Journal of the European Economic Association, 2019, 17(6):1753–1796.

BANKING AND INDUSTRIALIZATION

Stephan Heblich
University of Bristol

Alex Trew
University of St Andrews

Yifei Jiang
Mar.27th.2020

Contents

Introduction

- Banks and industrial employment

the causal connection from bank access to the rate and nature of growth in industrial employment in **England and Wales** over the period **1817–1881**, the Industrial Revolution

- Sectoral and geographical data

employment in banking within 10,528 **parishes across England and Wales**

- Mechanism

banks accelerated the pace of industrialization by causing **structural transformation** to occur across and within sectors, and across and within cities

Instrumental Variables

- 1817 access to banking is not exogenous

- Instrumental variables: the location of **Elizabethan (16th century) post towns**

post towns were located along six straight routes out of London for strategic and military communication purposes

horses were changed at posts in towns

- Post towns turned out to be the preferred locations for **country banks**

first stage: Elizabethan post town locations were 33% more likely to host bankers in 1817

- post roads did not have a direct effect on growth

canals and railways carried much of the heavy industrial traffic that mattered for growth

Main Results

- **bank significantly accelerated industrialization**

a one standard deviation change in the log of finance employment causes annualized growth to be 0.93 percentage points higher

- the effect is most pronounced in intermediate industrial sectors
- the impact on industrial employment growth is limited to less than 10 km
- industry becomes concentrated in proximity to the bank while the share of agricultural employment decreases

Brief History of Country Banks

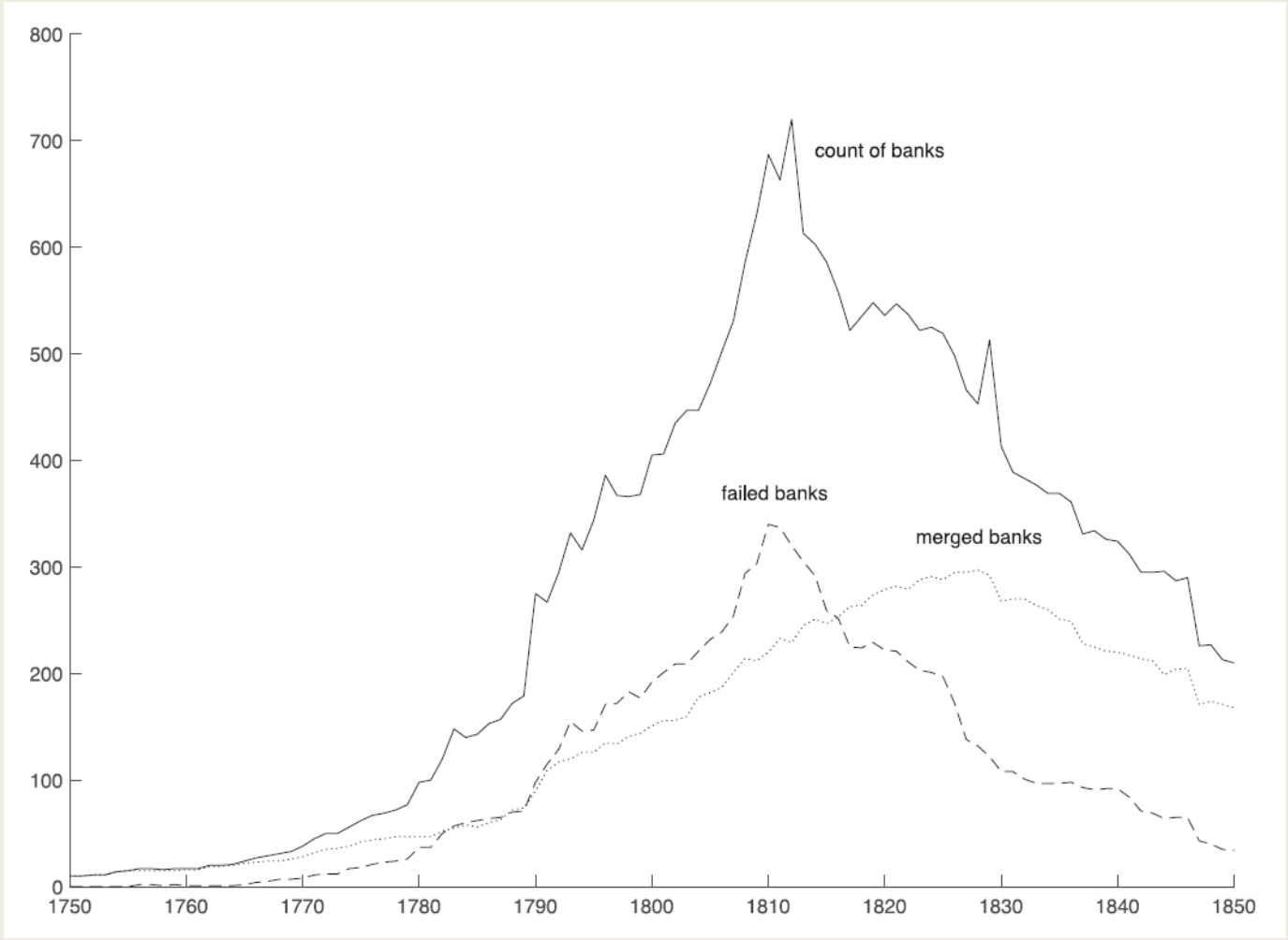
- At the turn of the 19th century, there were three principal forms of formal banking institution in England and Wales:

The Bank of England, **private banks in London**, and privately owned banks outside of London—the "**country banks**"

- Country banks were limited to six partners and they were predominantly unit banks that served their local area.
- a typical country bank employed around 4.8 workers
- The total number of country banks increased from only dozens in 1750 to around 700 in the 1820s

Brief History of Country Banks

- agricultural concerns, financial services to emerging textile and mining areas
- early country banks were often extremely long-lived and run by generations of the same family
- country banks held license to issue notes



Estimation Strategy

- Baseline Estimation

access to banks in parish p in 1817

$$\gamma^{M_p} = \alpha + \beta_1 FIN_p + X'_p \beta_2 + \mu_d + \varepsilon_p$$

$lnEmpl_{P,1881} - lnEmpl_{P,1817}$

Growth of manufacturing labor

fixed effect at the level of the registration district, d

Estimation Strategy

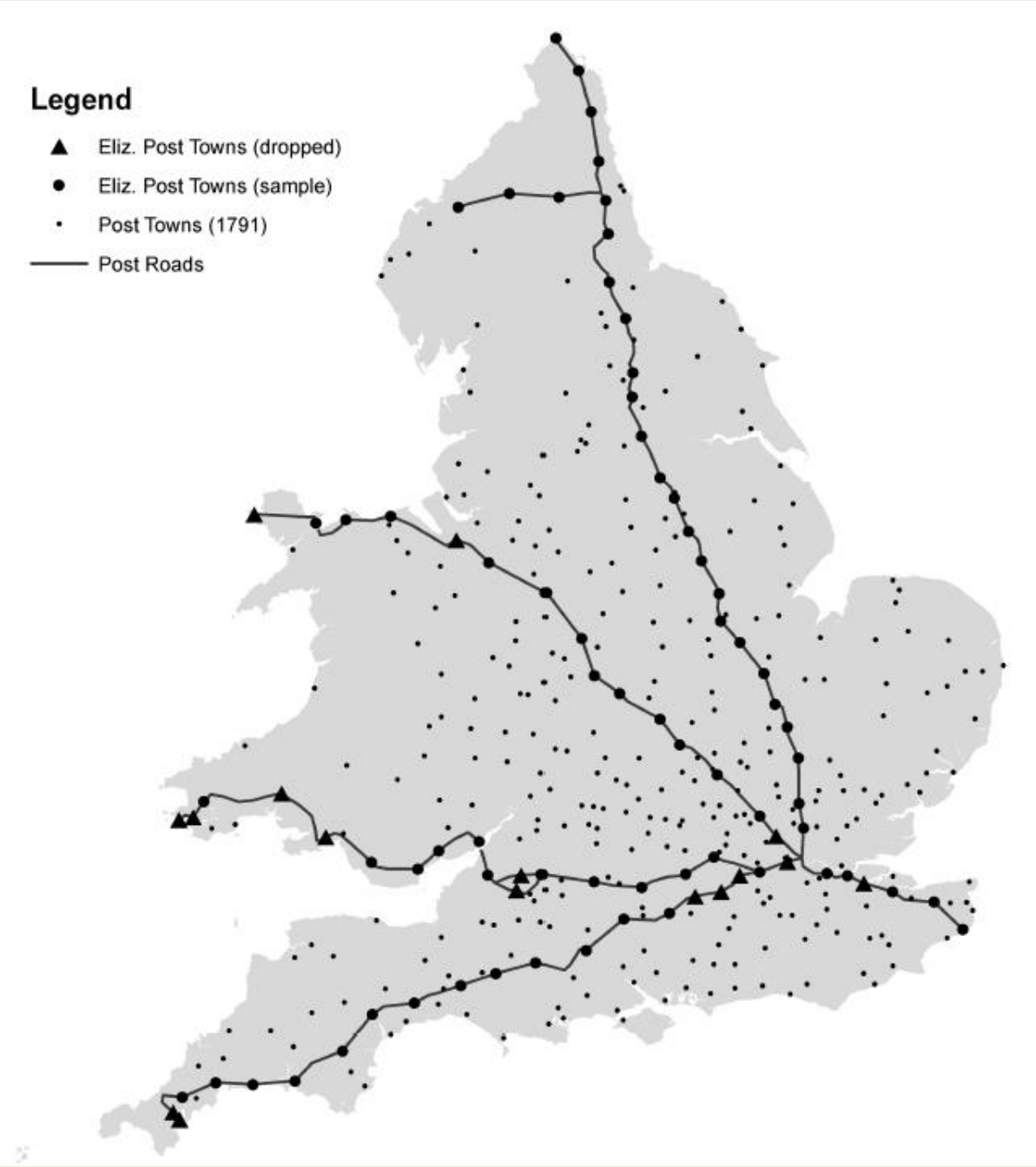
- Instrumental variable

$$\gamma_p^M = \beta_0 + \beta_1 \widehat{\mathrm{FIN}}_{p,1817} + X'_{p,1817}\beta_2 + \mu_d + \varepsilon_p$$

$$FIN_{p,1817} = \alpha_0 + \alpha_1 z_p + X'_{p,1817}\alpha_2 + \mu_d + \nu_p.$$

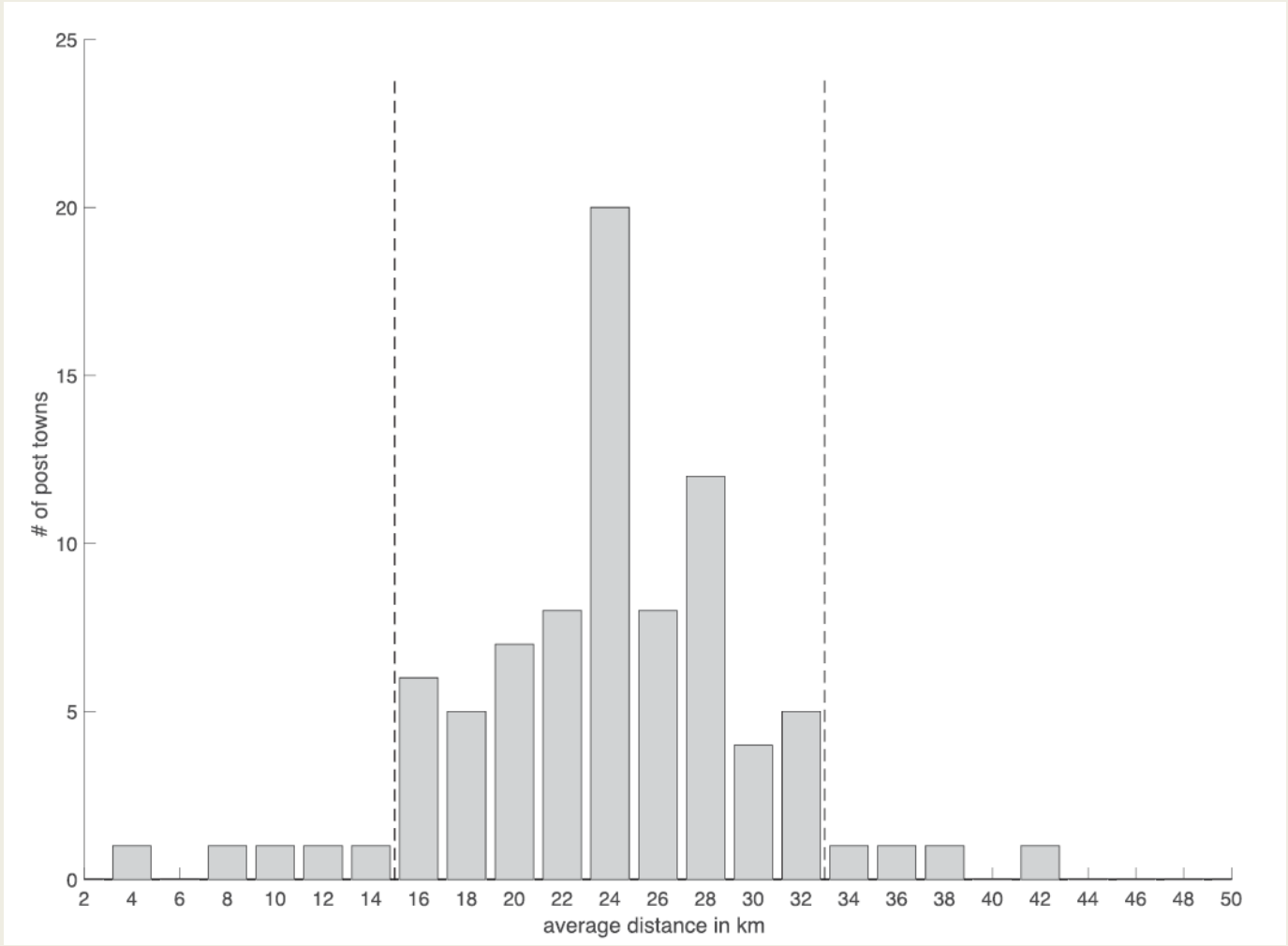
Elizabethan Post Towns as Instrument

- Post towns were attractive locations for banks because they **facilitated communication** with London and because the **roads were guarded and thus safe** to transport gold and money.
- the post network connect 85 post towns to London; six “Great Roads”
- 69 post towns in sample



Elizabethan Post Towns as Instrument

- the roads were laid principally for State purposes
- the post towns along those roads were spaced according to the need to change horses
- the location of post towns was not determined by economic considerations



Elizabethan Post Towns as Instrument

- all post town coefficients are insignificant and close to zero
- This supports our argument that the instrument is quasi-randomly assigned.

TABLE 2. Balance of pre-existing exogenous differences.

		Coefficient	SE
1	Domesday village within 5 km (dummy)	0.004	(0.022)
2	Log distance to nearest 1670 waterway	−0.159	(0.165)
3	Log distance to nearest sea port	−0.006	(0.011)
4	Distance to the coast	−0.025	(0.063)
5	Average Slope (in percent)	−0.020	(0.198)
6	Coal access (dummy)	0.017	(0.025)
7	Yield oats (in t/ha)	0.014	(0.009)
8	Yield rye (in t/ha)	0.016	(0.012)
9	Yield wheat (in t/ha)	0.014	(0.011)
10	Yield barley (in t/ha)	0.014	(0.011)
11	Soil Categories	0.041	(0.052)

Notes: Each row shows the result of a separate regression of the outcome named in the left column on the Elizabethan post town status. All regressions are conditional on registration district fixed effects, an indicator for territorial changes and a control for the differences in the size of parishes. Standard errors are clustered on the registration district level in all specifications.

Descriptive Statistics

	Mean	Std.Dev.
Secondary Sector Employment in c.1817	87.67	372.92
Secondary Sector Employment in c.1881	218.93	1288.68
c.1817–1881 Growth in Secondary Sector Employment	0.16	0.90
Finance Employment in c.1817 across all parishes	0.53	8.42
Finance Employment in c.1817 in parishes with finance employment	4.64	24.46
Number of Country banks across all parishes	0.05	0.35
Number of Country banks in parishes with a country bank	1.48	1.19
Area (in km^2)	14.05	17.65
Share Female c.1817 (in %)	48.99	4.04
Employment c.1817	219.84	541.71
Employment share in the primary sector (less mining) in c.1817 (in %)	60.26	21.26
Employment share in mining in c.1817 (in %)	1.34	6.32
Employment share in the secondary sector in c.1817 (in %)	26.66	15.81
Employment share in goods transportation in c.1817 (in %)	1.97	4.92
Herfindahl index for secondary employment concentration	0.36	0.17
Canal access in c.1817 (in %)	21.93	41.38
Road access in c.1820 (in %)	65.18	47.64
Elizabethan post town (in %)	0.65	8.02
Parishes where the area has changed (in %)	32.84	46.96
Parishes per registration district	26.28	14.14
Parishes per county	294.76	170.48

Basic Results

Dep. Variable: Δ log secondary employment	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS	(6) 2SLS	(7) OLS
Log finance employment c.1817	1.168***	1.427***	1.310***	1.269**	1.266**	1.266**	0.206***
	(0.443)	(0.494)	(0.487)	(0.516)	(0.518)	(0.517)	(0.023)
Log number secondary employment c.1817	−0.224***	−0.263***	−0.329***	−0.582***	−0.560***	−0.559***	−0.598***
	(0.078)	(0.072)	(0.058)	(0.039)	(0.040)	(0.040)	(0.036)
Log area (in km^2)	0.170***	0.232***	0.280***	0.262***	0.264***	0.264***	0.214***
	(0.048)	(0.041)	(0.032)	(0.038)	(0.038)	(0.038)	(0.024)
Share primary employment c.1817			−0.803***	−1.297***	−1.175***	−1.174***	−1.918***
			(0.271)	(0.395)	(0.398)	(0.398)	(0.204)
Share mining employment c.1817			0.849***	0.237	0.343	0.346	−0.193
			(0.269)	(0.367)	(0.371)	(0.370)	(0.228)
Coal access			0.104*	0.100*	0.101*	0.102*	0.124**
			(0.060)	(0.059)	(0.059)	(0.059)	(0.060)
Herfindahl Index c.1817			0.061	0.174	0.173	0.172	0.463***
			(0.186)	(0.212)	(0.213)	(0.213)	(0.177)
Log employment c.1817				0.307***	0.284***	0.284***	0.466***
				(0.106)	(0.106)	(0.106)	(0.047)
Female population share c.1817				−0.113	−0.118	−0.118	−0.100
				(0.205)	(0.205)	(0.205)	(0.181)
Road access c.1817 (dummy)					0.020	0.020	0.014
					(0.017)	(0.017)	(0.014)
Waterway access c.1817 (dummy)					0.003	0.003	0.003
					(0.022)	(0.022)	(0.019)
Share good transportation c.1817					0.647**	0.646**	0.673***
					(0.281)	(0.281)	(0.260)
Latitude						−0.033	0.036
						(0.235)	(0.234)
Longitude						0.065	0.058
						(0.144)	(0.138)
First Stage:							
Posttown Dummy	0.378***	0.356***	0.333***	0.326***	0.325***	0.325***	
	(0.099)	(0.099)	(0.099)	(0.097)	(0.097)	(0.097)	
Observations	10,504	10,504	10,504	10,504	10,504	10,504	10,504
Number of Registration District FE		570	570	570	570	570	570
Control for Territorial Changes	Y	Y	Y	Y	Y	Y	Y
Anderson-Rubin *F*-test (*p*-value)	0.0017	0.0003	0.0006	0.0030	0.0032	0.0032	
Kleibergen-Paap Wald rk F statistic	14.70	13.07	11.34	11.23	11.19	11.19	

Basic Results

Dep. Variable: Δ log secondary employment	(6) 2SLS	(7) OLS
Log finance employment c.1817	1.266**	0.206***
	(0.517)	(0.023)
Log number secondary employment c.1817	−0.559***	−0.598***
	(0.040)	(0.036)
Log area (in km^2)	0.264***	0.214***
	(0.038)	(0.024)
Share primary employment c.1817	−1.174***	−1.918***
	(0.398)	(0.204)
Share mining employment c.1817	0.346	−0.193
	(0.370)	(0.228)
Coal access	0.102*	0.124**
	(0.059)	(0.060)
Herfindahl Index c.1817	0.172	0.463***
	(0.213)	(0.177)
Log employment c.1817	0.284***	0.466***
	(0.106)	(0.047)
Female population share c.1817	−0.118	−0.100
	(0.205)	(0.181)
Road access c.1817 (dummy)	0.020	0.014
	(0.017)	(0.014)
Waterway access c.1817 (dummy)	0.003	0.003
	(0.022)	(0.019)
Share good transportation c.1817	0.646**	0.673***
	(0.281)	(0.260)
Latitude	−0.033	0.036
	(0.235)	(0.234)
Longitude	0.065	0.058
	(0.144)	(0.138)
First Stage:		
Posttown Dummy	0.325***	
	(0.097)	
Observations	10,504	10,504
Number of Registration District FE	570	570
Control for Territorial Changes	Y	Y
Anderson-Rubin *F*-test (*p*-value)	0.0032	
Kleibergen-Paap Wald rk F statistic	11.19	

- a 10% increase in 1817 finance increases industrial employment by 12.66% till 1881

Basic Results

Dep. Variable: Δ log secondary employment	(6) 2SLS	(7) OLS
Log finance employment c.1817	1.266**	0.206***
	(0.517)	(0.023)
Log number secondary employment c.1817	−0.559***	−0.598***
	(0.040)	(0.036)
Log area (in km^2)	0.264***	0.214***
	(0.038)	(0.024)
Share primary employment c.1817	−1.174***	−1.918***
	(0.398)	(0.204)
Share mining employment c.1817	0.346	−0.193
	(0.370)	(0.228)
Coal access	0.102*	0.124**
	(0.059)	(0.060)
Herfindahl Index c.1817	0.172	0.463***
	(0.213)	(0.177)
Log employment c.1817	0.284***	0.466***
	(0.106)	(0.047)
Female population share c.1817	−0.118	−0.100
	(0.205)	(0.181)
Road access c.1817 (dummy)	0.020	0.014
	(0.017)	(0.014)
Waterway access c.1817 (dummy)	0.003	0.003
	(0.022)	(0.019)
Share good transportation c.1817	0.646**	0.673***
	(0.281)	(0.260)
Latitude	−0.033	0.036
	(0.235)	(0.234)
Longitude	0.065	0.058
	(0.144)	(0.138)
First Stage:		
Posttown Dummy	0.325***	
	(0.097)	
Observations	10,504	10,504
Number of Registration District FE	570	570
Control for Territorial Changes	Y	Y
Anderson-Rubin *F*-test (*p*-value)	0.0032	
Kleibergen-Paap Wald rk F statistic	11.19	

- Downward bias
- measurement error

individual occupations are in random cases incorrectly recorded

- negative selection effect

new entrants based their location decision on incorrect assumptions about the future prosperity of a region

Robustness Tests

- Instrument validity

Post town parishes are **smaller** than the average, have a **lower share** or primary sector and mining employment, and we see that they faced **more territorial changes**

	Coefficient	SE
Panel A: Balancing Test		
Log number secondary employment c.1817	0.049	(0.063)
Log area (in km^2)	−0.435**	(0.184)
Share primary employment c.1817	−0.041***	(0.014)
Share mining employment c.1817	−0.018***	(0.004)
Access to Coal	0.006	(0.026)
Herfindahl index c.1817	0.026	(0.020)
Log employment c.1817	0.032	(0.084)
Female population share c.1817	0.001	(0.005)
Road access c.1817 (dummy)	−0.082	(0.064)
Waterway access c.1817 (dummy)	0.010	(0.050)
Share good transportation c.1817	0.004	(0.006)
Latitude	0.001	(0.005)
Longitude	−0.000	(0.007)
Territorial Changes (dummy)	0.164***	(0.054)

Robustness Tests

- Changes in the Finance Measure

a dataset of 1,700 country banks in 600 towns

Dep. Variable: Δ log secondary employment	(1) OLS Country Banks	(2) IV Country Banks	(3) Finance Employment ≤15 employees	(4) Finance Employment ≥2 employees
Log finance employment c.1817	0.393***	1.712**	1.117**	1.241***
	(0.051)	(0.731)	(0.436)	(0.477)
Log number secondary employment c.1817	−0.606***	−0.609***	−0.564***	−0.549***
	(0.037)	(0.036)	(0.038)	(0.040)
Log area (in km^2)	0.213***	0.244***	0.253***	0.274***
	(0.025)	(0.035)	(0.035)	(0.038)
Share primary employment c.1817	−2.002***	−1.799***	−1.324***	−1.171***
	(0.207)	(0.223)	(0.323)	(0.378)
Share mining employment c.1817	−0.252	−0.097	0.151	0.314
	(0.228)	(0.253)	(0.302)	(0.360)
First Stage:				
Posttown Dummy		0.241***	0.406***	0.399***
		(0.060)	(0.105)	(0.113)
Observations	10,504	10,504	10,006	9,795
Number of Registration District FE	570	570	548	546
Control for Territorial Changes	Y	Y	Y	Y
Anderson-Rubin *F*-test (*p*-value)		0.0032	0.0027	0.0016
Kleibergen-Paap Wald rk *F* statistic		15.85	14.81	12.47

Robustness Tests

- Additional robustness tests

Specification		(1) Coefficient	(2) SE
Baseline		1.266**	(0.517)
1	Including London	1.281**	(0.514)
2	Excluding North	1.480**	(0.634)
3	10 km buffer around post roads	1.434**	(0.577)
4	Only road parishes	0.882**	(0.431)
5	Distance between post towns within p25–p75	1.148**	(0.475)
6	Log employment within 15 km	1.289**	(0.518)
7	Log distance to the next port	1.276**	(0.515)
8	Market access, post town	1.263**	(0.519)
9	Market access, market town	1.287**	(0.539)
10	Soil Suitability	1.267**	(0.518)
11	Land Cover	1.327**	(0.531)
12	Wealth, measures as share of servants	1.255**	(0.520)
13	Education, measured as share of teachers	1.197**	(0.477)
14	Innovation, measured as patents	1.381**	(0.617)
15	Bartik control for predicted employment growth	1.122**	(0.520)
16	Cluster SE by county	1.266**	(0.631)
17	Cluster SE by 100 km grid	1.266**	(0.546)
18	Cluster SE by 50 km grid	1.266**	(0.510)

Banking and Structural Transformation

Dependent variable: Change in employment share of:	(1) Agriculture OLS	(2) Agriculture 2SLS	(3) Mining OLS	(4) Mining 2SLS	(5) Industry OLS	(6) Industry 2SLS	(7) Transportation OLS	(8) Transportation 2SLS
Log finance employment c.1817	−0.022***	−0.135**	−0.004*	−0.049**	0.021***	0.199**	0.002	−0.031
	(0.004)	(0.059)	(0.002)	(0.024)	(0.003)	(0.087)	(0.001)	(0.046)
Log number secondary employment c.1817	−0.009	−0.013**	0.003*	0.002	−0.095***	−0.089***	−0.005	−0.006
	(0.006)	(0.006)	(0.002)	(0.002)	(0.008)	(0.009)	(0.003)	(0.004)
Log area (in km^2)	0.034***	0.029***	0.002*	0.000	−0.010***	−0.002	−0.003	−0.004
	(0.003)	(0.005)	(0.001)	(0.002)	(0.004)	(0.006)	(0.002)	(0.004)
Share primary employment c.1817	−0.591***	−0.670***	0.034***	0.002	0.080*	0.204***	0.004	−0.019
	(0.032)	(0.054)	(0.011)	(0.019)	(0.047)	(0.070)	(0.031)	(0.019)
Share mining employment c.1817	−0.125***	−0.182***	−0.402***	−0.425***	0.219***	0.310***	−0.034**	−0.051***
	(0.040)	(0.052)	(0.040)	(0.041)	(0.032)	(0.057)	(0.015)	(0.020)
Coal access	−0.045***	−0.043***	0.043***	0.044***	0.010*	0.007	0.004	0.004
	(0.010)	(0.009)	(0.007)	(0.007)	(0.006)	(0.007)	(0.003)	(0.003)
Herfindahl Index c.1817	0.043*	0.074**	−0.026**	−0.013	−0.050	−0.098**	−0.047*	−0.038**
	(0.024)	(0.030)	(0.010)	(0.012)	(0.047)	(0.046)	(0.028)	(0.019)
Log employment c.1817	−0.048***	−0.028**	−0.001	0.007	0.113***	0.082***	0.009	0.014
	(0.007)	(0.013)	(0.002)	(0.005)	(0.012)	(0.021)	(0.006)	(0.013)
Female population share c.1817	0.003	0.005	−0.009	−0.009	−0.002	−0.005	−0.018	−0.018
	(0.035)	(0.037)	(0.015)	(0.016)	(0.027)	(0.031)	(0.013)	(0.013)
Road access c.1817 (dummy)	−0.002	−0.002	−0.000	−0.001	0.000	0.001	0.001	0.001
	(0.003)	(0.003)	(0.001)	(0.001)	(0.002)	(0.003)	(0.001)	(0.001)
Waterway access c.1817 (dummy)	−0.003	−0.002	−0.000	−0.000	−0.001	−0.001	0.002	0.002
	(0.004)	(0.004)	(0.002)	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)
Share good transportation c.1817	−0.227***	−0.225***	−0.021	−0.019	0.301***	0.296***	−0.703***	−0.703***
	(0.047)	(0.046)	(0.014)	(0.015)	(0.038)	(0.041)	(0.025)	(0.025)
Latitude	0.031	0.039	0.019	0.022	0.016	0.004	−0.033**	−0.031**
	(0.045)	(0.046)	(0.024)	(0.025)	(0.027)	(0.029)	(0.013)	(0.014)
Longitude	−0.014	−0.015	−0.014	−0.014	−0.007	−0.006	0.005	0.005
	(0.025)	(0.025)	(0.015)	(0.015)	(0.017)	(0.019)	(0.008)	(0.008)

- Results with shares

Banking and Structural Transformation

Dep. Variable: Δ log employment in:	(1) Final goods	(2) Intermediate goods	(3) TFP High	(4) TFP Low	(5) Capital intensity High	(6) Capital intensity Low
Log finance employment c.1817	1.254**	1.529**	1.420***	1.274**	1.544***	1.201**
	(0.513)	(0.605)	(0.505)	(0.538)	(0.593)	(0.505)
Log number secondary employment c.1817	−0.659***	−0.869***	−0.778***	−0.694***	−0.837***	−0.676***
	(0.025)	(0.053)	(0.030)	(0.022)	(0.045)	(0.023)
Log area (in km^2)	0.259***	0.269***	0.208***	0.272***	0.257***	0.263***
	(0.037)	(0.047)	(0.037)	(0.040)	(0.045)	(0.037)
Share primary employment c.1817	−1.485***	−1.294***	−1.200***	−1.511***	−1.359***	−1.517***
	(0.378)	(0.295)	(0.291)	(0.377)	(0.297)	(0.364)
Share mining employment c.1817	−0.368	0.992***	−0.188	0.094	0.770**	−0.353
	(0.358)	(0.383)	(0.293)	(0.358)	(0.368)	(0.342)
Coal access	0.009	0.260***	0.067	0.093	0.212***	0.023
	(0.055)	(0.070)	(0.050)	(0.063)	(0.067)	(0.056)
Herfindahl Index c.1817	0.369*	0.135	−0.039	0.337	0.199	0.324
	(0.212)	(0.211)	(0.207)	(0.215)	(0.207)	(0.213)
Log employment c.1817	0.383***	0.360***	0.337***	0.399***	0.356***	0.400***
	(0.095)	(0.061)	(0.062)	(0.093)	(0.062)	(0.092)
Female population share c.1817	0.020	−0.012	−0.206	0.056	−0.089	0.033
	(0.198)	(0.209)	(0.211)	(0.200)	(0.202)	(0.198)
Road access c.1817 (dummy)	0.025	0.029	0.011	0.026	0.019	0.029*
	(0.017)	(0.019)	(0.018)	(0.018)	(0.018)	(0.017)
Waterway access c.1817 (dummy)	0.002	−0.011	−0.009	−0.002	−0.009	0.001
	(0.021)	(0.021)	(0.022)	(0.020)	(0.021)	(0.021)
Share good transportation c.1817	0.364	0.436	0.499*	0.319	0.721**	0.259
	(0.261)	(0.323)	(0.280)	(0.275)	(0.307)	(0.258)
Latitude	−0.185	0.013	−0.043	−0.166	−0.046	−0.167
	(0.214)	(0.245)	(0.208)	(0.228)	(0.240)	(0.221)
Longitude	0.114	−0.008	0.212*	−0.001	−0.074	0.153
	(0.126)	(0.155)	(0.124)	(0.138)	(0.150)	(0.127)
First Stage:						
Posttown Dummy	0.324***	0.294***	0.315***	0.324***	0.303***	0.325***
	(0.097)	(0.096)	(0.096)	(0.097)	(0.096)	(0.097)
Observations	10,504	10,504	10,504	10,504	10,504	10,504
Number of Registration District FE	570	570	570	570	570	570
Control for Territorial Changes	Y	Y	Y	Y	Y	Y
Anderson-Rubin *F*-test (*p*-value)	0.0038	0.0012	0.0005	0.0050	0.0008	0.0059
Kleibergen-Paap Wald rk *F* statistic	11.15	9.463	10.79	11.14	9.999	11.17

- Results on Industrial Sector Transformation

Banking and Structural Transformation

Dep. Variable: Δ log employment in:	(1) Final goods	(2) Intermediate goods	(3) TFP High	(4) TFP Low	(5) Capital intensity High	(6) Capital intensity Low
Log finance employment c.1817	1.254**	1.529**	1.420***	1.274**	1.544***	1.201**
	(0.513)	(0.605)	(0.505)	(0.538)	(0.593)	(0.505)
Log number secondary employment c.1817	−0.659***	−0.869***	−0.778***	−0.694***	−0.837***	−0.676***
	(0.025)	(0.053)	(0.030)	(0.022)	(0.045)	(0.023)
Log area (in km^2)	0.259***	0.269***	0.208***	0.272***	0.257***	0.263***
	(0.037)	(0.047)	(0.037)	(0.040)	(0.045)	(0.037)
Share primary employment c.1817	−1.485***	−1.294***	−1.200***	−1.511***	−1.359***	−1.517***
	(0.378)	(0.295)	(0.291)	(0.377)	(0.297)	(0.364)
Share mining employment c.1817	−0.368	0.992***	−0.188	0.094	0.770**	−0.353
	(0.358)	(0.383)	(0.293)	(0.358)	(0.368)	(0.342)
First Stage:						
Posttown Dummy	0.324***	0.294***	0.315***	0.324***	0.303***	0.325***
	(0.097)	(0.096)	(0.096)	(0.097)	(0.096)	(0.097)
Observations	10,504	10,504	10,504	10,504	10,504	10,504
Number of Registration District FE	570	570	570	570	570	570
Control for Territorial Changes	Y	Y	Y	Y	Y	Y
Anderson-Rubin *F*-test (*p*-value)	0.0038	0.0012	0.0005	0.0050	0.0008	0.0059
Kleibergen-Paap Wald rk *F* statistic	11.15	9.463	10.79	11.14	9.999	11.17

- Results on Industrial Sector Transformation

- a larger impact of finance in intermediate industries like metal manufacture, gas, and fuel industries
- sectors with the highest TFP appear to benefit the most from access to finance
- most capital intensive, such as transport vehicles and iron and steel manufacture, appear to be benefit more from access to finance

Conclusion

- use new data that maps banking employment across parishes in 19th century England
- go beyond London and focus on small country banks outside of London as source of finance
- a one standard deviation change in the log of finance employment causes annualized growth in locations outside the London area to be 0.74 percentage points higher over the period 1817–1881
- the core of cities becoming relatively more industrial
- employment shifting away from mature industries toward newer and more specialized intermediate industrial sectors