.479*
=1 if HH head non-Muslim	4803	0.04	0.20	2454	0.08	0.28	0.044**
=1 if HH head Bedouin	4860	0.05	0.22	2469	0.01	0.08	-0.052***
Number of free males 0-5 in HH	4860	0.73	1.04	2469	0.68	1.04	-0.055
Number of free males 6-10 in HH	4860	0.38	0.67	2469	0.38	0.66	-0.006
Number of free males 11-20 in HH	4860	0.34	0.62	2469	0.34	0.62	0.001
Number of free males 21-30 in HH	4860	0.36	0.60	2469	0.36	0.67	-0.006
Number of free males 31-40 in HH	4860	0.31	0.53	2469	0.31	0.57	0.003
Number of free males 41-50 in HH	4860	0.24	0.46	2469	0.22	0.43	-0.015
Number of free males 50+ in HH	4860	0.36	0.54	2469	0.32	0.51	-0.044**
Number of free females 0-5 in HH	4860	0.71	1.01	2469	0.67	0.97	-0.040
Number of free females 6-10 in HH	4860	0.29	0.59	2469	0.26	0.53	-0.025
Number of free females 11-20 in HH	4860	0.34	0.65	2469	0.33	0.62	-0.013
Number of free females 21-30 in HH	4860	0.49	0.73	2469	0.49	0.66	0.005
Number of free females 31-40 in HH	4860	0.36	0.57	2469	0.33	0.54	-0.026
Number of free females 41-50 in HH	4860	0.22	0.45	2469	0.20	0.42	-0.023
Number of free females 50+ in HH	4860	0.34	0.54	2469	0.33	0.55	-0.012

Notes: The sample is restricted to households residing in 70 rural districts in 1848. The "Diff" column reports the coefficient of the following household-level regression in 1848: $y_{hd} = \alpha_1 + \alpha_2 DistMatched_d + \varepsilon_{hd}$, where y_{hd} is the outcome of household h residing in district d in 1848, and $DistMatched_d$ is a dummy variable =1 if the household's district of residence is observed in both 1848 and 1868, and =0 if the district of residence is observed in 1848 only. Each regression is weighted by the household inverse sampling probability. Standard errors are clustered at the district level. $*p < 0.10, **p < 0.05, ***p < 0.01$.
Sources: The 1848 population census sample. Data on crop productivity in 1877 are from the 1877 Statistical Yearbook.

Table A.2: The Cotton Boom and Slavery: Other Outcomes

	N. Slaves in Free-headed HH	=1 if HH Head Slave
	(1)	(2)
Cotton × 1868	0.13***	0.00
	(0.03)	(0.00)
Cereals × 1868	-0.06*	-0.00
	(0.04)	(0.00)
Controls	Yes	Yes
District FE	Yes	Yes
Census Year FE	Yes	Yes
Clusters (Districts)	25	25
Obs (Households)	5723	5736
R^2	0.10	0.01
Av. Dep. Var. in 1848	0.04	0.00

Notes: The sample is restricted to households residing in 25 rural districts that are observed in both 1848 and 1868. The sample is further restricted to free-headed households in column 1. Regressions are weighted by the inverse sampling probability of households. Standard errors clustered at the district level are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$. Controls are: =1 if household head is non-Muslim, =1 if household head is Bedouin, the number of household free members broken down by sex and age, the village's distance to Suez, and its interaction with 1868.
Sources: See the sources of Table 2.

Table A.3: The Cotton Boom and the Sex and Age Composition of Slaves

(a) Male Slaves by Age Bracket

	(1) Total	(2) 0-5	(3) 6-20	(4) 21-40	(5) 41-50	(6) 50+
Cotton × 1868	0.10***	0.01***	0.05***	0.04***	0.00	-0.00
	(0.02)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)
Cereals × 1868	-0.05*	0.00	-0.04**	-0.02	-0.00	0.00
	(0.03)	(0.00)	(0.02)	(0.01)	(0.00)	(0.00)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Census Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Clusters (Districts)	25	25	25	25	25	25
Obs (Households)	5645	5645	5645	5645	5645	5645
R^2	0.11	0.03	0.11	0.07	0.03	0.01
Av. Dep. Var. in 1848	0.02	0.01	0.01	0.01	0.00	0.00

(b) Female Slaves by Age Bracket

	(1) Total	(2) 0-5	(3) 6-20	(4) 21-40	(5) 41-50	(6) 50+
Cotton × 1868	0.03***	0.00	0.01***	0.01**	-0.00	0.00
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cereals × 1868	-0.01	0.00	-0.00	-0.01*	0.00	-0.00
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Census Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Clusters (Districts)	25	25	25	25	25	25
Obs (Households)	5645	5645	5645	5645	5645	5645
R^2	0.07	0.03	0.05	0.05	0.02	0.02
Av. Dep. Var. in 1848	0.02	0.00	0.01	0.01	0.00	0.00

Notes: The sample is restricted to free household heads residing in 25 rural districts that are observed in both 1848 and 1868. Regressions are weighted by the inverse sampling probability of households. Controls are the same as in Table A.2. Robust standard errors clustered at the district level are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.
Sources: See the sources of Table 2.

Table A.4: The Cotton Boom and the Occupational Distribution of Local Labor

	=1 if HH Head is					
	(1) Agricultural Laborer	(2) Peasant	(3) Village Headman	(4) Artisan	(5) White-collar	(6) Non-agr. Unskilled
Cotton × 1868	-0.13***	0.21***	0.01	0.00	-0.06*	-0.03
	(0.04)	(0.05)	(0.01)	(0.01)	(0.03)	(0.03)
Cereals × 1868	0.02	-0.10	-0.01**	0.02	0.05*	0.03
	(0.02)	(0.07)	(0.01)	(0.02)	(0.03)	(0.04)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Census Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Clusters (Districts)	25	25	25	25	25	25
Obs (Households)	3985	3985	3985	3985	3985	3985
R^2	0.19	0.07	0.12	0.08	0.05	0.06
Av. Dep. Var. in 1848	0.10	0.54	0.03	0.09	0.07	0.18

Notes: The sample is restricted to free household heads residing in 25 rural districts that are observed in both 1848 and 1868, with a non-missing occupational title. Regressions are weighted by the inverse sampling probability of households. Controls are the same as in Table A.2. Standard errors clustered at the district level are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.
Sources: See the sources of Table 2.

Table A.5: The Cotton Boom and Migration of Local Labor

	Number of Local Workers at the Area Level		
	(1) Total	(2) Natives	(3) Immigrants
Large Estate × Cotton × 1868	41.56***	53.72***	-12.16***
	(11.88)	(12.68)	(2.51)
Cotton × 1868	3.99	-0.17	4.16*
	(10.56)	(9.53)	(2.05)
Large Estate × 1868	-14.03	-45.90***	31.88***
	(12.93)	(15.23)	(4.57)
Controls	Yes	Yes	Yes
Large Estate	Yes	Yes	Yes
Large Estate × Cotton	Yes	Yes	Yes
District FE	Yes	Yes	Yes
Census Year FE	Yes	Yes	Yes
Clusters (Districts)	25	25	25
Obs (Areas)	669	669	669
R^2	0.34	0.23	0.26
Av. Dep. Var. in 1848	63.16	58.47	4.69

Notes: Controls are the interaction of the district-level cereals productivity in 1877 with the 1868 indicator, the village's distance to Suez, and its interaction with 1868. Regressions are weighted by the sum of household weights in the area. Robust standard errors clustered at the district level are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.
Sources: See the sources of Table 2.

B Labor Intensity of Cotton

Cotton was labor intensive, relative to other crops, in Egypt. It required a considerable amount of labor in land preparation, sowing, soil tending, picking, ginning, and trees uprooting (Owen 1969, pp. 30-33). I observe the number of cultivators per *feddan* for each crop in the 1939 Agricultural Census (pp. 60-69), which is the earliest data source that records this type of information. However, I do not observe the number of working hours, or the seasonality of employment (e.g., during the harvest season), which may vary across crops. I estimate the following model separately for each landholding size:

$$laborperland_{cp}^{f} = \alpha_c + \beta_p + \varepsilon_{cp}, \quad f \in \{0-1, 1-2, 2-3, 3-4, 4-5, 5-10, 10-20, 20-50, 50-100, 100-200, 200-500, 500^{+}\, feddans\} \tag{B.1}$$

where $laborperland_{cp}^{f}$ is the number of cultivators per *feddan* of crop c in province p on landholding size f, α_c is a full set of crop fixed effects, where cotton is the omitted category, and β_p is a full set of province fixed effects to control for inter-province heterogeneity in labor-to-land ratio. I estimate a separate regression for each landholding size, because crops may vary with respect to the landholding distribution.[2] The results are shown in Appendix Table B.1. Although differences between cotton and wheat are not statistically significant, cotton has systematically higher labor-to-land ratio at any landholding size.

Although the results come from 1939, they likely apply to the 19th century. First, the harvesting of wheat, barley, and beans in 1830 required 4–8 workers per *feddan*, according to Majlis al-Mashoura (1830). *La'ihat zira'at al-fallah wa tadbir ahkam al-siyasa bi qasd al-najah (Farmer's Guide to Agriculture)*. Amiria Press, Cairo, which is similar to the number of cultivators per *feddan* for these crops in 0–1 *feddan* landholdings in 1939. This suggests that the technology of production changed little between 1830 and 1939, especially on small landholdings. Second, mechanization of Egyptian agriculture started only in the 1970s (Richards 1981).

C Parallel Trends of Household's Slave Acquisition

I provide suggestive evidence on the parallel trends assumption for household slave purchases prior to the cotton boom using the age distribution of slaves. Recall that I only observe the household's stock of slaves in 1848 or 1868, but not the flow of slave purchases. However, age profiles of slaves enable me to reconstruct the yearly number (flow) of slaves that were purchased by each household, under the assumption that a slave is purchased at age 6 and lives up to age 50, which is supported by historical evidence.[3] I thus pool the 1848 and 1868

[2] My objective is to measure inter-crop differences in labor intensity, holding landholding size constant. For example, a crop may have a higher labor-to-land ratio, because it is more likely to be produced in small landholdings, and not because it is more labor-intensive.

[3] I focus on slaves aged 6–50 (with non-missing age) who live in free-headed households. I exclude slaves who are born into slavery, i.e. those who have at least one slave parent in the household, and those below 6 who are less

Table B.1: Labor-to-Land Ratio by Crop in 1939

	(1) 0-1	(2) 1-2	(3) 2-3	(4) 3-4	(5) 4-5	(6) 5-10	(7) 10-20	(8) 20-50	(9) 50-100	(10) 100-200	(11) 200-500	(12) 500+
Wheat	-0.620	-0.350	-0.226	-0.131	-0.115	-0.115	-0.026	-0.011	-0.005	-0.002	-0.016	-0.000
	(1.338)	(0.255)	(0.174)	(0.170)	(0.142)	(0.142)	(0.096)	(0.045)	(0.044)	(0.039)	(0.020)	(0.028)
Beans	9.384	0.354	0.528***	0.569***	0.527***	0.527***	0.323***	0.182***	0.090**	0.051	0.012	0.012
	(9.471)	(0.265)	(0.188)	(0.152)	(0.123)	(0.123)	(0.086)	(0.042)	(0.039)	(0.035)	(0.020)	(0.028)
Barley	0.583	0.527*	0.671***	0.756***	0.660***	0.660***	0.399***	0.248***	0.134***	0.077*	0.027	0.017
	(1.302)	(0.302)	(0.179)	(0.148)	(0.127)	(0.127)	(0.099)	(0.045)	(0.046)	(0.040)	(0.022)	(0.028)
Lentils	1.240	1.493*	1.528*	1.010***	0.862**	0.862**	1.378**	0.699***	0.477***	0.624***	0.065**	0.017
	(1.705)	(0.824)	(0.824)	(0.359)	(0.356)	(0.356)	(0.591)	(0.163)	(0.123)	(0.218)	(0.028)	(0.042)
Onions	3.054**	3.286***	3.369***	3.076***	2.700***	2.700***	1.419***	0.795***	0.521***	0.382***	0.191***	0.133***
	(1.528)	(1.042)	(0.919)	(0.916)	(0.577)	(0.577)	(0.318)	(0.170)	(0.127)	(0.125)	(0.054)	(0.044)
Rice	-1.508	-0.493	-0.038	-0.089	-0.068	-0.068	-0.035	-0.006	-0.011	-0.024	-0.010	0.008
	(1.669)	(0.344)	(0.270)	(0.208)	(0.170)	(0.170)	(0.117)	(0.054)	(0.053)	(0.044)	(0.024)	(0.044)
Sugar	0.356	0.357	0.603***	0.591***	0.559***	0.559***	0.426***	0.293***	0.214***	0.192***	0.128***	0.337*
	(1.301)	(0.348)	(0.205)	(0.183)	(0.161)	(0.161)	(0.097)	(0.052)	(0.064)	(0.056)	(0.042)	(0.188)
Peanuts	0.443	0.650	0.262	0.411*	0.330	0.330	0.201	0.233*	0.342	0.112	0.064	0.222*
	(1.273)	(0.973)	(0.317)	(0.247)	(0.239)	(0.239)	(0.139)	(0.123)	(0.226)	(0.085)	(0.053)	(0.131)
Maize	-0.779	1.314	-0.264	-0.157	-0.110	-0.110	-0.004	0.010	0.012	0.007	-0.007	0.001
	(1.379)	(1.751)	(0.208)	(0.201)	(0.170)	(0.170)	(0.111)	(0.054)	(0.050)	(0.042)	(0.021)	(0.028)
S. Sorghum	-0.191	0.035	-0.074	0.253	0.238	0.238	0.169*	0.091**	0.034	0.109	0.001	0.012
	(1.389)	(0.251)	(0.177)	(0.206)	(0.153)	(0.153)	(0.099)	(0.045)	(0.046)	(0.078)	(0.021)	(0.031)
N. Sorghum	-0.527	-0.009	-0.018	0.132	0.121	0.121	0.071	0.108*	0.066	0.062	0.034	0.027
	(1.410)	(0.305)	(0.192)	(0.178)	(0.157)	(0.157)	(0.108)	(0.057)	(0.044)	(0.045)	(0.021)	(0.043)
Fenugreek	0.484	0.933**	1.061***	0.977***	0.911***	0.911***	0.527***	0.332***	0.181***	0.116***	0.054**	0.045
	(1.420)	(0.367)	(0.245)	(0.252)	(0.189)	(0.189)	(0.108)	(0.056)	(0.052)	(0.040)	(0.022)	(0.030)
Province FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Obs (Crop-Province)	164	167	165	169	165	165	170	171	166	163	157	147
R^2	0.156	0.211	0.473	0.447	0.572	0.572	0.437	0.523	0.405	0.375	0.437	0.263
Mean Dep. Var.	4.410	2.457	1.772	1.470	1.240	1.240	0.619	0.347	0.205	0.156	0.070	0.068

Notes: The dependent variable is the labor-to-land ratio, which is the number of cultivators divided by the area cultivated. Each column shows the results of an OLS regression of the labor-to-land ratio on a full set of crop and province fixed effects, at each landholding size, where cotton is the omitted category. White-Huber heteroskedasticity robust standard errors are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$. Rice refers to both summer and Nolitic rice. S. Sorghum is summer sorghum, N. Sorghum is Nolitic sorghum.
Sources: The 1939 Agricultural Census (pp. 60-69).

households in matched districts, and create a "pseudo-panel" that traces yearly slave purchases of each household in 1848 (1868) from 1804 (1824) to 1848 (1868),[4] in order to estimate the following regression:

$$slavespurchased_{hdt} = \alpha_h + \delta_t + \sum_{j=1809}^{1868} \beta_{1j} cotton_d + \sum_{j=1808}^{1868} \beta_{2j} cereals_d + \varepsilon_{hdt} \qquad \text{(C.1)}$$

where $slavespurchased_{hdt}$ is the number of slaves purchased by household h in district d in period $t \in \{1809-1818, 1819-1828, ..., 1859-1868\}$ with $1804-1808$ being the omitted period,[5] α_h are household fixed effects, δ_t are period fixed effects. Standard errors are clustered at the district level. If the parallel trends assumption holds, I would expect β_1 to be not statistically different from 0 for all periods up to 1858, and to be positive in 1859–1868.

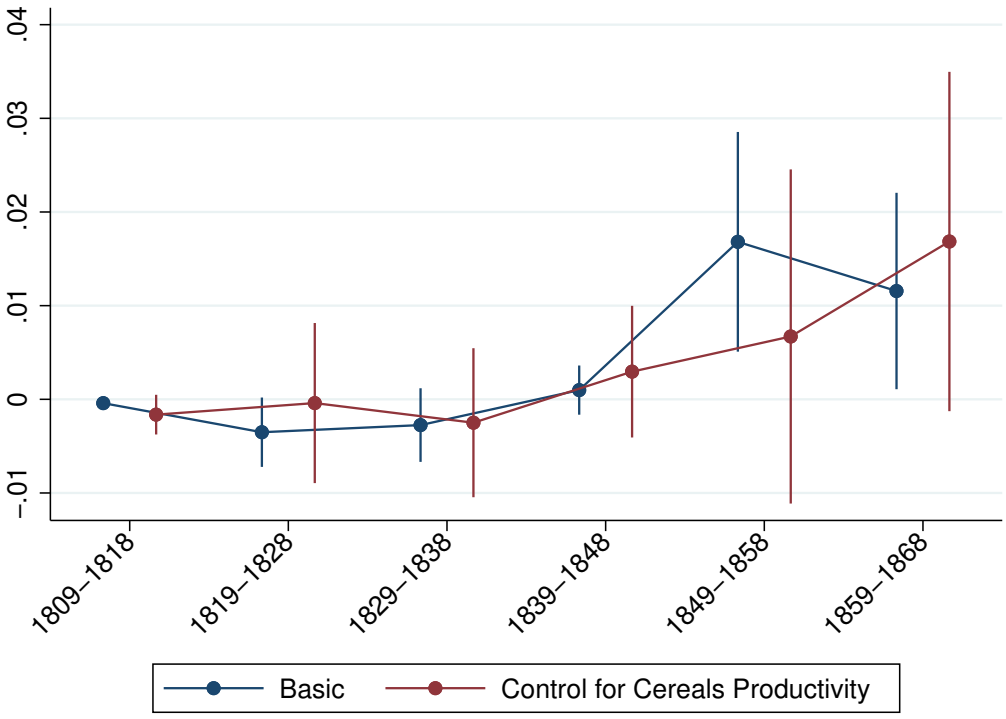

Figure C.1: The Evolution of Household Slave Acquisition in 1804–1868

Notes: The figure plots the estimated coefficients for equation (C.1). The 95% confidence intervals are shown.
Sources: See the sources of Table 2.

The coefficients $\hat{\beta}_1$ are plotted in Appendix Figure C.1. The growth of household slaveholdings in more cotton-suitable villages is not statistically different from that in less cotton-suitable villages up to 1858, but the difference becomes positive in 1859–1868, which is arguably attributable to the cotton boom. This finding is consistent with Figure 2, which suggests that

likely to have been purchased. According to Fredriksen (1977, pp. 44-5), slaves were mostly purchased below the age of 15. I exclude slaves above 50, because I observe extremely few of them, which suggests that most slaves died before that age.

[4]These are the earliest and latest possible dates of purchasing a slave aged 6–50 in each of 1848 and 1868. For example, the oldest slaves in 1848 are 50, i.e. born in 1798, and purchased at age 6 in 1804.

[5]I estimate the flow of slaves by decade, rather than by year, because of age heaping. I also tried 5-year and 15-year intervals, and the results (available upon request) are similar.

Egypt's slave imports remained stable between the invasion of Sudan in 1820 and the abolition of state slave raids in 1845.

D Robustness Checks

I conducted several robustness checks. First, I employed two alternative measures of cotton suitability. As a second measure, I used the village's distance to the (eastern) Damietta Nile branch, which is based on the irrigation network in the 1840s. According to Gliddon, G. R. (1841). *A Memoir on the Cotton of Egypt*. James Madden & Co., London (p. 15), areas closer to the Damietta branch were more suitable to cotton, because it was technically easier to dig summer canals from the Damietta branch, which was much deeper than the (western) Rosetta branch (Rivlin 1961, p. 224). Consequently, 61 percent of the total length of summer canals in 1840 originated from the Damietta branch (Rivlin 1961, p. 281).[6] The results, shown in Appendix Table D.1, are similar to the main findings.

I also employed a third measure, the Global Agro-Ecological Zoning crop suitability indices produced by the Food and Agriculture Organization (FAO-GAEZ), which are widely used in the literature. Because Egyptian agriculture is irrigation-fed, I used the FAO-GAEZ indices under irrigation and intermediate input level for the baseline period (1961–1990).[7] In comparison to the actual crop productivity in 1877, the FAO-GAEZ indices have the advantages of being measured at the more fine-grained village level, and of capturing the potential—not the actual—crop suitability. However, they are subject to a major caveat, because they assume that water resources are available and that the irrigation infrastructure is in place, based on the period from 1961 to 1990. This implies the FAO-GAEZ indices are endogenous to the evolution of the (perennial) irrigation infrastructure in Egypt up to 1990, making them less precise estimates of the crop suitability during the 19th century, than the 1877 crop productivity measures. The results, shown in Appendix Table D.2, are mostly similar to the main findings.

The second robustness check is to control for the more fine-grained village fixed effects, which account for time-invariant characteristics of villages that may be correlated with cotton suitability. I exploit the fact that among the 504 villages that are observed in either 1848 or 1868, there are 105 villages that appear by random chance in both samples. I thus restricted the analysis to households residing in this panel of villages, which allows me to control for village fixed effects. The results are mostly similar to the main findings (Appendix Table D.3).

[6] In 1840, 86 percent of the total length of summer canals was in the Delta: 61 percent originated from the Damietta branch, which consisted of canals in eastern and central Delta, and 25 percent from the Rosetta branch, which consisted of canals in western Delta (Rivlin 1961, pp. 213-249). Rivlin (1961, p. 224) mentions that "This higher elevation of water [of the Damietta branch] was due to the fact that the Damietta branch followed a more sinuous and consequently a longer course and had less of an incline than that of the Rosetta branch."

[7] I used FAO-GAEZ Data Portal Version 3.0.1. The crop suitability indices under irrigation are not available at the *low* input level, presumably because the irrigation infrastructure requires a sufficiently high level of input. The crop suitability indices under irrigation assume that water resources are available and that the irrigation infrastructure is in place. They take into account the type of soil and the terrain slope. The crop suitability indices under rain-fed agriculture show no variation within Egypt, which receives little rainfall.

Third, there may be spillover effects and spatial correlation across villages, which could bias the OLS estimates. To account for this possibility, I use the FAO-GAEZ crop suitability indices that are available at the village level. I then aggregate the data to the village level and restrict the analysis to the balanced panel of villages that appear in both 1848 and 1868. I estimate a Fixed Effects Spatial Autoregressive Model (SAR) at the village-year level. The results are mostly similar to the main findings (Table D.4).

Table D.1: The Cotton Boom, Slavery, and Wage Employment of Local Labor: Using Distance to Damietta Branch

	Slavery		Local Labor
	(1) N. Slaves in HH	(2) =1 if Slave-Owning Free-Headed HH	(3) =1 if HH Head Agr. Laborer
Dist. Damietta × 1868	-1.43***	-0.67***	1.16**
	(0.21)	(0.08)	(0.45)
Cereals × 1868	0.02	0.00	-0.06*
	(0.02)	(0.01)	(0.03)
Dist. Damietta	1.34	0.59	0.72
	(2.01)	(0.53)	(1.57)
Controls?	Yes	Yes	Yes
District FE	Yes	Yes	Yes
Census Year FE	Yes	Yes	Yes
Clusters (District)	25	25	25
Obs (Households)	5736	5723	4020
R^2	0.09	0.14	0.18
Av. Dep. Var. in 1848	0.05	0.01	0.10

Notes: The sample is restricted to households residing in 25 rural districts that are observed in both 1848 and 1868. Columns 2 is further restricted to free household heads. Column 3 is further restricted to free household heads with a non-missing occupational title. Standard errors clustered at the village level are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$. Distance to the Damietta branch is in 1,000 kilometres. Controls are: =1 if household head is non-Muslim, =1 if household head is Bedouin, the number of household free members broken down by sex and age, the village's distance to Suez, and its interaction with the 1868 dummy variable. Each regression is weighted by household inverse sampling probability.
Sources: See the sources of Table 2.

Table D.2: The Cotton Boom, Slavery, and Wage Employment of Local Labor: Using the FAO-GAEZ Crop Suitability Indices

	Slavery		Local Labor
	(1) N. Slaves in HH	(2) =1 if Slave-Owning Free-Headed HH	(3) =1 if HH Head Agr. Laborer
Cotton × 1868	0.53*	0.23**	0.57**
	(0.31)	(0.10)	(0.22)
Cereals × 1868	-0.23	-0.09	-0.69***
	(0.31)	(0.08)	(0.25)
Cotton	0.10	-0.08	-0.64***
	(0.26)	(0.07)	(0.24)
Cereals	-0.13	0.06	0.52***
	(0.26)	(0.06)	(0.20)
Controls?	Yes	Yes	Yes
District FE	Yes	Yes	Yes
Census Year FE	Yes	Yes	Yes
Clusters (Villages)	504	504	482
Obs (Households)	5736	5723	4020
R^2	0.09	0.13	0.16
Av. Dep. Var. in 1848	0.05	0.01	0.10

Notes: The sample is restricted to households residing in 25 rural districts that are observed in both 1848 and 1868. Columns 2 is further restricted to free household heads. Column 3 is further restricted to free household heads with a non-missing occupational title. The crop suitability indices are continuous. I transformed each crop measure into an index varying between 0 and 1, with 1 being the highest value in the sample, and 0 the lowest. The cereals suitability index is equal to the maximum of the suitability indices of wheat, barley, beans, and maize. Standard errors clustered at the district level are in parentheses. Controls are: =1 if household head is non-Muslim, =1 if household head is Bedouin, the number of household free members broken down by sex and age group, distance to Suez, and its interaction with the 1868 dummy variable. $*p < 0.10, **p < 0.05, ***p < 0.01$.
Sources: The 1848 and 1868 population census samples. Data on crop suitability are from FAO-GAEZ under irrigation and intermediate input in the baseline period 1961–1990.

Table D.3: The Cotton Boom, Slavery, and Wage Employment: Controlling for Village Fixed Effects

	Slavery		Local Labor
	(1) N. Slaves in HH	(2) =1 if Slave-Owning Free-Headed HH	(3) =1 if HH Head Agr. Laborer
Cotton × 1868	0.16**	0.05***	0.01*
	(0.07)	(0.02)	(0.01)
Cereals × 1868	-0.09*	-0.04**	-0.03
	(0.05)	(0.02)	(0.02)
Controls?	Yes	Yes	Yes
Village FE	Yes	Yes	Yes
Census Year FE	Yes	Yes	Yes
Clusters (Villages)	105	105	104
Obs (Households)	2102	2097	1460
R^2	0.13	0.15	0.29
Av. dep. var. in 1848	0.05	0.01	0.01

Notes: The sample is restricted to households residing in 105 villages that are observed in both 1848 and 1868. Columns 2 is further restricted to free household heads. Column 3 is further restricted to free household heads with a non-missing occupational title. Standard errors clustered at the village level are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$. Controls are: =1 if household head is non-Muslim, =1 if household head is Bedouin, the number of household free members broken down by sex, distance to Suez, and its interaction with the 1868 dummy variable. Each regression is weighted by household inverse sampling probability.
Sources: See the sources of Table 2.

Table D.4: The Cotton Boom, Slavery, and Wage Employment: Fixed Effects Spatial Autoregressive Model (SAR)

	Slavery		Local Labor
	(1) N. Slaves in HH	(2) =1 if Slaveowning Free-Headed HH	(3) =1 if HH Head Agr. Laborer
main			
Cotton × 1868	1.66*	0.67***	0.26*
	(0.89)	(0.26)	(0.14)
Cereals × 1868	-1.33	-0.49**	-0.20
	(0.84)	(0.25)	(0.13)
1868	0.20	0.04	0.01
	(0.27)	(0.08)	(0.04)
W			
Spatial lag of dep. var.	-0.08	0.45**	
	(0.26)	(0.21)	
L			
Spatial lag of dep. var.			-0.28
			(0.31)
Controls?	Yes	Yes	Yes
Location FE?	Yes	Yes	Yes
Locations	103	103	90
Obs (Location-Year)	206	206	180
Pseudo-R^2	0.35	0.35	0.02
Av. Dep. Var. in 1848	0.13	0.03	0.01

Notes: Regressions are based on the 1848 and 1868 population census samples, aggregated to the location level, where a location is defined as the latitude and longitude of the village's centroid. The location-level sample is further restricted to a balanced panel of locations that appear in both years. Specifically, out of 105 villages that appear in both 1848 and 1868 (Table D.3), there are 103 *unique* locations. While outcomes 1–2 are non-missing for all the 103 locations in both 1848 and 1868, outcome 3 is non-missing in both 1848 and 1868 for only 90 locations. W is the spatial weight matrix for the sample of locations used for outcomes 1–2, L is the spatial weight matrix for the sample of locations used for outcome 3, where the spatial weight in both W and L is defined as the inverse distance. The spatial lag of the dependent variable measures the spatial correlation in the dependent variable weighted by the spatial weight matrix. Standard errors are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$. Controls are measured at the village level and consist of: (1) proportion of non-Muslims, (2) proportion of Bedouins, (3) average number of male free household members, (4) average number of female free household members, and (5) the interaction of distance to Suez with the 1868 dummy variable.
Sources: The 1848 and 1868 population census samples. Data on crop suitability are from FAO-GAEZ under irrigation and intermediate input in the baseline period 1961–1990.

E Expansion of Cotton Cultivation

I hypothesize that the positive effects of the cotton boom on slavery and state coercion, and its negative effect on wage employment, are driven by cotton expansion. At the aggregate level, the cropped area increased by 50 percent between 1844 and 1874, reaching 7.5 million *feddans* in 1874, although the real area increased by only 11 percent during the same period.[8]

I first explore the impact of the cotton boom on the cultivation of cotton, cereals, and other crops, at the district level, using a first-differences model:

$$\Delta cropoutcome_d = \beta_1 cotton_d + \beta_2 cereals_d + \varepsilon_d \tag{E.1}$$

where $\Delta cropoutcome_d$ is the change between 1844 and 1877 in district d in the outcome of three crop groups: cotton, cereals (wheat, barley, and beans), and other crops. For cotton and cereals, I study both area and yield, while for the other crops, I only observe the area. I employ several data sources to construct these outcomes.[9]

Next, I examine the correlation between cotton cultivation and each of slavery and the agricultural employment of local labor:

$$\begin{aligned} y_{hvdt} = \; & \delta_1 cottonoutcome_{dt} + \delta_2 cerealsoutcome_{dt} \\ & + \delta_3 othercropoutcome_{dt} + X_{hvdt}\gamma + \alpha_d + \beta_t + \varepsilon_{hvdt} \end{aligned} \tag{E.2}$$

where y_{hvdt} is either slaveholdings or the agricultural employment of household h in village v in district d in census year t, $cottonoutcome_{dt}$, $cerealsoutcome_{dt}$, and $othercropoutcome_{dt}$ are the area or yield of cotton, cereals, and other crops, respectively, in each of 1844 and 1877, where I assign the 1844 values to the 1848 census, and the 1877 values to the 1868 census.

The results are shown in Table E.1. High-cotton districts increased their real area in 1844–1877 by 33,500 *feddans*, relative to low-cotton districts, which amounts to 42 percent of the average in 1844 (column 1). Furthermore, compared to low-cotton districts, the cotton area in high-cotton districts increased by an additional 4,800 *feddans*, which is more than the average cotton area in 1844 (column 3), whereas the cotton yield rose by an additional 15,700 *qintars*, which is 3.5 times the average in 1844 (column 6). This cotton expansion in high-cotton districts was partially at the expense of other crops (column 5). However, the area and yield

[8] There are inconsistencies across data sources, though. The cropped area in 1874 (7.52 million *feddans*) (U.S. House of Representatives Papers (1877), p. 905) is higher than in 1877 (4.37 million) (the 1873 Statistical Yearbook, Vol. 2, pp. 54-77, 84-99, 118-166), and in 1893–1894 (6.3 million) (the 1909 Statistical Yearbook, p. 270). By contrast, the real area in 1874 (4.81 million *feddans*) (U.S. House of Representatives Papers (1877), p. 905) is lower than in 1877 (5.74 million) (the 1873 Statistical Yearbook, Vol. 1, pp. 123-129), and in 1893–1894 (5.39 million) (the 1909 Statistical Yearbook, p. 270), although it is close to the real area in 1873 (4.62 million) (the 1873 Statistical Yearbook, p. 300). I prefer to use the Egypt-level data for 1874 in U.S. House of Representatives Papers (1877) instead of the other sources, because (1) the cropped area in the 1873 Statistical Yearbook is lower than the real area in the same source (which is definitely an error), (2) the 1873 Statistical Yearbook does not report the cropped area, and (3) the 1909 Statistical Yearbook is after the period of study. However, I use the district-level data in U.S. House of Representatives Papers (1877) on the area and yield of each crop in Table E.1a, due to its finer geographic detail.

[9] Data are at the province level in 1844 from Rivlin (1961, pp. 258-260), and at the district level in 1877 from the 1877 Statistical Yearbook (Vol. 2, pp. 54-77, 84-99, 118-166). Because the 1844 data are at the province level, I impute the outcomes at the district level in 1844, by multiplying the province's outcome in 1844 with the district's share in the province's outcome in 1877.

of cereals did not change differentially across high- and low-cotton districts (columns 4 and 7). Historical evidence suggests that this cotton expansion was achieved via irreversible investments in perennial irrigation (Owen 1969).[10] These irreversible capital investments in perennial irrigation and slavery may explain why cotton production remained high through 1877 (Figure 1) despite the decline in cotton prices after the end of the U.S. Civil War.

Furthermore, panel (E.1b) shows that the growth of slavery in 1848–1868 is positively correlated with cotton area and yield, but not with the area and yield of cereals or the area of other crops. The growth of wage employment in 1848–1868 is negatively correlated with cotton area and yield, but the correlation is not statistically significant. This suggests that the positive impact of the cotton boom on slavery, and its negative impact on wage employment of local labor, that were documented in Tables 2 and 3, can be traced to cotton expansion.

Do these results imply that slavery and state coercion were necessary conditions for cotton cultivation? Answering this question in the Egyptian context requires comparing the cotton yield per slave and local worker across non-large estate areas and large estates, which we do not observe. Yet, various observations suggest that coercion was *not* necessary for cotton production. First, cotton was produced outside large estates by a majority of local workers, both before and during the cotton boom. In 1848 (resp. 1868), non-large estates areas in cotton-growing districts had 1,659,977 (2,139,335) non-slaves versus 4,897 (81,043) slaves, whereas large estates had 142,668 (152,381) non-slaves and 2,449 (2,290) slaves. Second, cotton production increased after the abolition (Figure 2), although state coercion did not rise (see Section), suggesting that this cotton expansion was mostly due to local workers outside large estates. Third, the 1877 Statistical Yearbook provides area-level data on crop yield per unit of land. It thus allows me to compare cotton productivity in large estates and non-large estate areas, although it does not distinguish between slave and free labor. Appendix Table E.2 shows that state coercion was not correlated with higher cotton productivity: Large estates did not have higher cotton productivity than non-large estate areas in 1877, although they were more productive in wheat, barley, and beans.

[10] Province-level data ($N = 5$) on the number of waterwheels per *feddan* and the number of irrigation steam engines per *feddan* in each of 1844 (Rivlin 1961, p. 281) and the 1873 Statistical Yearbook (pp. 270-272) show a positive correlation between the district's cotton productivity and these irrigation investments between 1844 and 1877. However, I fail to detect any correlation between the district's cotton productivity and the growth of summer canals between 1844 and 1873.

Table E.1: The Cotton Boom and Cotton Expansion

(a) Δ Area and Yield of Cotton, Cereals, and Other Crops between 1844 and 1877

	Δ Area (1,000 *feddans*)					Δ Yield (1,000 *qintars* or *ardabbs*)	
	(1) Total Real	(2) Total Cropped	(3) Cotton	(4) Cereals	(5) Other Crops	(6) Cotton	(7) Cereals
Cotton	22.81***	5.30	3.28***	5.53	-3.52*	10.71**	-3.73
	(3.80)	(3.75)	(1.09)	(3.29)	(1.77)	(3.94)	(11.66)
Cereals	-10.07**	-17.85**	0.72	-13.61**	-4.96	5.33	-33.06**
	(4.65)	(7.44)	(1.73)	(5.03)	(4.59)	(4.95)	(13.91)
Obs (Districts)	24	21	21	21	21	21	21
R^2	0.45	0.14	0.34	0.18	0.08	0.41	0.06
Mean Dep. Var. in 1844	80.05	100.24	4.06	57.42	38.77	4.60	166.29

(b) Slavery and the Agricultural Employment of Local Labor

	N. Slaves in HH		=1 if Slaveowning Free-headed HH		=1 if HH Head Agr. Laborer	
	(1)	(2)	(3)	(4)	(5)	(6)
Cotton area (1,000 *feddans*)	0.03***		0.01***		-0.01	
	(0.00)		(0.00)		(0.01)	
Cereals area (1,000 *feddans*)	-0.00		0.00		-0.00*	
	(0.00)		(0.00)		(0.00)	
Other crops area (1,000 *feddans*)	0.00		-0.00		0.01	
	(0.00)		(0.00)		(0.00)	
Cotton yield (1,000 *qintars*)		0.01***		0.00***		-0.00
		(0.00)		(0.00)		(0.00)
Cereals yield (1,000 *ardabbs*)		0.00		0.00		-0.00
		(0.00)		(0.00)		(0.00)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Census Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Clusters (Districts)	21	21	21	21	21	21
Obs (Households)	4758	4758	4746	4746	3275	3275
R^2	0.09	0.09	0.14	0.14	0.21	0.20

Notes: White-Huber robust standard errors are in parentheses in panel (a). Standard errors clustered at the district level are in parentheses in panel (b). $*p < 0.10, **p < 0.05, ***p < 0.01$. In panel (a), area is measured in 1,000 *feddans*, yield is measured in 1,000 *qintars* for cotton, and in 1,000 *ardabbs* for wheat, barley, and beans. In panel (b), controls are defined as in Table 2. Regressions in panel (b) are weighted by the inverse sampling probability of households. 1 *feddan* = 6,368 square meters, 1 *qintar* = 44.5 kilograms , 1 *ardabb* = 135 kilograms.
Sources: The 1848 and 1868 population census samples. Data on crop area and yield are from Rivlin (1961, pp. 258-260) for 1844, and the 1877 Statistical Yearbook, Vol. 2, pp. 54-77, 84-99, 118-166, for 1877.

Table E.2: Difference in Cotton and Cereals Productivity Across Large Estates and Non-Large Estate Areas in 1877

	(1) Large Estate 1	(2) Large Estate 2
Cotton × Large Estate	-0.076	-0.369
	(0.215)	(0.236)
Wheat × Large Estate	0.566	0.617**
	(0.429)	(0.297)
Beans × Large Estate	0.552**	1.074***
	(0.252)	(0.301)
Barley × Large Estate	0.218	0.767**
	(0.315)	(0.364)
District FE?	Yes	Yes
Crop FE?	Yes	Yes
Clusters (Districts)	67	61
Obs (Area-Crop)	366	329
R^2	0.514	0.579
Mean Dep. Var.	0.839	0.755

Notes: The dependent variable is the standardized revenue per *feddan* for each crop at the area level. White-Huber heteroskedasticity robust standard errors are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$. Large estate 1 is a dummy variable that equals 1 if an area is designated as a large estate or if an area includes both a large estate and a non-large estate, and equals 0 if an area does not include any large estates. Large estate 2 is a dummy variable that equals 1 if an area is designated as a large estate, and equals 0 if an area does not include any large estates. It thus treats as missing areas that include both a large estate and a non-large estate.
Sources: Area-level data on the area and revenue of each crop are from the 1877 Statistical Yearbook.

F The Egyptian Parliamentary Minutes in 1866–1882

The analysis of the political attitudes of rural middle class MPs is based on two datasets. The first is the Egyptian parliamentary minutes in 1866–1882 that were published in Arabic by the National Archives of Egypt (Dar al-Watha'iq al-Qawmiya (2001–2017). *The Minutes of Majlis Shura al-Nuwwab*. Cairo: Dar al-Watha'iq al-Qawmiya. 4 volumes). It provides the detailed minutes, including all speeches, during each parliamentary meeting. Hartnett and Saleh (2022) OCR digitized these minutes. The second dataset covers the universe of MPs during this period, and was constructed by Mohamed Saleh based on Subhi, M. K. (1947). *History of Parliamentary Life in Egypt since the Era of Muhammad Ali Pasha*, Vol. 6 and Addendum. Cairo: Dar al-Kutub. It provides information on MP's name, title, occupation, constituency (according to the 1882 population census administrative division), among other variables. I identify rural middle class MPs during this period as those whose occupational title is village headman. The information on MP's constituency enables me to assign the cotton and cereals productivity in 1877 to each MP. For the purpose of this article, I restrict the analysis to rural middle class MPs in 1866–1882, with non-missing constituency and occupation information.

We classified texts in the parliamentary minutes into:

1. General statement: This is a descriptive statement that is not attributed to any person, or an organizational speech made by the House Speaker.

2. MP debate: This is a speech made by an MP.

3. Report: This is a report written by a parliamentary committee, or a group of MPs.

4. Ministerial statement: This is a report, correspondence, or a speech made by a government official, such as a minister, or a director of government agency.

5. Opinion / Decision: This is a resolution made by MPs at the end of a debate. It is not attributed to any particular person.

6. Petition: This is a petition presented by an MP, a group of MPs, or citizens, regarding a personal demand.

I restrict the analysis to texts identified as "MP debate," which are the vast majority of texts. I identified the MP speaker for each text, and linked this dataset with the MPs' dataset, in order to obtain information on MP's characteristics. To identify labor-related speeches, I first manually inferred the "Matter of Discussion" for each group of MP speeches, from the content of the speeches, and from the matter of discussion that is often explicitly mentioned in the source minutes. I then classified matters of discussion into the following "General Topics:" (1) Parliament Organization, (2) Agriculture and Irrigation, (3) Land (Incl. Land Tax), (4) Labor, (5) Budget and Finances (Excl. Land Tax), (6) Judiciary and Bureaucracy, (7) Other,

and (8) Cabinet-Parliament Relationship. In this article, I restrict the analysis to General Topic (4): Labor. I then further classified labor-related matters of discussion into two sub-categories: "State Coercion" and "Other." I list below the labor-related matters of discussion and their sub-category:

1. State Coercion This includes the following matters of discussion sorted by parliamentary cycle:

- 1866–1869: Abolishing Corvée Requirement during Cotton Sowing and Harvest Seasons
- 1870–1873: Corvée Labor Needed for the Beheira Canal Drilling
- 1870–1873: Number of Corvée Workers Required for Public Works
- 1876–1879: Controlling Labor Migration to Large Estates
- 1876–1879: Exempting Landless Farmers from Corvée Labor
- 1876–1879: Monetary Payment for Exemption from Corvée Labor
- 1881–1882: Allocation of Corvée Labor Needed for Cleanup of Beheira Canal across Provinces
- 1881–1882: Draft Law on Corvée Labor
- 1881–1882: Inquiry about Monetary Payments by Populations of Jifliks, Izbas, Ib'adiyas, and Kufur, to Avoid Corvée Labor
- 1881–1882: Reducing Corvée Requirement for Villages, Ib'adiyas, and Jifliks
- 1881–1882: Replacing Corvée Workers with Machinery for Cleaning Irrigation Canals
- 1881–1882: Using Corvée Labor for Certain Canals in Upper Egypt that Are Used Exclusively for Summer Irrigation by Khedival Land

2. Other Labor-Related This includes the following matters of discussion sorted by parliamentary cycle:

- 1866–1869: Enumeration of Bedouins and Populations of Hamlets
- 1866–1869: Making Exemption from Military Conscription by Cash Payment to Government and Removing Social Class Eligibility Conditions
- 1866–1869: Population Census
- 1870–1873: Revising Population Census

- 1881–1882: Draft Decree on Abolition of Privileges of Arab Tribes
- 1881–1882: Draft Decree on Preservation of Exemption for Arab Tribes from Military Conscription and of Monetary Payment to Avoid Corvée Requirement
- 1881–1882: Stricter Identification of Arab Tribes for Census Operation and Military Conscription Privileges

I classify the political attitude in each MP's speech into (1) "Progressive", if the speech calls for an improvement over the status quo, (2) "Conservative," if the speech calls for maintaining the status quo, and (3) "Procedural," if the speech makes a procedural, as opposed to substantive, remark.

In this article, I focus on the following outcomes measured at the MP and parliamentary cycle level: (1) MP's total length of speeches (total word count) that fall under State Coercion, regardless of the attitude, (2) MP's total length of speeches that are "Anti" State Coercion, defined as "Progressive" speeches under State Coercion, (3) MP's total length of speeches that are "Pro or Neutral" towards State Coercion, defined as "Conservative" and "Procedural" speeches under State Coercion, (4) MP's total length of speeches that fall under Other Labor-Related, regardless of the attitude.

Table F.1: The Political Effects of the Abolition of Slavery

	Total Word Count of MP Speeches by Attitude			
	(1) Total Labor	(2) Anti-State Coercion	(3) Pro or Neutral w.r.t. State Coercion	(4) Other Labor
Cotton × Post-1877	4.70	6.26*	1.32	-2.87
	(5.56)	(3.41)	(1.88)	(2.22)
Controls	Yes	Yes	Yes	Yes
District FEs	Yes	Yes	Yes	Yes
Parl. Cycle FEs	Yes	Yes	Yes	Yes
Clusters (Districts)	57	57	57	57
Obs (MP-Cycle)	294	294	294	294
R^2	0.22	0.20	0.23	0.32
Baseline Av. Dep. Var.	30.52	4.06	7.10	19.36

Notes: The analysis is at the MP and parliamentary cycle level. The sample is restricted to rural middle class MPs. The dependent variable is the MP's total word count of parliamentary speeches that are labor-related, classified into (1) all labor, (2) anti-state coercion, (3) pro- or neutral with respect to state coercion, and (4) other labor. Controls are the cereals suitability interacted with the post-1877 dummy variable. There are four parliamentary cycles in 1866–69, 1870–73, 1876–79, and 1881–82. The latter two cycles are coded as post 1877. Standard errors clustered at the district level are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.
Sources: The Egyptian parliamentary minutes in 1866–1882.

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