

The Success of the Embedded State in England

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Motivation: State Capacity and Bureaucracy

We think of today's **successful states** as 'Weberian':

- Meritocratic recruitment of a salaried, professional workforce. (Evans and Rauch, 1999; Acemoglu et al., 2015; Dell et al., 2018; Khan et al., 2016, 2019; Besley et al., 2022)

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It is also a **recent phenomenon**:

- During the early Industrial Revolution, England spent around 10% of national income while successfully providing public goods (O'Brien, 2011); Prussia 5%. (Spoerer, 2010)
- 'Modern' levels of tax/GDP and civil service reforms *followed* economic growth. (Heldring, 2025)

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How did states provide extensive local public goods on so little revenue?

This Project: The Embedded State

We characterize the provision of public goods in the context of historical England.

Part I: Account for the size and composition of the state.

- Many individuals worked for the state without getting paid.
- Across all levels of government in 1835, **about 75% of positions were not salaried.**
- Crucially, these were **bureaucrats** with recognized positions and defined responsibilities.

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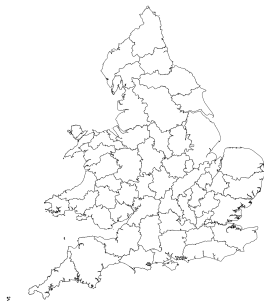
- Non-monetary **incentives** substitute for wages, attracting positively **selected** individuals.

→ Capacity can be organized through a socially **embedded state**.

State Size & Composition

Levels of Government in England

Below the central state, **three tiers** of local government:



A. County

Militia

(e.g. Lieutenant)



B. Borough

Courts, policing, infrastructure

(e.g. Magistrate, Constable)



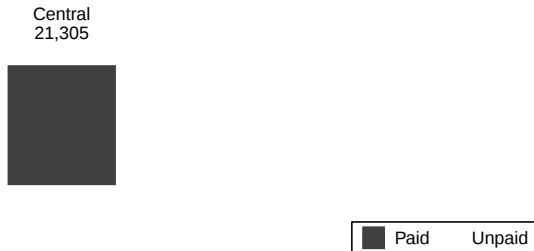
C. Parish

Poor relief

(e.g. Overseer of the poor)

The English State, 1835

Consulting a wide variety of sources, we measure the size and composition of the state in England.

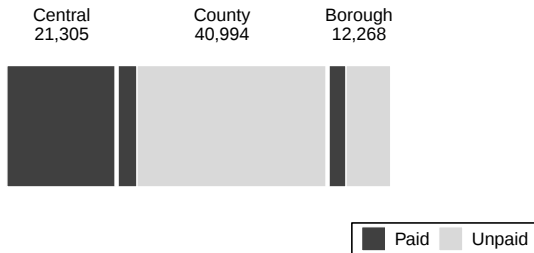


(Selected) sources: Brewer (1989); Cook and Keith (1975); Hanlon (2024); Goldie (2001); Landau (1984).

[▸ Table](#)[▸ 1700](#)[▸ Central State](#)[▸ Local vs Central](#)[▸ Totals](#)[▸ Turnover](#)[▸ Org Chart](#)[▸ Civil Service](#)

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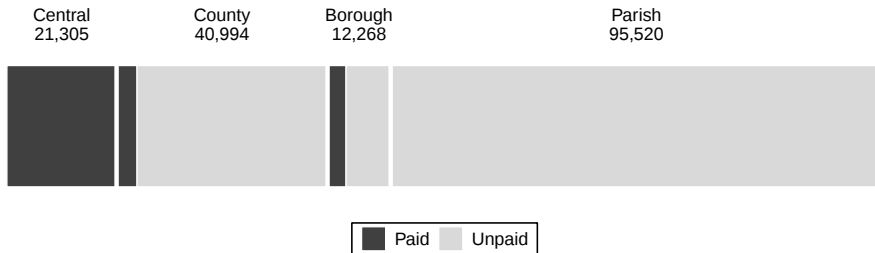
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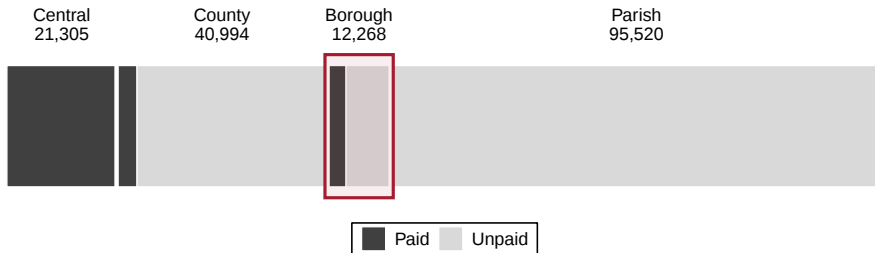


→ The state was **overwhelmingly local**, and local government **overwhelmingly unpaid**.

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Unpaid Performance: Boroughs

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 - Comprehensive study of the government of 258 English boroughs.
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- We extract information on **5,710 local state positions**:
 - Identify **paid status** of each position.
 - Link positions to assignment to **seven core tasks**:
 - Governing, judicial, infrastructure, financial, clerical, prison, police
 - Borough **performance** across those public goods.

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 - Pay (fees, in-kind payment, salary) and performance (outside-report measures).
 - Corruption, individual officers (MPs), boroughs, . . .

▶ The Report

▶ East Loos

▶ Task Performance

▶ Governance

▶ Borough

▶ Wokingham

▶ Positions & Tasks

▶ Borough Data

▶ Incentive Data

▶ Selection Data

▶ Corruption Data

Measurement: East Looe

Positions

Recorder.

The Recorder is appointed by the mayor and capital burgesses, being the common council of the borough, or the major part of them. He holds his office so long as he shall well behave himself. He is required by the charter to be an able, honest and fit person. He is a justice of the peace for the borough, and may appoint a deputy who is also a justice of the peace. It has not been usual to appoint a barrister to the office, which has, in fact, been generally bestowed upon the patron of the borough, or some one nominated by him. The following is a list of the recorders, since the year 1754:

- 1754: The Rev. J. Buller.
- 1760: The Rev. W. Buller.
- 1797: Dr. W. Buller, bishop of Exeter.
- 1797: William Graves, esq.
- 1802: Edward Buller, esq.
- 1802: John Buller, esq.
- 1807: Edward Buller, esq.

The present recorder is John Drummond Buller Elphinstone, esq. He resides in Hertfordshire, and was formerly an officer in the guards. His age is between 40 and 50. He formerly resided near the borough, and was then in the habit of sitting as a magistrate.

The deputy recorder is Thomas Hope, esq. He resides at Trenant Park, near Looe, and in Duchess-street, London. He was appointed on the 29th September 1830. He has not since his appointment performed the usual duties of his office.

Town Clerk.

The Town Clerk or Common Clerk of the courts within the borough is nominated by the recorder; he is clerk of the peace, clerk to the magistrates, and solicitor to the corporation; he receives a salary of 15*l.* per annum, and the other emoluments of his office do not exceed 20*l.* The present town clerk is Mr. William Tickell, solicitor, aged 44; he has filled the office for seven or eight years.

Serjeants at Mace.

There are two Serjeants-at-Mace for the execution of precepts, mandates, attachments, and other process within the borough; they also attend upon the mayor; they receive a stipend of 2*l.* 6*s.* 6*d.* each, in lieu of cloaks and hats.

Constables.

There are nine Constables; they are appointed by the court leet.

Quay Master.

The Quay Master is appointed by the corporation; he collects the quay dues and ballast dues, and has the general superintendence of the quays; he also collects the market dues; he receives a salary of 10*l.* per annum.

Performance

The Gaol consists of an outer room, with three small cells, two of which are boarded; Gaol. they are ill ventilated, and unfit for the reception of prisoners for any length of time. There is no yard. The gaol is seldom used except in cases of imprisonment for examination, or until fines imposed by the magistrates are paid.

The constables are said to form a sufficient Police in point of numbers, but they are stated to be remiss in the performance of their duty for fear of offending the inhabitants. The town is frequently disorderly, and subject to petty depredations. It is neither watched nor lighted. The streets, until recently, have been repaired at the expense of the corporation. There are five licensed public-houses and one beer shop within the borough.

Performance and Unpaid Status Across Positions

$$Y_{bp} = a u_{bp} + \delta_b + e_{bp}$$

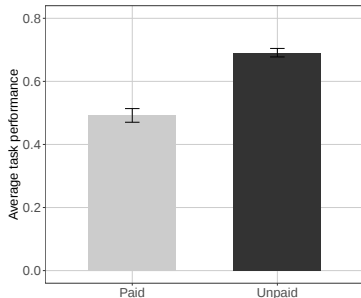
Y_{bp} : average task performance; u_{bp} : unpaid position; δ_b : borough fixed effects. (Within-borough)

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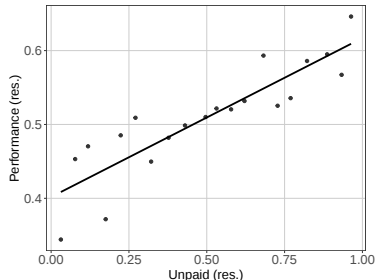
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A. Means



B. Scatter Plot



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Teams

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- Derive and estimate model of team production.
 - Empirical Strategy
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 - Estimated Returns
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 - Results
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- AKM decomposition: Unpaid officers are higher ability.
 - Ability
- Show robustness to model assumptions:
 - Within-team spillovers
 - Standard Errors
 - Team Level
 - Single-Position
 - Across-team spillovers
 - Outperformance
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Identification

- Are easier positions more likely to be unpaid?
- Show robustness to comparable control groups.
 - Potential Endogeneity
 - Fixed effects [▸ Link](#)
 - Controls [▸ Link](#) [▸ Report Length](#)
 - Matching, outliers [▸ Link](#) [▸ Leave-Out](#)
- Isolate exogenous component of unpaid status (and task assignment) from borough financial and constitutional histories
 - Account for task assignment [▸ Charter](#)
- Alternative ways of measuring LHS and RHS
 - Cutoffs
 - Definitions
 - Extensive Margin
 - Market Wages
 - Intensive
 - Ext. (Excl. Gov)
 - Ext. (Borough)

Mechanisms

Incentives, Selection, and Implementation Costs

Why might unpaid positions **outperform** paid ones? Two channels:

- **Incentives:** prestige, autonomy, and stepping-stone career concerns.
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- **Selection:** unpaid positions attract positively selected individuals.

But the embedded state has **costs**:

- Limited ability to motivate effort on **onerous/low-prestige** tasks. ▶ Tasks
- Greater scope for **patronage** and **corruption** when oversight is weak. ▶ Corruption
 - (But: corruption is not a *precondition* for performance.) ▶ Driven by Corruption?

Incentives: Social Prestige

▸ Prestige Measure

▸ The 'Gentleman'



Unpaid Status, Incentives and Selection

[▶ AKM Ability](#)[▶ Performance Decomposition](#)

$$Y_{bp} = \beta u_{bp} + \delta_b + \epsilon_{bp}$$

Y_{bp} : incentive or selection measure of position bp ; u_{bp} : unpaid position; δ_b : borough fixed effects.

Unpaid Status, Incentives and Selection

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Incentives

	External		Internal	
	Prestige (1)	Career Concerns (2)	Flexibility (3)	Autonomy (4)
Unpaid	0.18*** (0.02)	0.30*** (0.03)	0.10*** (0.03)	0.22*** (0.03)
Observations	5,710	5,710	5,710	5,710
R^2	0.21	0.23	0.24	0.28
Boroughs	258	258	258	258
Positions	5,710	5,710	5,710	5,710
Outcome Mean	0.48	0.54	0.31	0.52
Cluster	Borough	Borough	Borough	Borough
Borough fixed effects	✓	✓	✓	✓

Selection

	Title		Elite	
	Gentry (1)	Clergy (2)	Political (3)	Economic (4)
Unpaid	0.20*** (0.05)	0.02*** (0.006)	0.38*** (0.05)	0.24*** (0.03)
Observations	1,785	1,785	1,785	5,710
R^2	0.47	0.19	0.44	0.22
Boroughs	163	163	163	258
Positions	1,785	1,785	1,785	5,710
Outcome Mean	0.45	0.01	0.75	0.26
Cluster	Borough	Borough	Borough	Borough
Borough fixed effects	✓	✓	✓	✓

The Embedded State

A Characterization of the Embedded State

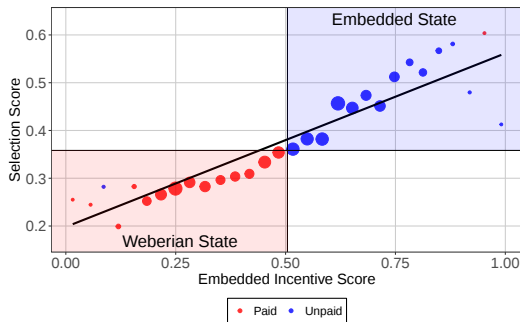
Within boroughs, characterize the **system** of incentives and selection:

$$Selection\ score_{bp} = \beta\ Incentive\ score_{bp} + \delta_b + \epsilon_{bp}$$

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Conclusion

Conclusion: England

Embedded local government in England was **widespread** and **effective**:

- Boroughs relied heavily on unpaid officers, who provided core local public goods.
- Unpaid offices are robustly associated with **better** administrative performance.

This worked:

- Officeholding paid in **status**, autonomy, and public career opportunities.
- These returns attracted selected individuals and gave them incentives to perform.

... within limits:

- Low-prestige or onerous tasks harder to motivate without pay.
- Patronage and corruption as side effects.

Conclusion: Broader Implications for State Capacity

We often proxy state capacity with **tax revenue** and the size of the **salaried bureaucracy**.

- By that measure, many (historical) states look small.
- But states can draw on **nonmarket institutions**, with distributional and dynamic consequences.

→ ways of organizing state capacity reflect constraints, public-goods demands, and social structure.

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→ ways of organizing state capacity reflect constraints, public-goods demands, and social structure.

Social embedding **extends the reach** of the state, but cedes **control**. This may explain

- differences in performance between resource-constrained states.
- civil service reform *following*, rather than preceding, economic growth.

The Size of the State (Table)

► Size of the State

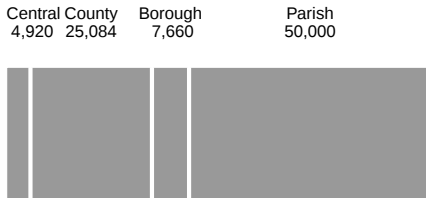
	Total size		% Male pop.		% Unpaid
	1700	1835	1700	1835	1835
Central	4,920	21,305	0.33	0.63	0.00
Parish	50,000	95,520	3.33	2.81	100.00
County	25,084	40,994	1.65	1.20	90.30
Borough	7,660	12,268	0.51	0.36	70.69
Borough (our sample)	—	5,095	—	0.15	85.42
Total (Local)	82,744	148,782	5.52	4.38	94.91

Note: Position totals and shares of the adult male population, 1700 and 1835; the final column is the share of local positions unpaid in 1835. Central state from Brewer (1989) and Cook and Keith (1975); local from Goldie (2001), Landau (1984), and this project.

The Size of the State, 1700

► Size of the State

In 1700 the state was smaller, but already **overwhelmingly local**.



Position totals by tier in 1700, on the same scale as the 1835 figure. A paid/unpaid split is not observed for 1700.

The Central State

► Size of the State

“England’s central administration did little in 1833 besides administer justice, collect taxes, and defend the realm. It rarely touched the life of the ordinary individual and showed little concern for his well-being.”

Roberts (1960, p. 13)

Comparing the Local and Central States

► Size of the State

We reconstruct the size of the local state in 1835 and 1700:

- County (Parliamentary records): sheriffs, militia officers, justices of the peace.
- Borough/town (Project data and census): mayors, aldermen, judges, clerks, ...
- Parish (Secondary sources): Churchwardens, overseers of the poor, constables.

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We then compare this to the central — paid — state:

- Consult gov. records and secondary sources to measure central state size.
- However, local government turned over much more frequently.
- We account for this using data on life-tenure and dismissal rates.

Comparing the Local and Central States

► Size of the State

Category	Total		% male pop.	
	1700	1835	1700	1835
Central	4,920	21,305	0.33	0.63
Parish	50,000	95,520	3.33	2.81
County	25,084	40,994	1.65	1.20
Borough	28,000	46,479	1.87	1.37
Borough (our sample)	—	8,275	—	0.24
Total (Local)	103,084	182,993	6.85	5.38

Note: Data on central government officials from Brewer (1989) for 1700 and from Cook and Keith (1975) for 1835. Local government totals from Goldie (2001), Landau (1984), and original data from this project. Percent male population = total/adult male population in year t . Total Local sums rows 2-4.

Comparing the Local and Central States (Turnover)

► Size of the State

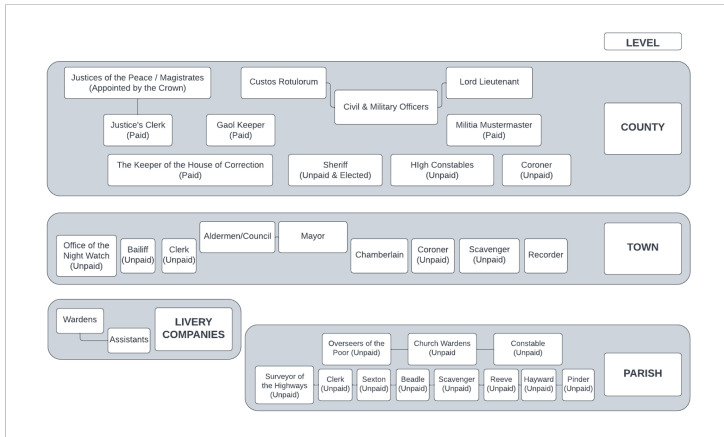
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County	25,084	40,994	8.68	4.77
Borough	28,000	46,479	11.39	8.35
Borough (our sample)	—	8,275	—	1.59
Total (Local)	103,084	182,993	43.40	32.82

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The Unpaid Organizational Chart

► Size of the State

Strikingly, many of these positions **tended not to be paid**:

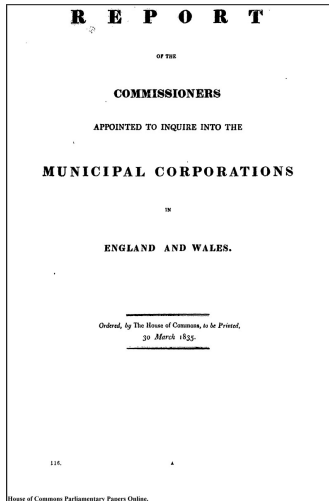


British Civil Service Employment, 1797–1914

► Size of the State

Year	Civil Service employment	Per thousand population	Notes
1797	16,267	1.83	
1815	24,598	2.42	
1821	27,000	2.25	
1832	21,305	1.53	
1841	16,750	1.05	(excludes clerks, messengers, etc.)
1851	39,147	2.18	
1861	31,943	1.59	
1871	53,874	2.37	(includes some workmen)
1881	50,859	1.96	(excludes telegraph, telephone services)
1891	79,241	2.73	
1901	116,413	3.58	(includes General Post Office)
1914	280,000	6.86	(includes Scotland)

Sources: Table 3.1 from Hanlon (2024); original data from Cook and Keith (1975, p. 150) and Mitchell & Deane (1962). England and Wales, except 1914 (includes Scotland).



► **East Looe**

The Recorder is appointed by the mayor and capital burgesses, being the common council of the borough, or the major part of them. He holds his office for long as he shall so well behave himself. He is required by the charter to be an able, honest and fit person. He is a justice of the peace for the borough, and may appoint a deputy who is also a justice of the peace. It has not been usual to appoint a barrister to the office, which has, in fact, been generally bestowed upon the patron of the borough, or some one connected by kin. The following is a list of the residents, since the year 1744:

1794: The Rev. J. Butler.
1799: The Rev. W. Butler.
1797: Dr. W. Butler, bishop of Exeter.
1799: William Gurnea, esq.
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The present recorder is John Unwinson Butler Elphinstone, esq. He resides in Eton-Row, and was formerly an officer in the guards. His age is between 40 and 45. He formerly resided near the borough, and was then in the habit of sitting as a magistrate.

The deputy recorder is Thomas Hays, esq. He resides at Tresselt Park, near Looe, and in Duchess-street, London. He was appointed on the 29th September 1854. He has not been called upon to sit as a magistrate.

Town Clerk. The Town Clerk or Coroner Clerk of the courts within the borough is assisted by the deputy. He is clerk of the peace, clerk to the magistrates, and solicitor to the corporation; he receives a salary of £50 per annum, and the other emoluments of his office do not exceed 20s. The present town clerk is Mr. William Tickell, solicitor, aged 44; he has filled the office for seven or eight years.

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Constables. There are nine Constables; they are appointed by the court leet.

Quay Master. The Quay Master is appointed by the corporation; he collects the quay dues and ballast dues, and has the general superintendence of the quays; he also collects the market dues; he receives a salary of 101. per annum.

These are general sums of the yamse held twice in every year, viz. within 30 days after *Remission of the Debtors*, and within 30 days after *Michaelmas-tide*. By the charter of James I, the justices *Poss.* are to be held before the mayor, the recorder, and "the justices," or any two of them. Their jurisdiction extends over the whole borough, and to the trial of all offences not punishable with the loss of life. The lists of juries are made out by the town clerk, from the inhabitant householders, and the juries are empanelled by the *sheriffs-at-arms*. The grand jury is selected from the more respectable class of inhabitants. For the last seven or eight years it has not been necessary to swear a petty jury, there having been no criminals tried. Petty juries are generally sworn for the trial of the petty jury at *Bodley* (a small village distant from East Loze) for trial at the assizes. The assize makes no charge for supplying the prisoners. There is no table of costs.

A Court Leet is held half-yearly at the same time as the sessions of the peace. The Court Leet grand jury of the leet is selected in the same manner as the grand jury of the sessions; there are generally 18 sworn, but the practice is not invariable; they present misdemeanors.

There is no stated time for the Petty Sessions, which are held as occasion requires. There is a Court of the Peace within the borough, but it is never held.

Petty Sessions
Court of Pie
Pouder.

Rents of houses, meadows and conventional rents	lands, chiefly high,	£.	s.	d.
Quay dues	-	81	23	6
Market dues	-	14	0	3
Ballast dues	-	14	2	-
The waste	-	-	15	-
The town soil	-	17	-	-
	£.	100	16	0

Repairing quays and streets	-	-	-	-	-	25	-	-
Timber for quays	-	-	-	-	-	0	-	-
Town clerk	-	-	-	-	-	16	-	-
Town sergeants	-	-	-	-	-	4	13	-
Collector of dues	-	-	-	-	-	10	-	-

The report provides detailed excerpts on officer lists and duties, judicial arrangements, corporate accounts, and expenditure, enabling systematic measurement.

Measurement: Task Performance

► Data

Task	Binary Outcome	Mean	Range	Cutoff
Governance	Overall performance assessment	0.69	[0, 7]	6
Justice	More than two courts held	0.70	[0, 9]	3
Infrastructure	Borough lit or paved	0.68	[0, 2]	1
Clerical Work	Borough reported more than three documents	0.62	[0, 137]	4
Financial Management	Borough keeps accounts	0.89	[0, 1]	1
Prison	Gaol reported adequate	0.30	[0, 3]	2
Law Enforcement	Police reported adequate	0.39	[0, 3]	2

Performance Metric: Governance ► Data

- We record overall performance of the borough on eight categories of assessment: deficiency, degradation, incompetency, misconduct, mismanagement, neglect, mayor, non-residence.
- Neglect:
 - Bristol: 'Harbour choked, consequent damage and losses ... 'non-appointment' of police'
 - Cambridge: 'Decay of bridges and quay .. inefficiency'
 - Tenby: 'the town is not lighted... nuisances and obstructions are suffered to exist to an extent extremely inconvenient'
- Misconduct:
 - Evesham: 'Allegation against magistrates'
 - Harwich: 'Councillor absconded with town money'
 - Haverfordwest: 'Incompetency ... Impossibility of convicting a burgess'

The Municipal Borough and Corporation [▶ Data](#)

Municipal boroughs were one key level of local administration:

- Autonomous, run by a 'corporation': A mayor and a council.
- Established by charter, which lays out privileges and duties, mostly to independently administer justice.

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The municipal boroughs undertook a variety of tasks:

- They ran the local judiciary and police. They sometimes collected revenue, provided for markets, roads, lighting, and the prison.
- The corporation and judiciary had clerical tasks associated with them, and the borough needed general 'management'.
- About 75% of officers in our borough sample were unpaid, and were either wealthy or engaged in bureaucratic work part-time.

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- About 75% of officers in our borough sample were unpaid, and were either wealthy or engaged in bureaucratic work part-time.

Most boroughs were very poorly funded:

- '... charters of incorporation of many towns did not allow for the imposition of rates' (Chandler, 2007, p. 22)
- Therefore: 'corporate wealth tended to be derived chiefly from land' (Sweet, 2014, p. 106)
- Land came from historical bequests and could typically not be acquired.

Position	Officer Count
Alderman	1
Capital Burgess	7
Secondary Burgess	12
High Steward	1
Recorder	1
Justice	1
Town Clerk	1
Serjeant-at-Mace	1
Constable	2
Bailiff	2
Ale taster	2
Flesh-taster	1
Leather-sealer	1
Night Watchman	1

*"The whole Property of the corporation consists in the town hall, some small quit-rents, and the tolls; and **that property may literally be said to be less than nothing**, as the inconsiderable income arising from the tolls and quit-rents is more than absorbed by the expenses of the town-hall ... **Neither the present situation nor the future prospects of the town of Wokingham, furnish any reasonable expectation of advantage from a local jurisdiction equivalent to the expense of a corporate establishment.** There is no staple manufacture, nor any considerable amount of trade; and though the population of the three divisions of the parish exceeds 3,000, little more than half of that number are employed in trade or manufactures."*

- Wokingham has neither property nor a tax base, yet has 34 local officers, only one of which receives a salary.

Measurement: Boroughs

► East Looe

Borough	Population	# Positions	Share Unpaid	Most Common Position Title	Most Common Task
Liverpool	165,175	203	0.07	watchman	law enforcement
Leeds	123,393	121	0.31	watchman	law enforcement
Norwich	61,096	176	0.49	common councilman	infrastructure
Bristol	59,034	338	0.38	constable	law enforcement
Nottingham	50,220	119	0.03	constable	law enforcement
...	...	...	...	...	...
Caerwys	500	1	1.00	recorder	judicial
Fordwich	487	8	1.00	borsholder	law enforcement
Kenfig	487	2	0.00	portreeve	clerical
Dunwich	232	31	0.97	common councilman	judicial
Newtown	68	3	1.00	clerk	financial corporation

Measurement: Positions and Tasks ► East Looe

Position	# Boroughs	# Positions	Share Unpaid	Avg Tasks	Most Common Task
Constable	226	1228	0.70	1.13	Law Enforcement
Town clerk	195	204	0.40	3.27	Clerical
Serjeant at mace	187	397	0.23	2.70	Law Enforcement
Recorder	186	224	0.64	1.53	Judicial
Mayor	182	202	0.53	3.20	Judicial
...	...	...	...	...	...
Assessor	2	6	0.17	0.83	Infrastructure
Bridgeman	2	4	1.00	0.50	Financial Corp.
Brother	2	20	1.00	0.30	Governing
Catcher	2	2	0.50	2.00	Clerical
Claviger	2	4	1.00	1.00	Clerical

Empirical Strategy: Triple Difference

► Robustness

Aim: Estimate the performance difference associated with unpaid positions.

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Aim: Estimate the performance difference associated with unpaid positions.

Objects: A **team** is the set of positions assigned to a task in a borough (e.g., the town clerk and the mayor engaged in legal work): 1,332 borough-task teams; median size 2, range 1 to 45. Pay varies at the *position* level; performance is observed at the *team* level.

1. $Y_{bt} = 1$ if team bt performs well, 0 otherwise.
2. $w_{bpt} = 1$ if position bp is assigned to team bt , 0 otherwise.
3. $u_{bp} = 1$ if position bp is unpaid, 0 otherwise.

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Strategy: a **triple difference** (unpaid vs. paid positions, within borough, within task, within position title), which we show boils down to estimating a model of **team production**. (Bonhomme, 2025)

- The model makes the assumptions explicit: no within-team spillovers, no cross-team spillovers, correctly specified returns to team size; we address all three. Remaining issue: **endogeneity** of unpaid status and task assignment.

Empirical Strategy: Estimating Equation ► Robustness

We estimate the following specification:

$$Y_{bt} = a w_{bpt} + b w_{bpt} u_{bp} + X_b \mathbb{1}(\tau = t)' \theta + \delta_b + \delta_t + \delta_p + e_{bpt}, \quad (1)$$

- **b is the coefficient of interest:** the performance difference associated with unpaid positions, within borough, task, and position title.
- The team outcome is written at the position-task level to recover team-production weights, not to duplicate observations: standard errors cluster at the team (bt) level, and team-level and borough-level aggregations give the same answer.

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- $X_b \mathbb{1}(\tau = t)' \theta$ denotes borough latitude and longitude polynomials, X_b , interacted with task indicators $\mathbb{1}(\tau = t)$.
- δ_b , δ_t , and δ_p are borough, task (e.g. keeping the gaol), and position title (e.g. mayor) fixed effects.

Results: Unpaid Positions Perform Better ► Robustness

	Performance		
	(1)	(2)	(3)
Unpaid Position on Team	0.09*** (0.02)	0.11*** (0.02)	0.12*** (0.02)
Observations	39,970	39,970	39,970
R^2	0.33	0.39	0.39
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

$b \approx 0.09\text{--}0.12$ against a mean of 0.61 (about 19 to 20 percent); +8 pp on the extensive margin (task provided at all); continuous (logged) outcomes agree.

► Effect Sizes

► Extensive Margin

Performance:

- Unpaid positions: **+12 pp** in public good provision ($\approx 20\%$ of the mean).
- Turning a median-size team from paid to unpaid: **+34 pp**.

Incentives (relative to the mean):

- Prestige +38%; stepping-stone +56%; flexibility $+\frac{1}{3}$; elected +42%.

Selection (relative to the mean):

- Gentry +45%; clergy $\times 2$; political +38 pp; economic elite 0.24 (mean 0.26).

Team Production Model ► Robustness

Denote the task-specific input of position bp to performance of team bt as α_{bpt} .

$$\alpha_{bpt} = \alpha + \gamma \cdot u_{bp} + \varepsilon_{bpt}, \quad (2)$$

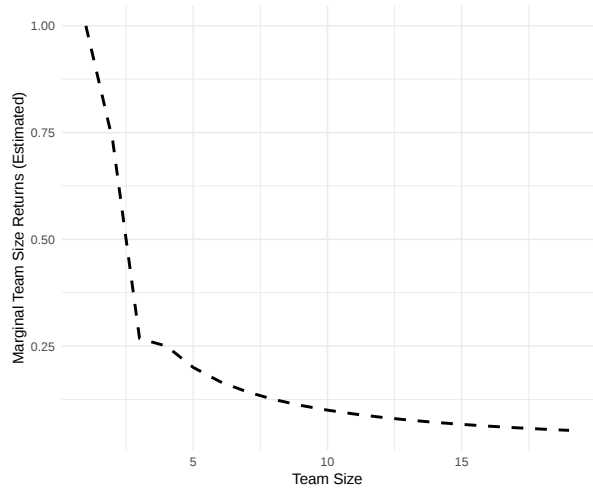
where α is the expected input of a paid position, $\alpha + \gamma$ is the expected input of an unpaid position, and ε_{bpt} is a position-team specific component.

Assumption: Following Abowd et al. (1999); Bonhomme (2025), team output is additively separable in inputs:

$$\begin{aligned} Y_{bt} &= \lambda_{N_{bt}} \sum_{bp \in P_{bt}} (\alpha + \gamma \cdot u_{bp} + \varepsilon_{bpt}) + \varepsilon_{bt} \\ &= \alpha \lambda_{N_{bt}} N_{bt} + \gamma \lambda_{N_{bt}} U_{bt} + \underbrace{\lambda_{N_{bt}} \sum_{bp \in P_{bt}} \varepsilon_{bpt}}_{\varepsilon_{bt}} + \varepsilon_{bt} \end{aligned} \quad (3)$$

- Y_{bt} is the output of team bt ; P_b the total number of positions in borough b .
- $N_{bt} = \sum_{p=1}^{P_b} w_{bpt}$ is the size of team bt , where $w_{bpt} = 1$ if position bp is in team bt .
- $\lambda_{N_{bt}}$ is a team-size-dependent scaling factor (normalized so that $\lambda_1 = 1$).

Estimated Returns to Team Size ▸ Robustness



Team Production Estimation ► Robustness

Rewrite equation (3) to isolate the contribution of a single position bp :

$$Y_{bt} = \alpha \cdot w_{bpt} \lambda_{N_{bt}} N_{bt} + \gamma \cdot w_{bpt} u_{bp} \lambda_{N_{bt}} U_{bt} + \Xi_{bpt} + \epsilon_{bt} \quad (4)$$

This decomposition holds for every position bp with

$$\Xi_{bpt} = \alpha \cdot (1 - w_{bpt}) \lambda_{N_{bt}} N_{bt} + \gamma \cdot (1 - w_{bpt} u_{bp}) \lambda_{N_{bt}} U_{bt}.$$

Performance and Unpaid Status (Model Estimation)

► Robustness

	Performance		
	(1)	(2)	(3)
Unpaid Position on Team	0.18*** (0.04)	0.21*** (0.03)	0.21*** (0.03)
Observations	39,970	39,970	39,970
R^2	0.35	0.41	0.41
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Model Controls	✓	✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Higher Ability of Unpaid Officers

► Robustness

	Officer Ability		
	(1)	(2)	(3)
Unpaid	0.22*** (0.05)	0.21*** (0.05)	0.26*** (0.08)
Observations	433	433	433
R ²	0.05	0.07	0.42
Boroughs	219	219	219
Outcome Mean	0.00	0.00	0.00
Cluster	Borough	Borough	Borough
Controls		✓	✓
Borough fixed effects			✓

Estimated individual inputs (AKM / Bonhomme (2025) team decomposition) regressed on unpaid status.

Restrictive Standard Errors

► Robustness

	Performance						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Unpaid Position on Team	0.12*** (0.02)	0.12*** (0.02)	0.12*** (0.02)	0.12*** (0.02)	0.12*** (0.02)	0.12*** (0.02)	0.12*** (0.02)
Standard-Errors	Borough × Task	Task Scope	Borough	County	50km	100km	200km
Observations	39,970	39,970	39,970	39,970	39,970	39,970	39,970
<i>R</i> ²	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Outcome Mean	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Borough fixed effects	✓	✓	✓	✓	✓	✓	✓
Task fixed effects	✓	✓	✓	✓	✓	✓	✓
Position Title fixed effects	✓	✓	✓	✓	✓	✓	✓

Performance and Unpaid Status (Team Level) ► Robustness

	Performance		
	(1)	(2)	(3)
Unpaid Positions	0.10*** (0.03)	0.12*** (0.03)	0.10*** (0.04)
Observations	1,332	1,332	1,332
R^2	0.38	0.44	0.63
Boroughs	258	258	258
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough	Borough	Borough
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
County $\times$ Task fixed effects			✓

Outperformance

► Robustness

	Relative Performance (Leave-Out Mean)		
	(1)	(2)	(3)
Unpaid Position on Team	0.11*** (0.02)	0.13*** (0.02)	0.14*** (0.02)
Observations	39,970	39,970	39,970
R^2	0.18	0.25	0.25
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.00	0.00	0.00
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

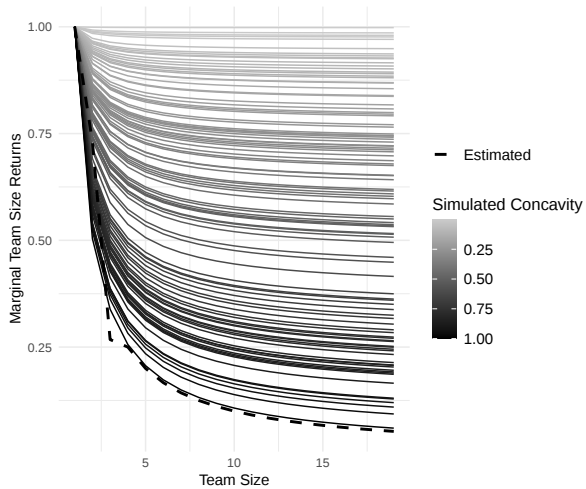
Performance and Unpaid Status (Borough Level)

► Robustness

	Performance (Borough)		
	(1)	(2)	(3)
Unpaid Positions	0.12** (0.05)	0.13** (0.06)	0.10* (0.06)
Observations	258	258	258
R^2	0.39	0.53	0.59
Boroughs	258	258	258
Outcome Mean	3.57	3.57	3.57
Cluster	County	County	County
Controls			✓
County fixed effects		✓	✓

Estimated Returns to Team Size (Simulation)

► Robustness



Endogeneity: Who Gets Paid Is Not Random ► Robustness

We isolate a plausibly exogenous component of pay: could borough b **afford** to salary position bp if it wanted to?

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Borough income is predetermined: mostly rents from assets bequeathed centuries earlier.

- "... their governing charter actually stipulated a limit to the value of the property which they might hold, a limit that was not adjusted to keep pace with inflation." (Sweet, 2014, p. 106)
- Rental income is balanced across borough characteristics. ► Income Balance

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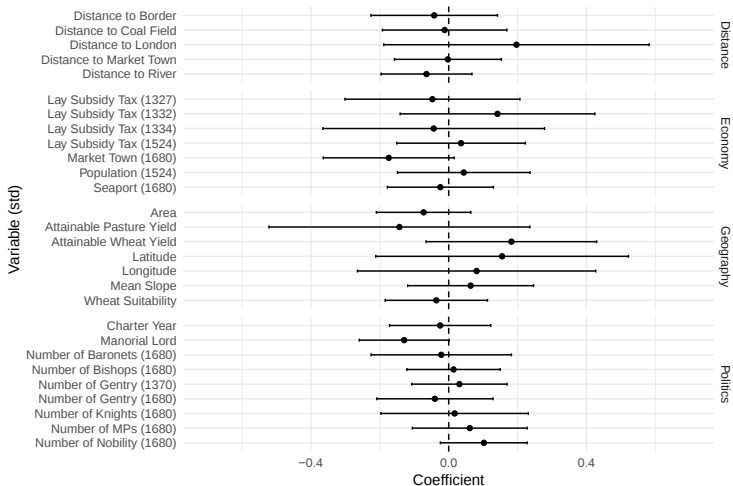
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- Rental income is balanced across borough characteristics. ► Income Balance

Affordability design: did the task-specific market wage (median paid wage: £16) exceed remaining borough income?

- We focus on the 3,487 (of 5,710) **affordability-sensitive** ('complier') positions, whose pay status responds to borough income.
- Identifying comparison: within borough (absorbing overall resources), task, and position title, affordability moves pay and the selection it induces, not independent resources for the same task.
- Task assignment could respond to pay: addressed with charter positions and modal tasks.

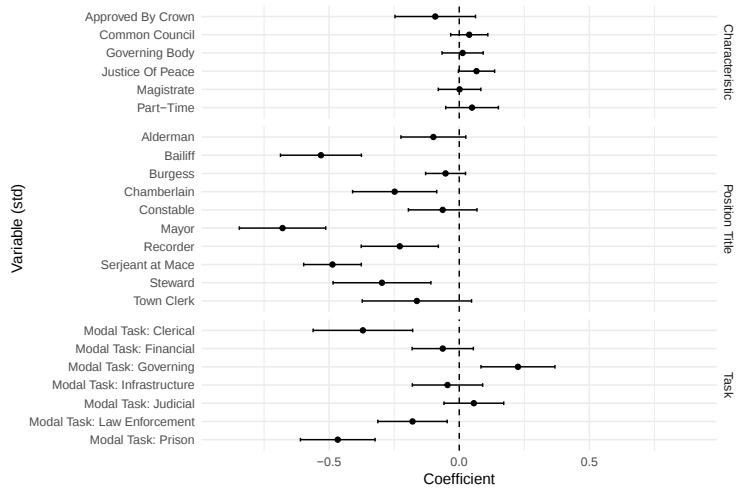
Balance: Rental Income and Borough Characteristics

► Endogeneity



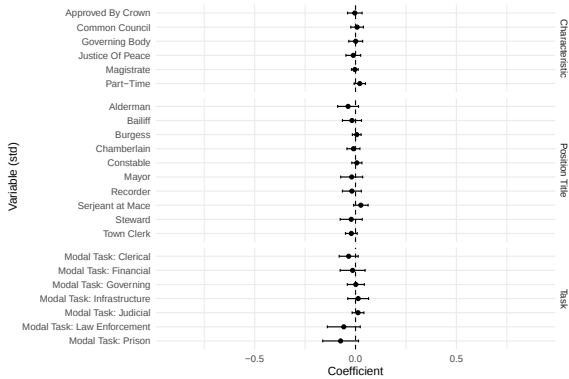
Position Characteristics: Unbalanced for Unpaid

► Robustness



Position Characteristics: Balanced for Unaffordable

► Robustness

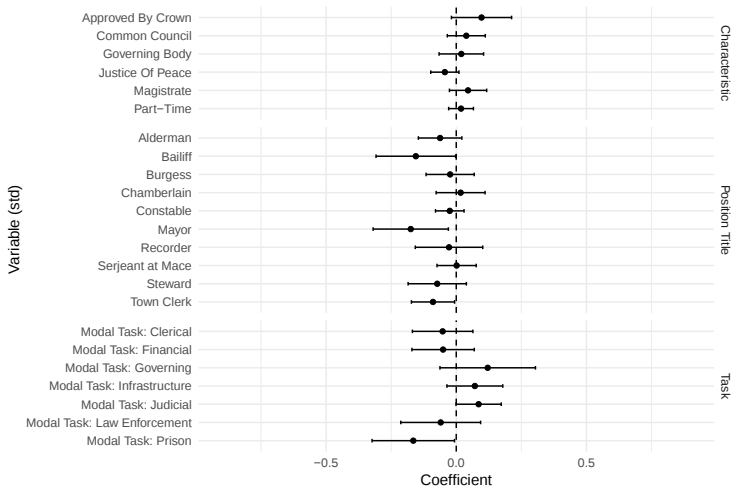


► Full Sample

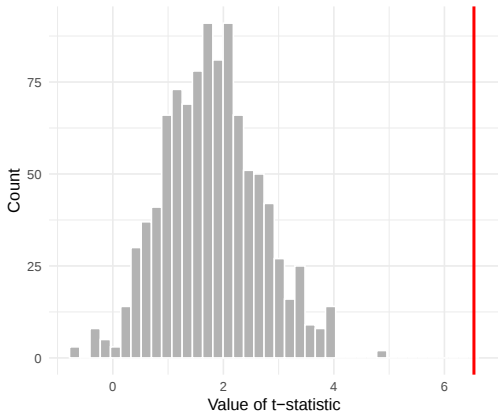
► Affordability Validation

Position Characteristics: Balanced for Unaffordable (Full Sample)

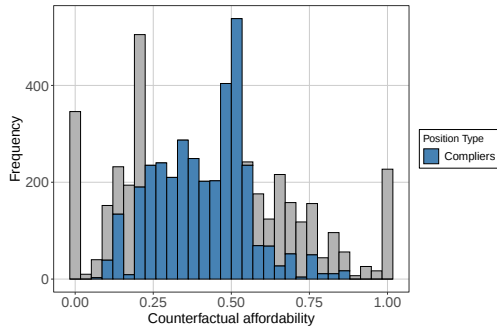
► Balance



Validating the Affordability Design ► Balance



Randomization inference: reassign rental income within counties and recompute affordability.



Affordability across counterfactuals: compliers have intermediate predicted affordability.

Results: Affordability Design ► Robustness

	(1)	Performance (2)	(3)
Unaffordable Position on Team	0.15*** (0.04)	0.15*** (0.04)	0.15*** (0.04)
Observations	24,409	24,409	24,409
R^2	0.33	0.40	0.40
Boroughs	208	208	208
Positions	3,487	3,487	3,487
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

0.15 (s.e. 0.04) against a mean of 0.61, in line with the 0.12 baseline; in-kind-as-pay and market-wage definitions do not change it.

Additional Fixed Effects

► Robustness

	Performance			
	(1)	(2)	(3)	(4)
Unpaid Position on Team	0.06*** (0.02)	0.07*** (0.02)	0.08*** (0.02)	0.06*** (0.02)
Observations	39,970	39,970	39,970	39,970
R^2	0.54	0.54	0.58	0.73
Outcome Mean	0.61	0.61	0.61	0.61
Controls	✓	✓	✓	✓
Cluster	Borough × Task	Borough × Task	Borough × Task	Borough × Task
Borough fixed effects	✓	✓	✓	✓
Task fixed effects	✓	✓		
Position Title fixed effects	✓	✓		
Task Scope fixed effects		✓	✓	✓
Position Title × Task fixed effects			✓	✓
County × Task fixed effects				✓

Controls

► Robustness

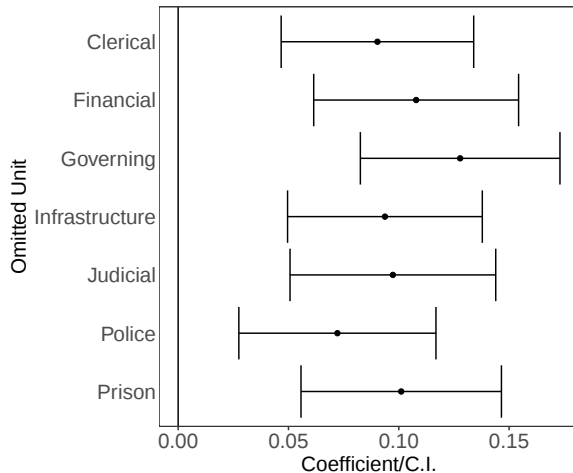
	Performance		
	(1)	(2)	(3)
Unpaid Position on Team	0.10*** (0.02)	0.12*** (0.02)	0.12*** (0.02)
Magistrate × On Task	0.06 (0.04)	0.06 (0.04)	0.06 (0.04)
Part of Governing Body × On Task	0.01 (0.04)	0.004 (0.04)	0.003 (0.04)
Part of Common Council × On Task	-0.02 (0.04)	0.010 (0.04)	0.008 (0.04)
Justice of the Peace × On Task	-0.05 (0.04)	-0.04 (0.04)	-0.04 (0.04)
Approval by Crown × On Task	0.07 (0.07)	-0.01 (0.06)	-0.01 (0.06)
Part-Time Office × On Task	-0.009 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Observations	39,970	39,970	39,970
R ²	0.33	0.39	0.39
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough × Task	Borough × Task	Borough × Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Nearest-Neighbor Matching ► Robustness

	Performance		
	(1)	(2)	(3)
Unpaid Position on Team	0.11*** (0.03)	0.13*** (0.03)	0.15*** (0.04)
Observations	25,788	25,788	25,788
R^2	0.33	0.39	0.39
Boroughs	237	237	237
Positions	3,684	3,684	3,684
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Leave-Out Plot

► Robustness



Charter Subset

► Robustness

	Performance		
	(1)	(2)	(3)
Unaffordable Charter Position on (Modal) Team	0.17** (0.07)	0.14** (0.07)	0.14** (0.07)
Observations	12,026	12,026	12,026
R^2	0.36	0.45	0.45
Boroughs	137	137	137
Positions	1,718	1,718	1,718
Tasks	7	7	7
Outcome Mean	0.64	0.64	0.64
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Performance: Extensive Margin ► Robustness

	Performance (Extensive)		
	(1)	(2)	(3)
Unpaid Position on Team	0.02** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Observations	39,970	39,970	39,970
R^2	0.66	0.68	0.68
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.75	0.75	0.75
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

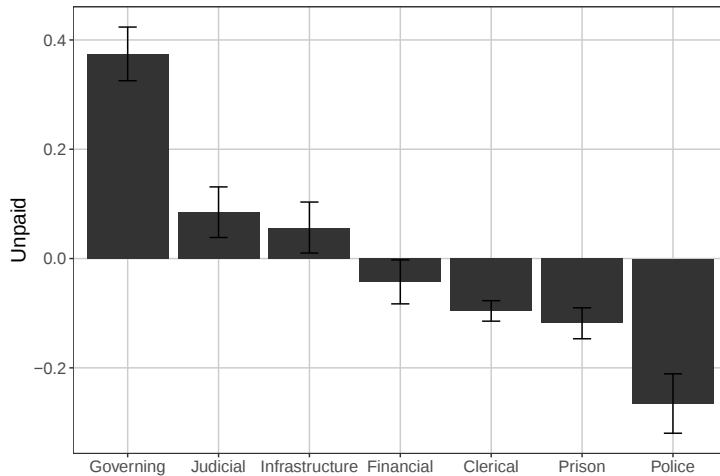
Performance: Omitting Low Wages ► Robustness

	Performance		
	(1)	(2)	(3)
Unpaid Position on Team	0.08*** (0.02)	0.09*** (0.02)	0.10*** (0.02)
Observations	32,193	32,193	32,193
R^2	0.33	0.39	0.39
Boroughs	254	254	254
Positions	4,599	4,599	4,599
Tasks	7	7	7
Outcome Mean	0.62	0.62	0.62
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Unpaid Status Across Tasks

▸ Embedded State

▸ Across Tasks



Costs: Corruption, Nepotism, and Unpaid Status ► Mechanisms

	In Office		During Election	
	Nepotism (1)	Bribery (2)	Self-Appointment (3)	Vote Rigging (4)
Unpaid	0.09*** (0.02)	0.05** (0.02)	0.24*** (0.03)	0.11*** (0.02)
Observations	5,710	5,710	5,710	5,710
R^2	0.53	0.49	0.35	0.55
Boroughs	258	258	258	258
Positions	5,710	5,710	5,710	5,710
Outcome Mean	0.11	0.13	0.22	0.11
Cluster	Borough	Borough	Borough	Borough
Borough fixed effects	✓	✓	✓	✓

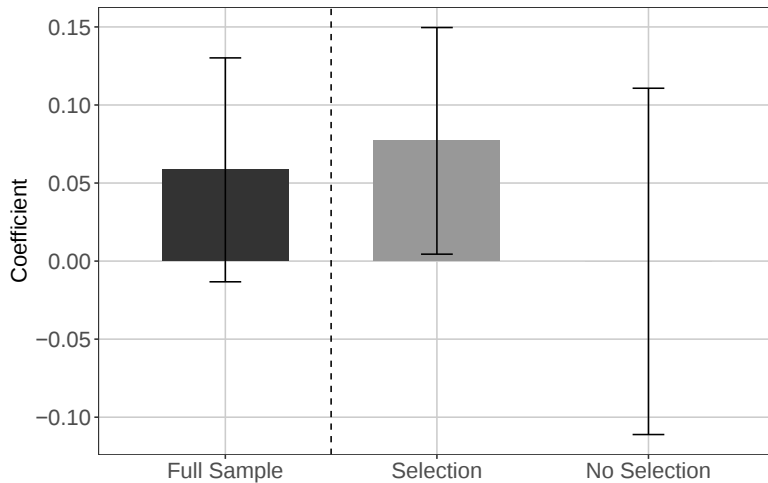
► Driven by Corruption?

► Measurement

► Patronage (Report)

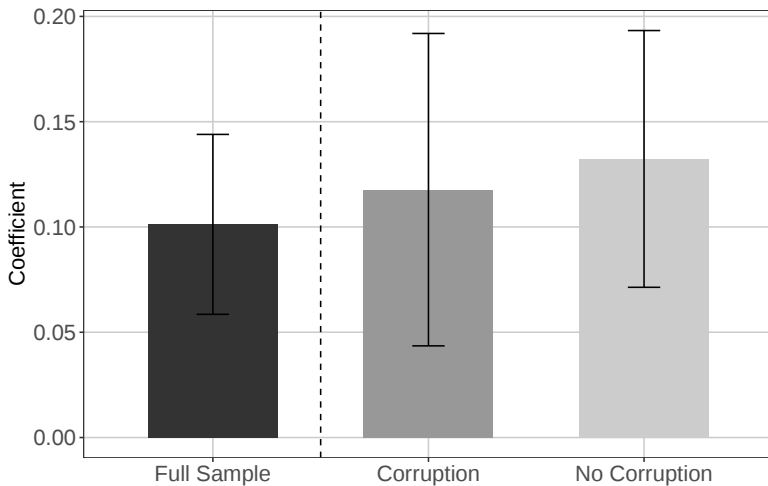
► Corruption Data

Interpretation: Are Results Driven by Elite Selection? [► Costs](#)



Interpretation: Are Results Driven by Corruption?

► Costs



Measuring Costs: Patronage and Corruption in the Embedded State

► Costs

- *Orford.* Want of account of port dues received by **harbour-master**; IV. 2512-2509*.
- *Radnor (New).* Incompetency and political bias of the **magistrates**; exercising exclusive jurisdiction in one-fifth of the county; I. 358.
- Reading.* Alleged partiality of **judges** in borough court, and imputed favouritism in licensing public-houses; disproved; I. 114.
- Retford (East).* Subserviency of governing body to political feelings; confession of aldermen respecting; proofs in present state of corporation of evils of choosing aldermen out of poorest class; misconduct on the bench; III. 1872.
- *Saltash.* Of **magistrates**; I. 609.
- Stafford.* Of corporation in conniving at payment of admission fees of freemen by candidates' agents; III. 2030.
- Stamford.* Selection of grand jury from one political party alone, on "particular occasion;" IV. 2531.—Opposition of **recorder** to beneficial inclosure of common fields, for political reasons; 2534, 2538.
- St. Ives.* Of **aldermen**, in their character of ancient select vestry; placing of poor on the list as rate-payers, and afterwards lowering rate, to qualify them to vote; tenants of an individual alderman; I. 620.
- Tewkesbury.* Severe infliction of discipline by **master of grammar school**, unchecked because himself chief corporator; I. 127.
- Thetford.* Gross mismanagement of navigation and its revenues by **chamberlain**; IV. 2545.
—Constitution permitting; 2547.
- Tiverton.* Revenue derived from exercise of political influence in procuring government offices; I. 620.
- Walsall.* Partial administration of justice, consequent on enfranchisement of borough; alleged establishment of body of police for purposes of intimidation; partiality in adjudication on tumults and affrays; cases illustrating; III. 2052-3.
- Wenlock.* Of **magistrates** in performance of functions; careless delegation of undue powers to unworthy officer; unnecessary committal and detention for pleasure of officer; undue detention by same **constable** of a prisoner before notification to magistrates; indiscriminate grant of summonses for non-payment of rates and tithes, and distress warrants, upon mere statement

The report frequently documents self-election, favoritism in appointments, and financial misconduct.

Incentives: Measuring Prestige in the Report

► Prestige

Mayor.	The Mayor is elected annually on the 8th of September, by the freemen, including the common councilmen, from among the jurats. He is chief magistrate; presides at the sessions and in the court of record, and is also coroner, by virtue of his office. On his election he appoints a deputy, who must be one of the jurats. He has a salary of 2<i>l.</i> 13<i>s.</i> 4<i>d.</i>; a fee of 6<i>d.</i> on sealing writs in the court of record, and, as coroner, a fee of 13<i>s.</i> 4<i>d.</i> on every inquest.
Recorder.	The Recorder, or High Steward, is, on a vacancy, chosen for life, by a majority of the whole corporation. It has always been the custom to elect a barrister. His duty is to assist the mayor and jurats at the sessions, or other courts in which the mayor and jurats sit in their judicial capacity, and he has always attended the sessions when there have been prisoners to try. He has a salary of 2<i>l.</i> 2<i>s.</i>, and 10<i>l.</i> 10<i>s.</i> for every attendance at sessions.
Town Clerk.	The Town Clerk is also appointed for life, by a majority of the whole corporation. He transacts the law business of the corporation, is clerk of the peace at the sessions, and assists in the court of record. He has a salary of 2<i>l.</i> a year; his professional charges for business done; a small fee on the admission of freemen; and his fees at the sessions, which are the same as in the county.
Chamberlain.	The Chamberlain is elected annually, by a majority of the whole corporation, from among the commoners. He collects the revenue, and makes the disbursements of the corporation, to whom he accounts annually. He has a salary of 18<i>s.</i> 4<i>d.</i>
Serjeant at Mace.	The Serjeant at Mace is, upon a vacancy, appointed during pleasure, by the mayor for the time being. His duty is to attend the corporation on public occasions, and to serve notices. He has a salary of 20<i>l.</i>, a livery, and a fee of 1<i>s.</i> on the admission of freemen.
Water-bailiff.	The Water-bailiff is appointed during pleasure by the lord of the manor and barony of Folkestone. His duties are to impanel and summon juries, to act as crier of the courts and keep the gaol. The office is at present filled by the serjeant at mace. As water-bailiff he has a salary of 5<i>l.</i>; and a house as gaoler. Both from the lord of the manor.
Town Crier.	The Town Crier is appointed by the mayor and jurats. His only emoluments are his charges for crying.

The Municipal Corporations Report explicitly ranks offices by social standing and describes ceremonial roles, which we use to construct a prestige measure.

Selection: The 'Gentleman'

► Prestige

► Historical Context



Historical Context

► Gentleman

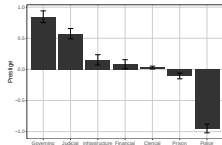
- *“Office ... became a mark of status and prestige within the community and was, ideally, desirable in itself.” (Sweet, 2014, p. 110)*
- *“Members of the elite gladly became servants of the state ... for the prestige and influence those offices conveyed.” (Patterson, 1999, p. 3)*
- *“[Local government functionaries] ought to be ... men of large landed property, whose families are as old in the country as the oaks upon their estates... in a word, true English gentlemen, well acquainted with local interests... perfectly independent, and... sincerely attached to the existing institutions of the country” (Southey, 1817)*
- *“[E]arly modern England consisted of a series of overlapping, superimposed communities which were also semi-autonomous, self-governing political cultures. These may be called... ‘republics’: village republics; gentry republics; and... the commonwealth of England.” (Collinson, 1994)*
- *“One must keep in mind a fundamental feature of the early modern English state, namely the lack of a national salaried bureaucracy... Beyond Whitehall, government was amateur, part-time and unsalaried. Governance was thereby highly dispersed, and was conducted by gentlemen, yeoman and tradesmen...” (Goldie, 2001)*

The Embedded State Across Tasks

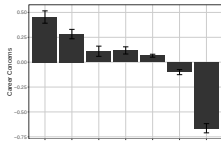
► Embedded State

Incentives

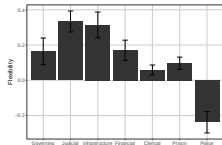
A: Prestige



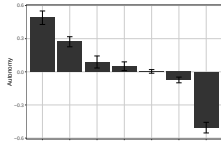
B: Career Concerns



C: Flexibility

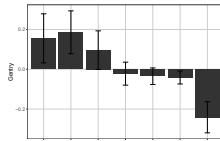


D: Autonomy

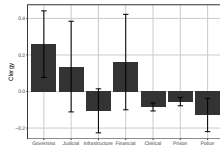


Selection

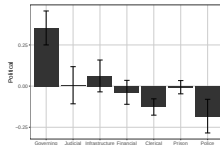
A: Gentry



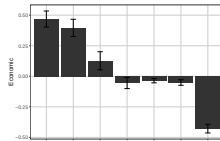
B: Clergy



C: Political



D: Economic



The Embedded State Within Boroughs

► Embedded State

	Selection Index		
	(1)	(2)	(3)
Incentive Index	0.35*** (0.02)	0.35*** (0.02)	0.36*** (0.02)
Observations	5,710	5,710	5,710
R^2	0.30	0.30	0.45
Boroughs	258	258	258
Outcome Mean	0.19	0.19	0.19
Cluster	Borough	Borough	Borough
Controls		✓	✓
Borough fixed effects			✓

Data: Borough Characteristics [► Data](#)

Variable	Mean	SD	Min	Max
Manorial Lord	0.34	0.47	0.00	1.00
Charter Year	1630.83	94.00	1278.00	1827.00
Area	16293866.23	19593104.78	134817.61	144776160.92
Lay Subsidy Tax (1327)	4.88	7.96	0.00	51.36
Lay Subsidy Tax (1332)	7.50	12.84	0.00	91.76
Lay Subsidy Tax (1334)	10.30	15.04	0.00	100.00
Number of Gentry (1370)	1.17	16.64	0.00	240.00
Market Town (1680)	0.71	0.48	0.00	2.00
Seaport (1680)	0.19	0.42	0.00	2.00
Number of Gentry (1680)	2.44	2.30	0.00	24.00
Number of Baronets (1680)	0.24	0.43	0.00	1.00
Number of Knights (1680)	0.20	0.43	0.00	2.00
Number of MPs (1680)	0.88	1.02	0.00	4.00
Number of Nobility (1680)	0.04	0.22	0.00	2.00
Number of Bishops (1680)	0.02	0.14	0.00	1.00
Longitude	-2.07	1.76	-5.54	1.67
Latitude	52.03	1.14	50.10	55.78
Distance to Coal Field	45589.20	45981.69	0.00	184097.20
Distance to Border	20132.16	22637.59	78.27	86650.92
Distance to London	207212.22	102222.10	16078.60	495034.66
Distance to Market Town	2954.22	4168.72	17.43	25350.39
Distance to River	2099.99	2444.34	1.63	16454.80
Mean Slope	3.06	2.17	0.26	17.77
Wheat Suitability	34.49	14.26	1.86	88.31
Attainable Pasture Yield	0.79	0.06	0.64	0.93
Attainable Wheat Yield	3.25	0.72	0.10	4.12
Lay Subsidy Tax (1524)	8545.54	20596.32	0.00	191120.50
Population (1524)	55.52	152.42	0.00	1449.00

Descriptive statistics for the borough-level covariates (mean, standard deviation, min, max).

Data: Incentive Measures [▶ Data](#)

Variable	Mean	SD	Min	Max
Prestige	0.48	0.31	0	0.99
Career Concerns	0.54	0.50	0	1.00
Flexibility	0.31	0.46	0	1.00
Autonomy	0.52	0.50	0	1.00

Descriptive statistics for the incentive measures: prestige, career concerns, flexibility, and autonomy.

Data: Selection Measures [▶ Data](#)

Variable	Mean	SD	Min	Max
Gentry	0.45	0.50	0	1
Clergy	0.01	0.12	0	1
Political	0.75	0.44	0	1
Economic	0.26	0.44	0	1

Descriptive statistics for the selection measures: gentry, clergy, political elite, and economic elite.

Data: Corruption Measures [▶ Data](#)

Variable	Mean	SD	Min	Max
Nepotism	0.11	0.31	0	1
Bribery	0.13	0.33	0	1
Self-Appointment	0.22	0.42	0	1
Vote Rigging	0.11	0.31	0	1

Descriptive statistics for the corruption measures: nepotism, bribery, self-election, and electoral corruption.

Performance and Unpaid Status (Estimated Returns)

► Robustness

	Performance		
	(1)	(2)	(3)
Unpaid Position on Team	0.10*** (0.03)	0.10*** (0.03)	0.10*** (0.03)
Observations	22,583	22,583	22,583
R^2	0.44	0.52	0.51
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Model Controls	✓	✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Structural equivalent of the baseline, estimating the returns to team size jointly with the unpaid coefficient.

Performance and Unpaid Status (Single-Position Teams)

► Robustness

	Performance		
	(1)	(2)	(3)
Unpaid Position on Team	0.12*** (0.03)	0.08*** (0.02)	0.08*** (0.02)
Observations	14,684	14,684	14,684
R^2	0.51	0.63	0.63
Boroughs	248	248	248
Positions	5,157	5,157	5,157
Tasks	7	7	7
Outcome Mean	0.50	0.50	0.50
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Restricting to single-position teams, where within-team spillovers are limited by construction.

Performance and Unpaid Status (Unrestricted Team Size)

► Robustness

	Performance		
	(1)	(2)	(3)
Unpaid Position on Team	0.07** (0.04)	0.11*** (0.03)	0.12*** (0.03)
Observations	62,874	62,874	62,874
R^2	0.34	0.39	0.39
Boroughs	258	258	258
Positions	1,912	1,912	1,912
Tasks	7	7	7
Outcome Mean	0.62	0.62	0.62
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Robustness to a wide range of returns-to-team-size parameters (unrestricted team size).

Relative Performance (Leave-Out Max) ► Robustness

	Relative Performance (Leave-Out Max)		
	(1)	(2)	(3)
Unpaid Position on Team	0.09*** (0.02)	0.11*** (0.02)	0.12*** (0.02)
Observations	39,970	39,970	39,970
R^2	0.30	0.36	0.36
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	-0.39	-0.39	-0.39
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Outperformance (Leave-Out Mean, Binary)

► Robustness

	Outperform Leave-Out Mean		
	(1)	(2)	(3)
Unpaid Position on Team	0.09*** (0.02)	0.11*** (0.02)	0.12*** (0.02)
Observations	39,970	39,970	39,970
R^2	0.35	0.40	0.40
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.57	0.57	0.57
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Performance and Unpaid Status (Report Length)

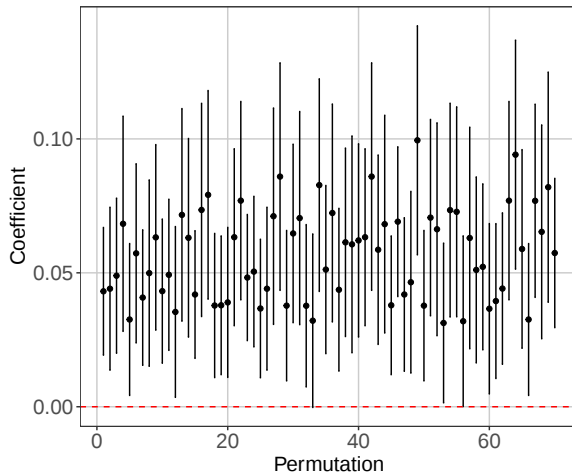
► Robustness

	Performance		
	(1)	(2)	(3)
Unpaid Position on Team	0.09*** (0.02)	0.07*** (0.02)	0.08*** (0.02)
Observations	39,970	39,970	39,970
R^2	0.33	0.45	0.45
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Controlling for deciles of borough report page length interacted with task indicators.

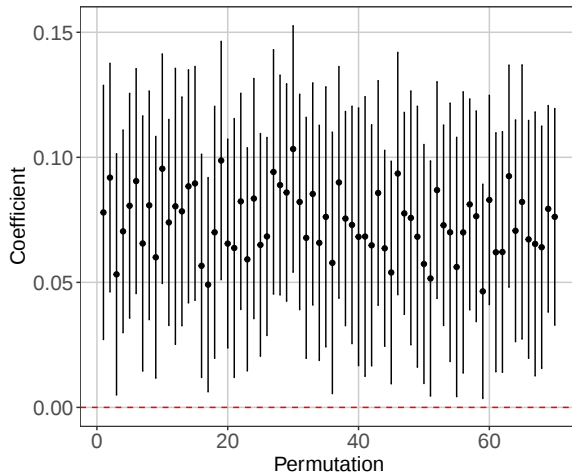
Performance: Varying Binarization Cutoffs

► Robustness



Performance: Varying Performance Definitions

► Robustness



Performance: Extensive Margin (Excl. Governing)

► Extensive Margin

	Performance (Extensive)		
	(1)	(2)	(3)
Unpaid Position on Team	0.04*** (0.01)	0.05*** (0.01)	0.05*** (0.01)
Observations	34,260	34,260	34,260
R^2	0.38	0.42	0.42
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	6	6	6
Outcome Mean	0.87	0.87	0.87
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Extensive-margin performance, excluding the 'governing' task.

Performance: Intensive Margin ► Extensive Margin

	Performance (Intensive)		
	(1)	(2)	(3)
Unpaid Position on Team	0.12*** (0.03)	0.11*** (0.02)	0.12*** (0.03)
Observations	29,829	29,829	29,829
R^2	0.88	0.89	0.89
Boroughs	254	254	254
Positions	5,689	5,689	5,689
Tasks	6	6	6
Outcome Mean	-1.08	-1.08	-1.08
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Intensive-margin (continuous, logged) performance outcome.

Extensive Margin Performance (Borough Level) ► Extensive Margin

	Performance (Extensive, Borough)		
	(1)	(2)	(3)
Unpaid Positions	0.01*** (0.005)	0.01*** (0.005)	0.01** (0.005)
Observations	258	258	258
R^2	0.30	0.51	0.60
Boroughs	258	258	258
Outcome Mean	0.76	0.76	0.76
Cluster	County	County	County
Controls			✓
County fixed effects		✓	✓

Extensive-margin performance (share of tasks implemented) at the borough level.

Comparing Wages with Market Wages

► Affordability

Borough	Population	Position Title	Wage (£)	Local Wage (£)	Global Wage (£)	Tasks
Liverpool	165175	mayor	600.00	600.00	25.00	Governing, Judicial
		town clerk	813.96	813.96	900.00	Clerical, Financial, Law enforcement
		constable	49.40	49.40	7.64	Law enforcement, Prison
Leeds	123393	mayor	0.00	50.00	41.70	Governing, Infrastructure, Judicial
		town clerk	21.00	21.00	10.50	Clerical, Judicial
		constable	80.88	5.40	13.56	Law enforcement
Norwich	61096	mayor	300.00	300.00	41.70	Governing, Infrastructure, Judicial
		town clerk	0.00	490.00	30.00	Clerical
		constable	16.25	16.25	13.33	Law enforcement
...	...	...	...	...	...	...
Yarmouth	586	mayor	0.00	51.39	9.58	Governing
		town clerk	6.30	6.30	10.50	Financial
		constable	0.00	2.60	13.45	Law enforcement
Fordwich	487	mayor	0.00	51.39	9.58	Governing
		town clerk	0.00	57.75	30.00	Clerical
		constable	0.00	36.00	13.33	Law enforcement
Newtown	68	mayor	0.00	51.39	9.58	Governing
		town clerk	0.00	17.77	10.00	Financial
		constable	0.00	17.33	13.33	Law enforcement

Wages of the mayor, town clerk, and constable against local and global market wages, for large and small

Affordability and Performance (Full Sample) ► Affordability

	Performance		
	(1)	(2)	(3)
Unaffordable Position on Team	0.11*** (0.03)	0.11*** (0.03)	0.11*** (0.03)
Observations	39,970	39,970	39,970
R^2	0.33	0.39	0.39
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Affordability design on the full (unrestricted) sample, rather than only compliers.

Affordability and Performance (Local Wages) ► Affordability

	Performance		
	(1)	(2)	(3)
Unaffordable Position on Team	0.07*** (0.03)	0.08*** (0.03)	0.08*** (0.03)
Observations	39,970	39,970	39,970
R^2	0.33	0.39	0.39
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Market wages and salary rankings computed from within-county positions.

Affordability and Performance (Global Wages) ► Affordability

	Performance		
	(1)	(2)	(3)
Unaffordable Position on Team	0.11*** (0.03)	0.11*** (0.03)	0.11*** (0.03)
Observations	39,970	39,970	39,970
R^2	0.33	0.39	0.39
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Market wages and salary rankings computed from out-of-county positions.

Affordability and Performance (Charter Wages) ► Affordability

	Performance		
	(1)	(2)	(3)
Unaffordable Charter Position on Team	0.11*** (0.03)	0.11*** (0.03)	0.11*** (0.03)
Observations	39,970	39,970	39,970
R^2	0.33	0.39	0.39
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	7	7	7
Outcome Mean	0.61	0.61	0.61
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Market wages and salary rankings computed from charter positions only.

Affordability and Performance (Alternative Compliers) ▸ Affordability

	Performance		
	(1)	(2)	(3)
Unaffordable Position on Team	0.12*** (0.04)	0.12*** (0.03)	0.12*** (0.03)
Observations	24,164	24,164	24,164
R^2	0.33	0.39	0.39
Boroughs	250	250	250
Positions	3,452	3,452	3,452
Tasks	7	7	7
Outcome Mean	0.60	0.60	0.60
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

Compliers defined as position titles outside the lowest and highest quartiles of average paid status.

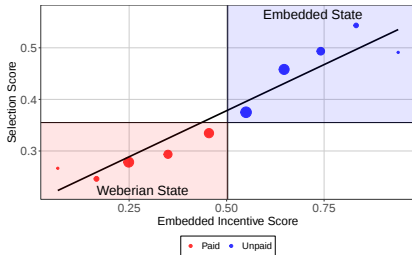
Affordability and Performance (Task Subset) ► Affordability

	Performance		
	(1)	(2)	(3)
Unaffordable Position on Team	0.11*** (0.03)	0.11*** (0.03)	0.11*** (0.03)
Observations	34,260	34,260	34,260
R^2	0.32	0.38	0.38
Boroughs	258	258	258
Positions	5,710	5,710	5,710
Tasks	6	6	6
Outcome Mean	0.56	0.56	0.56
Cluster	Borough $\times$ Task	Borough $\times$ Task	Borough $\times$ Task
Task Control	✓	✓	✓
Controls		✓	✓
Borough fixed effects	✓	✓	✓
Task fixed effects	✓	✓	✓
Position Title fixed effects			✓

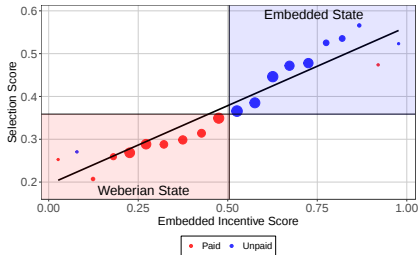
Omitting financial tasks, in case rental income directly affects financial performance.

The Embedded State Within Boroughs (Varying Bins) ► Embedded State

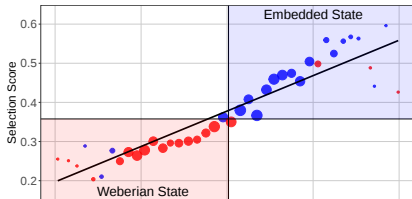
A: 10 Bins



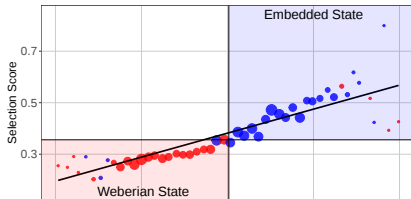
B: 20 Bins



C: 40 Bins



D: 50 Bins



Costs: Patronage in the Report ► Costs

Shaftesbury. Noble recorder; II. 1353.

Stomford. Exclusion from aldermanship by opposition to Exeter interest; IV. 2528.—Self-election of capital burgesses dictated by; 2528.—Marquis of Exeter; recorder; 2528.—Use of authority, as lord of the manor, against political opponents; 2530.—Employment of labourers as constables during election; 2533.—Opposition to beneficial inclosure of common fields on political considerations; 2534.—Recapitulation and effects; 2537–8.

Swansea. Lord's control over the corporation, by his steward's veto on all corporate appointments; working of this system; political purposes to which applied; payment of voters; expenses out of corporate funds; I. 392. See *Constitution*.

Tenby. Corporation a strictly exclusive party engine; I. 406.

Thetford. Election of mayor, principal burgesses and commonalty burgesses under the influence of two neighbouring families; IV. 2541, 2542.—Unbounded influence; transference with property; appointments; pensions; mayor's salary, and money tickets to support; local advantages and disadvantages; exclusion of inhabitants; 2547.

Totnes. Long subjection of borough to; family exercising; cessation of; effects during continuance; I. 643.

**Tregony.* Succession of patrons; corporate influence subject to; I. 650.

**Ush.* Till Reform Act, absolute control by lord of borough; I. 415–16.

Warwick. Strong opinion of the corporation's long subjection to the Earls of Warwick; the "Castle influence;" letters of the Earl of Warwick; III. 2069.

The report documents patronage in appointments, alongside the financial misconduct shown previously.

[DEAD] Our context: England

Studying unpaid bureaucracy requires:

- Variation in state organization across comparable units
- Detailed records on paid status, offices, and task assignment
- Systematic measures of institutional performance

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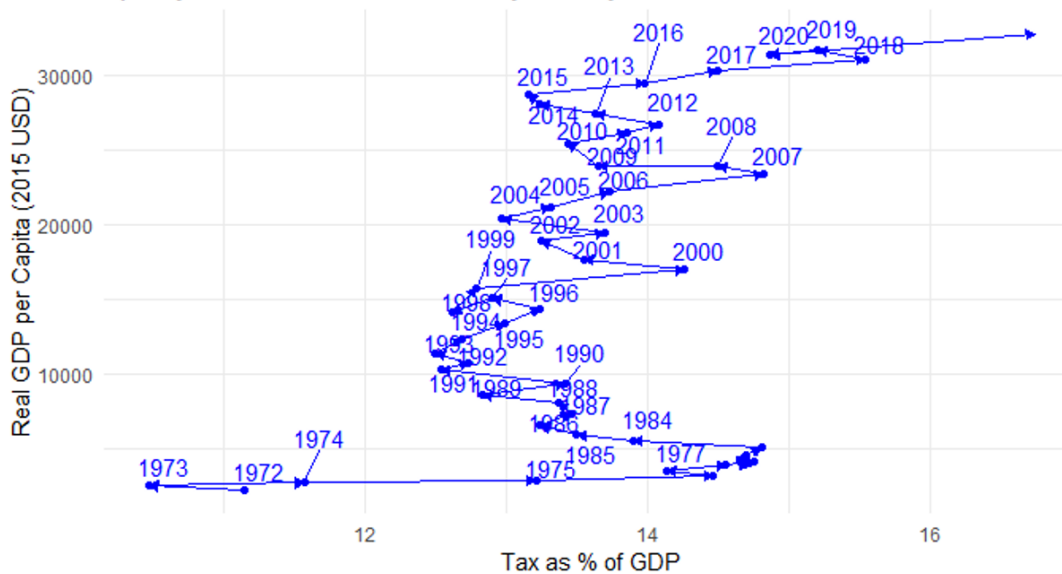
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This paper

We study borough governments in England using the Municipal Corporations Report (1835):

- Boroughs (cities and towns) were semi-autonomous “republics”
[collinson_elizabethan_1994,goldie_unacknowledged_2001]
- Data on all officers (paid/unpaid), their offices, task assignments, and remuneration (5,111 officers in 258 boroughs)
- In boroughs, roughly 75% of officers served without pay
- Measures of performance across seven core public goods

[DEAD] Korea: Taxes and GDP



[DEAD] Motivation: State Capacity and Bureaucracy

We study the organization of successful government historically, in England

- Small government?: Conventional measures of historical government point out how small it is (tax/GDP, employees)

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In this paper, we document the extent of the local *unpaid* bureaucracy in early modern England. We study the incentives sustaining individual participation, and compare unpaid to paid bureaucrats

[DEAD] Contributions

- **Empirical: Explain difference in performance between historical governments that look equally small on paper:** [brewer_sinews_1989, ertman_birth_1997, heldring-economic_2022, north_rise_2009, levi1988ofrule, johnson_states_2021]

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- **Conceptual: Point to the success of a model of government that blends elements from traditional and modern government; and is distinct from the 'Weberian' ideal type:** [heldring_origins_2021, heldring_problematizing_2023, north_rise_2009, evans_embedded_1995]

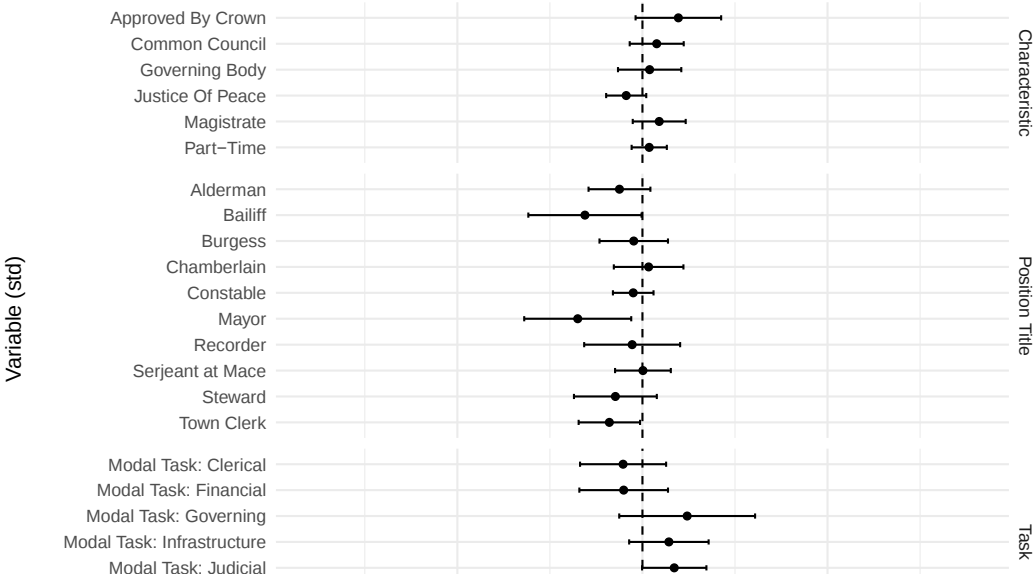
[DEAD] Outline

[DEAD] Treatment Components: Operationalization

Compute Affordability:

1. Compute for each officer the average wage for officers with the same task profile who receive a salary.
2. Calculate borough disposable income.
 - Process borough revenue statements
 - Focus on pre-determined income from *rents*
3. Rank all officers by leave-out paid status (from other boroughs.)
4. Officers are affordable until disposable income is used up.
→ indicator whether the officer wage exceeds rental income.
5. Subset to compliers (remove always/never paid)

[DEAD] Officer Characteristics: Balanced for Unaffordable



[DEAD] Outline

[DEAD] Measurement: Incentives and Selection

We measure incentives at the level of job and task:

- Prestige: Officers are ranked by prestige
- Career concerns: We measure whether a job title has been held by an MP
- Flexibility: Fraction of tasks outside modal task assignment
- Autonomy: Does the officer have a principal (appointment) or elected by the governing body

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We measure several margins of individual selection:

- Social status in public life: A 'gentleman' or a member of the clergy
- Names and titles of over 2,300 officers in 1790 collected from the Universal British Directory of Trade and Commerce
- Economic elite: Is an office ever held by the very rich (>100k pounds) from the biographies in Rubinstein (2009)
- Political elite: Did someone with your last name ever sit as an MP

[DEAD] Borough Organization: Incentives

In boroughs, 69% of officers were unpaid.

How were officers motivated without pay?

We study **incentives** and **selection** through the lens of organizational economics.

Non-monetary incentives:

- **Social prestige** [ashraf2014no]:
 - Holding office accorded respect through ceremony and approbation.

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Non-monetary incentives:

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 - Holding office accorded respect through ceremony and approbation.
- **Career prospects** [lazeear1981rank,alesina2004bureaucrats]:
 - Holding office could be a stepping stone for a parliamentary career.

[DEAD] Incentives and Selection: Measurement

- **Non-monetary incentives:**
 - Officers are ranked by *prestige* in the report, we standardize rank $[-1, 1]$.
 - We also measure whether an office was used as a *career stepping stone* by members of parliament in the nineteenth century.
- **Selection:**
 - In a sample of linked individuals to gazetteers, we can measure 'sir' title of officers.
 - We also measure ability, using standard AKM model adjusted to team contexts [abowd1999high,bonhomme2025teams].

$$Y_{bo} = \beta \text{Unpaid}_{bo} + \alpha_b + \alpha_s + \epsilon_{bo}$$

- Y_{bo} : characteristic of office(r) o
- Unpaid_{bo} : 1 if officer o in borough b is not salaried.
- α_b : borough fixed effects.

[DEAD] Costs of the Unpaid State

Organizational economics can also shed light on the **costs** of setting up this structure:

Incentives are constrained:

- Prestige is more easily accorded to **visible tasks** [dixit2002incentives].
- Control (curtailing autonomy) can crowd out intrinsic motivation [aghion1997formal, rasul2018management].

Not paying influences selection:

- We also measure the influence family members exert through an officer.
- We also measure patronage — recorded as favoritism in hiring.

[DEAD] Outline

[DEAD] A Characterization of the Embedded State

We now study how incentives and selection co-move:

- We create a selection and incentives index, and estimate the following model:

$$Selection_{bo} = \beta Incentive_{bo} + \delta_b + \epsilon_{bo}. \quad (5)$$

[DEAD] Costs: Incentives and Selection Across Tasks

We can also break down characteristics by task:

- Are some tasks more 'Embedded' than others?

$$w_{boi} = \beta_0 + \beta_1 c_{bo} + \epsilon_{bo}. \quad (6)$$

[DEAD] Discussion

Main finding: unpaid officers are associated with higher task performance

- The positive effect is concentrated among **positively selected** officers (e.g., titled/elite individuals)
- When we remove this selection margin, performance differences between paid and unpaid officers largely **disappear**
- Using affordability (predetermined rental income) suggests many paid officers were simply **out of budget**

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The Embedded State as an organizational form

- Incentives and selection **co-move** across boroughs: an 'embedded' equilibrium (unpaid elite + social incentives) vs. a more Weberian equilibrium (paid + formal incentives)
- Helps explain why bureaucratic modernization often **followed** economic development (fiscal capacity), rather than preceded it

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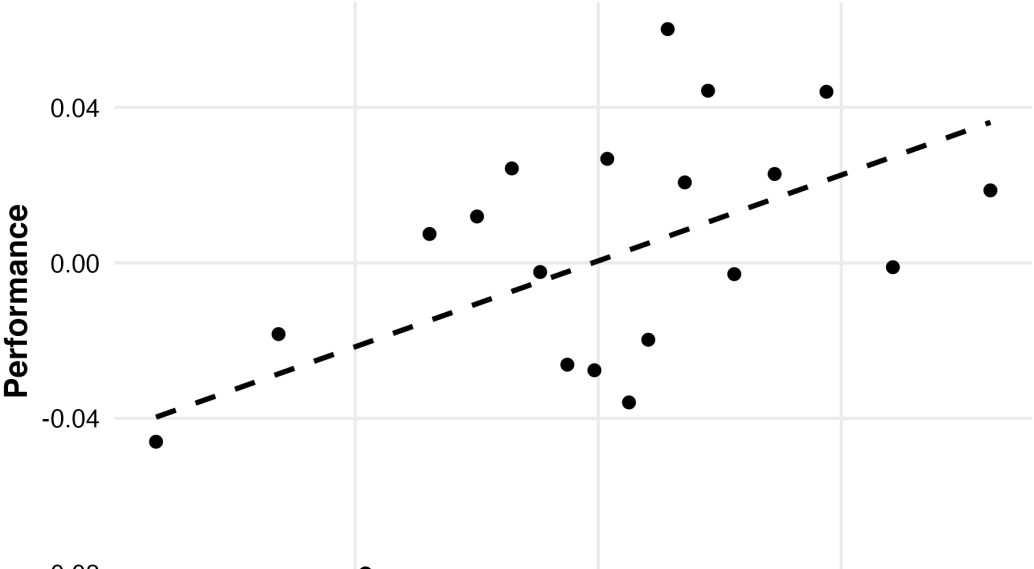
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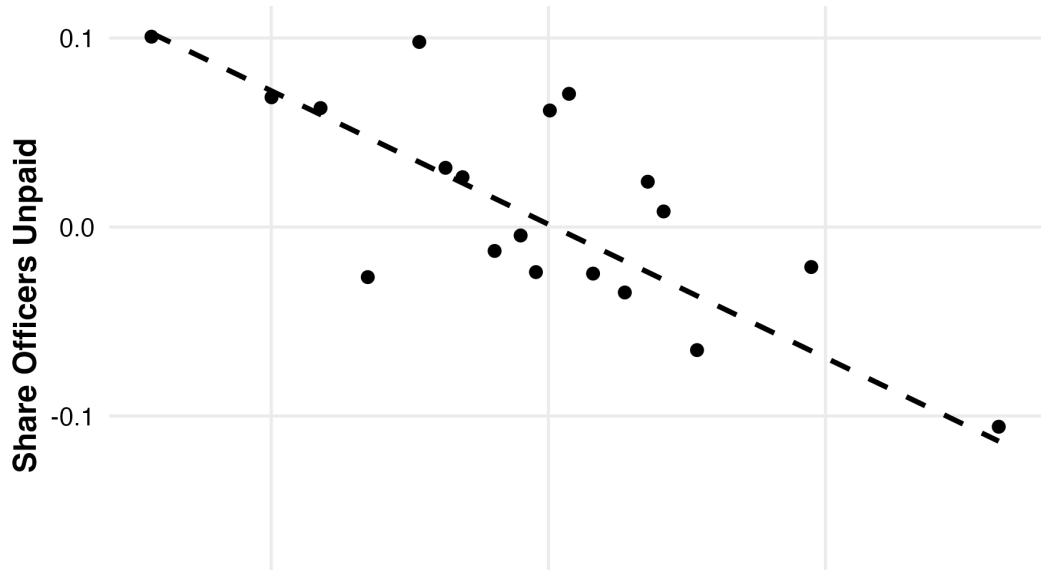
Costs and limits

What are the costs and limits of this organizational form? What are the costs and limits of this organizational form?

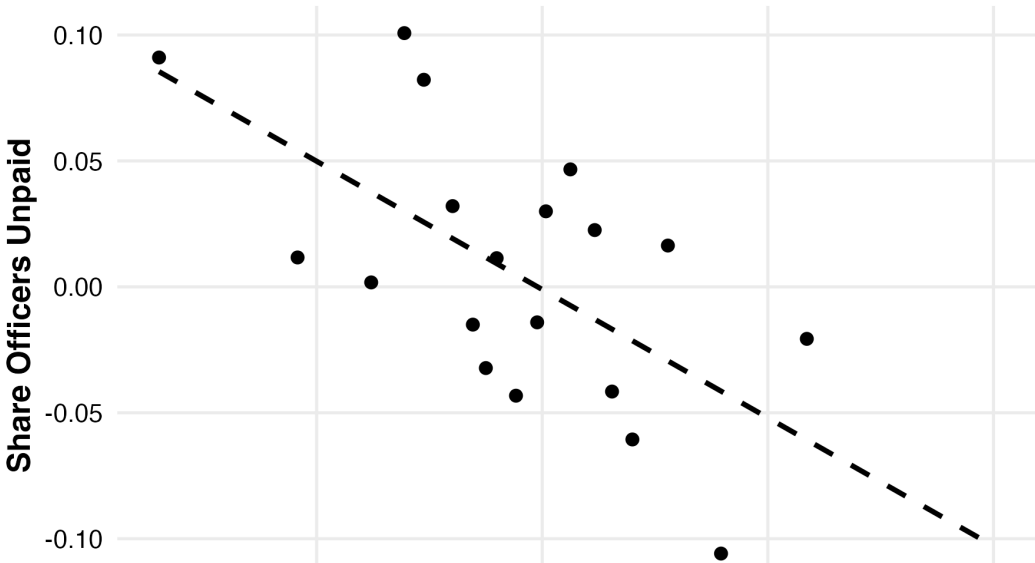
[DEAD] Boroughs: Performance and Share Unpaid



[DEAD] Boroughs: Share Unpaid vs. Population



[DEAD] Boroughs: Share Unpaid vs. Electorate Size



[DEAD] Interpretation checks: questions & answers

- **Are the main results driven by corruption? No.** The unpaid-performance advantage remains when restricting to officers *not* associated with corruption in the report (corruption is a cost, not the mechanism).
- **Are the main results driven by positively selected people? Yes (for the positive effect).** Unpaid offices crowd in elite/titled officers; removing this selection margin largely eliminates performance differences.
- **Is unpaid status just proxying for endogenous choice of offices/tasks? Unlikely.** Results are robust when focusing on predetermined offices/tasks (e.g., charter-based roles and modal task assignments).
- **Could team spillovers or team size drive the pattern? No.** The results are robust in a team-production framework and under alternative aggregation/standard-error assumptions.
- **Are unpaid officers simply doing easier/more visible tasks? Partly by design.** Onerous low-prestige tasks (e.g., prisons/policing) are more often paid, but the core results compare within task and office-title categories.

[DEAD] Comparing the Local and Central States

	1700	1835
Central	4,920	21,305
Local	98,640	178,570

Note: Data on central government officials from [brewer_sinews_1989] for 1700 and from [cook_british_1975] for 1835. Local government totals from [goldie_unacknowledged_2001], [landau_justices_1984], and original data from this project.

- local officers — [goldie_unacknowledged_2001]’s ‘unacknowledged republic’ — always outnumbered central administrators (of which there were only 1,200 in the 17th century)
 - the ‘local’ estimates are conservative and ignore frequent rotation of office-holders, which occurred within years

[DEAD] Windsor Office Table

Table 1: Roles associated with different offices

Office	Admin Support	Judicial	Judicial Support	Financial	Prison
Justice		1			
Bailiff			1		1
Chamberlain				1	
Serjeant-at-Mace	1				
Hall Keeper	1				
Gaoler					1

Source: Report on the Municipal Corporations (1835).

[DEAD] Municipal Finance

"Many corporations' largest source of income was rental income from property —though some of the newer foundations (such as the cloth towns of Leeds and Tiverton, both incorporated in the early seventeenth century) had little or no property. Another important income source was dues and tolls, levied for the use of harbour facilities, on river traffic, or on those bringing goods to market. A third source was 'fines', leviable on a wide variety of grounds: for the renewal of leases; on wealthy inhabitants refusing to serve corporate office (who might be targeted for that very purpose); for admission to the freedom; or by way of penalty for an offence judged in a local court. Many corporate bodies administered charitable trusts, which sometimes found their way into corporate coffers; at the very least, corporations might draw upon them to cushion themselves in difficult times. The sums arising from these various sources were not usually very great. At the beginning of our period, fair-sized towns, such as Hull, York, Nottingham and Bath, reckoned their income only in hundreds of pounds a year — even by the early nineteenth century, only in thousands. In 1835, among English towns, only London, Liverpool and Newcastle had annual incomes exceeding £20,000. The historical contingencies of corporate property ownership meant that there was no consistent relationship between a town's size and its income. Newcastle, thus, had an income several times that of Norwich — though it surpassed it in size only at the end of the eighteenth century."

[clark_politics_2000]

[DEAD] High Weberian Liverpool

Office	Officer Count	Salary
Mayor	1	1200 0 0
Bailiff	2	0
Recorder	1	525 0 0
Common Clerk	1	105 0 0
Alderman	15	0
Sub-Bailiff	2	20 0 0
Deputy Mayor	1	0
Sword Bearer	1	210 0 0
Clerk to the Magistrates	1	950 0 0
Treasurer	1	1000 0 0
Chief Clerk	1	262 10 0
Assistant	1	150 0 0
Collector	1	100 0 0
Surveyor	1	1000 0 0

	Journ. fol.	£. s. d.
By Balance in hands of the Treasurer, brought from last Years' Account	136	329 13 11
By Corporation Account for 1831, for Rent in Arrear - - -	136	303 11 7
By Fines for Leases - - - - - Balance	159	13,210 11 11
By Ground Rents - - - - - Balance	159	1,132 16 - 1
By Town Duties - - - - - Balance	159	35,176 12 6
By Anchorage - - - - - Balance	159	588 16 10
By Town Duties, &c. received at Runcorn - - - Balance	159	631 2 9
By Weighing Machines - - - - - Balance	159	102 1 5
By Estate, Salthouse Dock - - - - - Balance	159	2,028 15 6
By Estate, Wapping - - - - - Balance	159	2,113 2 3
By Tobacco Warehouse - - - - - Balance	159	4,633 14 5
By Old Tobacco Warehouse - - - - - Balance	159	254 18 6
By Oil House - - - - - Balance	159	112 9 2
By St. James's Market - - - - - Balance	159	111 - -
By Tenants at Will - - - - - Balance	159	1,357 5 9
By Sales of Land and Premises in Possession - - - Balance	159	1,915 - -
By opening and widening Lord Street - - - - - Balance	159	224 1 8
By Custom House - - - - - Balance	159	2,258 5 11
By opening and widening Dale Street - - - - - Balance	159	255 4 7
By Improvements - - - - - Balance	159	3,209 16 3
By Markets - - - - - Balance	159	2,930 13 2
By Chain Cable Trial Machine - - - - - Balance	159	137 8 5
By Estate, Birkenhead, &c. - - - - - Balance	159	1,638 6 5
By Arrears of Town Duties - - - - - Balance	159	94 11 11
By Establishment of the Baths - - - - - Balance	159	283 19 8
By Graving Docks - - - - - Balance	159	2,045 3 8
By Sales of Ground Rent - - - - - Balance	159	1,587 15 5
By Bonds on Interest - - - - - received	159	10 2 6
By Corporation Account for 1833, for Interest in Arrear - - -	160	104 7 11 1/2
By Balance due to Arthur Heywood, Sons & Co. in 1833	500	208 10 6

References
