Divergence or Convergence? The Municipal Franchise in England and Wales, 1835-1897

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This paper documents and explains the evolution of spatial variation in the municipal voting franchise in England and Wales between 1835 and 1897. Using newly assembled data on voters across Municipal Corporations, we examine how a uniform legal framework produced divergent local democratic outcomes. Applying concepts of β- and σ-convergence from the growth literature, we show strong β-convergence: initially less democratic municipalities expanded their franchise more rapidly than highly democratic ones. However, σ-convergence is weak overall, reflecting the offsetting effects of major national reforms. Our findings reveal how de jure uniformity translates into persistent de facto democratic heterogeneity.

Keywords: Democracy, franchise extension, local government, England, 19th century

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1 Introduction

Modern democratic institutions emerged gradually in Western Europe around the turn of the 18th century (e.g. Congleton 2011; Hanlon 2022; Stasavage 2022). Although some countries had representative parliaments earlier, only a tiny share of the population held the right to vote in the elections that selected their representatives. Over the course of the long 19th century this changed: the voting franchise was extended to ever larger segments of the population, culminating in universal male suffrage in many Western European countries shortly after World War I.

Alongside the democratization of national parliaments, local democracy in parishes, municipalities, and counties also took root, and an increasing number of citizens gained the right to participate in local elections. The rules and traditions governing these local democratic institutions had, in some cases, evolved organically over the centuries, while in others they were designed in a top-down manner by national parliaments and were therefore, de jure, uniform across localities. Because the rules often tied the franchise to tax payments or property ownership, the extension of voting rights in any given locality had what Congleton (2004) calls a "natural" element: even under common de jure rules, the franchise evolved differently across places because their socio-economic conditions differed and evolved along distinct trajectories. This naturally created spatial variation in the share of the population eligible to vote, allowing highly "democratic" localities to coexist with highly "undemocratic" ones.

The purpose of this paper is two-fold. The first purpose is to document the evolution of the spatial dispersion in the voting franchise among towns in England and Wales with a Municipal Corporation between 1835 and the turn of the century. The specific rules that governed municipal elections were laid down by the British Parliament in 1835, reformed several times over the course of the century by Acts of Parliament, and were the same for all incorporated towns (Keith-Lucas 1952). The question, therefore, is how and to what extent these *common* rules created an *uneven* extension of the municipal franchise.

The second purpose is to study the convergence or divergence in the dispersion of the municipal franchise throughout the 19th century. Did the initial differences in 1835, when the Municipal Corporations were first established, persist, or were they gradually eliminated by later reforms that expanded the right to vote in municipal elections? Did specific national reforms affect the process of convergence or divergence? Was the process contingent on specific borough characteristics?

For the first purpose, we assemble data on the number of voters in each Municipal Corporation from 1835 to 1897. These data represent the most comprehensive surviving record of voters who elected municipal councils in Victorian Britain. For the second purpose, we build on the macroeconomics literature on economic growth and investigate β-convergence (e.g., Barro and Sala-I-Martin 1992) and σ-convergence (e.g., Quah 1993b) in the distribution of the franchise across corporations over time. This captures two different aspects of the convergence process: β-convergence refers to a negative relationship between initial levels and subsequent growth, whereby municipalities with initially few voters tend to experience faster franchise extension than those with initially many. In contrast, σ-convergence refers to a reduction over time in the cross-sectional dispersion of the franchise. These aspects of the process of democratization have, to the best of our knowledge, not been studied before, with the existing literature focused squarely on documenting and understanding the evolution of the 'average' franchise extension over time (e.g. Aidt and Jensen 2014) or on analysing specific democratic reforms (e.g. Ziblatt 2008; Aidt and Franck 2025b). Deepening our understanding of the distributional dimension of democratization is important because persistent spatial differences in the strength of democratic institutions are likely to induce spatial differences in public policy, and because it helps unlock the 'black box' that hides the relationship between de jure and de facto institutions (see Acemoglu and Robinson 2008).

We find the following. First, despite the fact that the suffrage rules were the same for all corporations, we document the stylized fact that the extension of the franchise – however measured – varied enormously across both space and time. For example, in 1835, in the ‘least democratic’ municipal corporation, less than 1% of the population could vote, while in the ‘most democratic’ corporation, around 14% of the population were on the electoral roll. By the end of the period, in 1897, the ‘least democratic’ corporation had just under 9% of the population on the roll, whereas the ‘most democratic’ corporation had about 33%. It is a striking stylized fact that this ‘democratic gap’ persisted for the better part of a century and survived several major reforms.

Second, we find strong evidence of β-convergence: municipalities with few voters initially tended to grow their voting population rapidly, while those with many voters at the beginning of the period tended to expand their franchise more slowly. Taken together, these results suggest that, over the period as a whole, the initial level of the franchise – whether highly democratic or highly undemocratic – matters little: all municipalities would, ceteris paribus, eventually converge, on average, to the similar franchise levels.

Third, we find that the Municipal Franchise Act of 1869 was the key driver of β-convergence. Among other provisions, this Act reduced the residency requirement for obtaining the right to vote from two and a half years to one year, making it easier for potential voters in large, dynamic towns with frequent intra-town migration to claim their rights.

Fourth, we find that β-convergence was stronger in boroughs with higher population density or a smaller secondary (manufacturing) sector. By contrast, the effects of other factors – including employment, wealth, population structure, and regional clusters – were negligible.

Fifth, strong β-convergence does not imply strong σ-convergence, and indeed we do not observe substantial σ-convergence over the century as a whole. However, sub-period analysis reveals that the Municipal Franchise Act of 1869 did help compress the franchise distribution, whereas the subsequent reforms of 1878 and 1882 – which clarified that tenants renting, often shared, accommodation also had the right to vote – had the opposite effect. Taken together, these opposing forces led most municipalities to converge toward the middle of the distribution, but without much overall compression.

We contribute to several strands of literature. First, the paper primarily contributes to the large and well-developed literature that investigates the causes of democratic reforms. The focus in this literature is mostly on national-level reforms that change the rules for national elections.[1] Our perspective is different: we seek to understand how a common legal framework, and reforms thereof, can create significant spatial variation in de facto democracy across sub-units within a given jurisdiction. This aspect of democratization has not been explored before, despite the fact that the variation created in this way – for example, across states within a federation (e.g., Lott and Kenny 1999) or across cantons and municipalities within a country (e.g., Asatryan et al. 2017; Asatryan and De Witte 2015; Hessami 2018; Ferraresi, Rizzo, and Zanardi 2015) – is commonly used to study public policy consequences.

Second, the paper contributes to a smaller literature on local democratic institutions in England and Wales in the long nineteenth century. This literature examines how variation in the extension of the franchise in general, and taxpayer democracy in particular, influenced local investment in public goods such as water and sanitation (e.g., Szreter 1988; Chapman 2018; Aidt, Daunton, and Dutta 2010) or generated political budget cycles (e.g., Aidt and Mooney 2014). We contribute to this literature by unpacking the source of the variation that underpins these studies.

The rest of the paper is organized as follows. Section 2 provides the historical background. Section 3 presents the data, discusses the primary sources used to obtain them, and establishes the key stylized facts about the franchise extension process. Sections 4 to 6 present the results related to β-convergence. Section 7 presents the results related to σ-convergence. Section 8 concludes.

[1] Acemoglu and Robinson (2000, 2006), Aidt and Franck (2015), Aidt and Jensen (2014), and Aidt and Franck (2025a) stress the role of the threat of revolution. Congleton (2007, 2011) emphasise peaceful constitutional bargaining. Lipset (1959), Gundlach and Paldam (2009), and Paldam (2021) highlight the role of economic development.

2 Historical background

During the Victorian period, local government in Great Britain was organized through a complex mosaic of elected and appointed bodies whose jurisdictions often overlapped and whose rules for appointment or election varied widely. Our focus is on the Municipal Corporations in England and Wales.[2] The *Municipal Corporations Act* of 1835 (5 & 6 Will. 4. c. 76) defined the statutory powers of the municipal corporations and introduced a system of representative municipal councils, composed of elected councilors, appointed aldermen, and an appointed mayor, in the 178 boroughs that initially opted for incorporation and in those incorporated thereafter. The Act confined the activities of corporations to holding property, regulating markets and harbours, establishing policing and lighting systems, and issuing by-laws. By 1870, however, many corporations had become the principal providers of urban infrastructure, sanitation, and other public health amenities (see, e.g., Millward and Sheard 1995). Responsibilities for drainage, sewage and waste treatment, paving and street widening, cemetery construction, and the reliable supply of clean water gradually came under their jurisdiction.[3]

Under the *Public Health Act* of 1848 (11 & 12 Vict. c. 63), towns and districts could establish Local Boards of Health, and many corporations did so. From 1872, they also acted as Urban Sanitary Authorities under the *Public Health Act* of 1872 (35 & 36 Vict. c. 79). Within the limits set by statutory law and the local property tax base – which provided the main source of revenue – corporations thus enjoyed considerable autonomy to ex-

[2] Local government in Scotland was organized on fundamentally different principles from that of the Municipal Corporations in England and Wales (see Atkinson 1903; Smellie 1946). In London, local administration was similarly distinct, centered on the vestries until the establishment of the Metropolitan Boroughs in 1902.

[3] Corporations were never responsible for three key areas: main roads, primary education, and poor relief, which were administered respectively by the Highway Authorities, School Boards, and Guardians of the Poor.

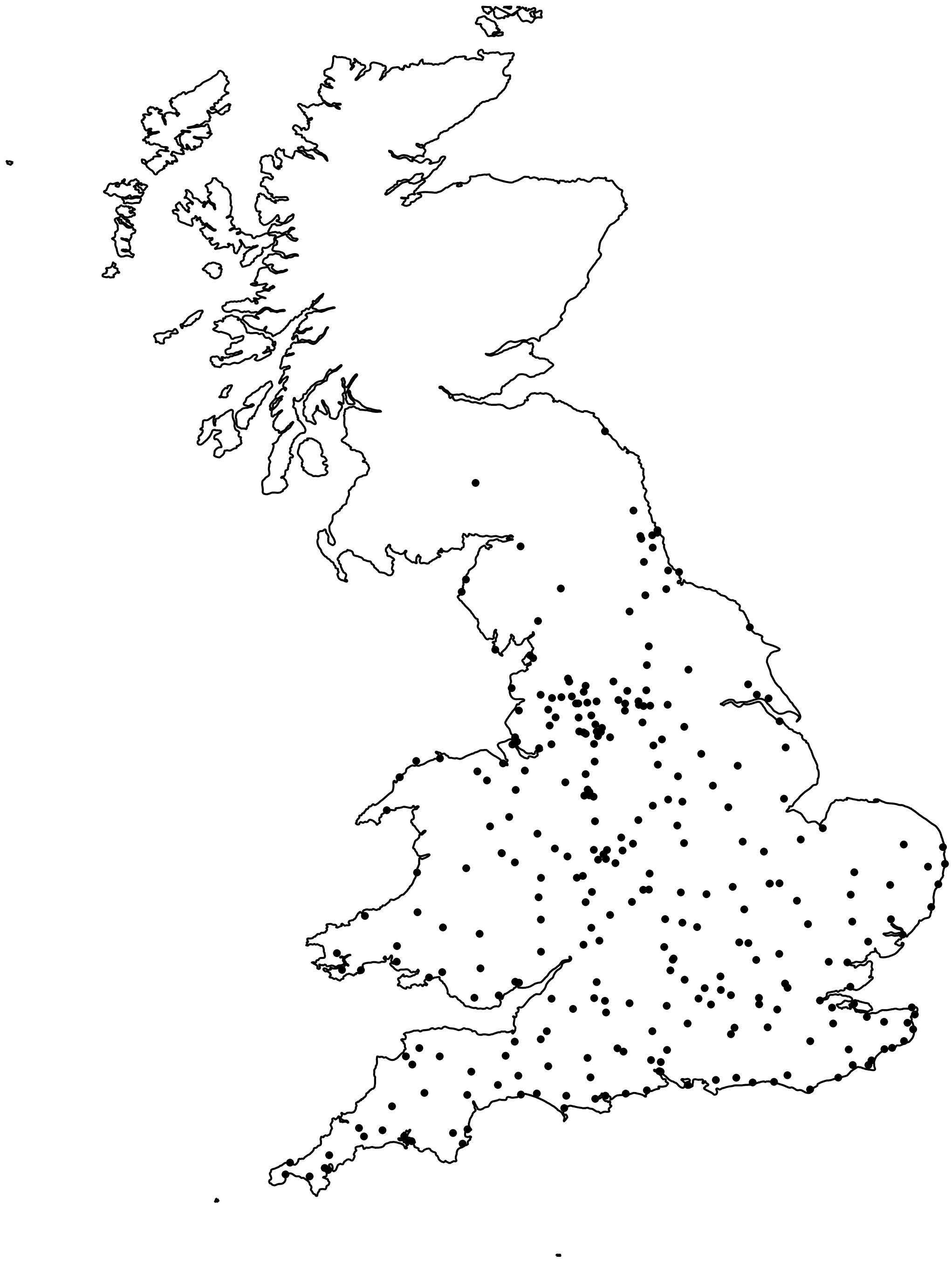
pand the range and quality of local services beyond statutory requirements (Davis 2001, p. 264). In 1888, the *Local Government Act* (51 & 52 Vict. c. 41) created 61 county boroughs in England, which meant that the corporations in these large cities and towns were granted independence from their surrounding administrative counties, functioning as their own local authority. Figure 1 shows the geographical distribution of municipal corporations as of 1897.

The *Municipal Corporations Act* of 1835 stipulated the rules governing the municipal franchise. Eligible as a voter was

> "every man who was an inhabitant householder within a borough or within seven miles thereof and who had occupied any house, warehouse, counting house or shop within the borough for the previous two and a half year, provided he had been rated for the whole of that period and had paid the rates, and was duly enrolled on the Burgess Roll. Those, who, within the previous twelve months, had received parochial relief or other alms [under the Poor Laws] were excluded, and provision was made to enable a tenant, in cases where the landlord was liable for the rate, to pay them himself and so quality for the franchise." Keith-Lucas (1952, p. 53).

The 1835 thus franchise targeted resident male ratepayers and was restricted by residence, property type, gender, and status, as well as by rating practices. These constraints were eased incrementally by later Acts (see the overview in Table 1).

Under the 1835 Act, the right to vote was confined to householders occupying a "house, warehouse, counting house, or shop" subject to rating. This excluded those living in other



Notes: The figure displays location of each of the municipal corporations that existed in 1897.

Figure 1: The geography of municipal corporations in 1897

rateable premises and in low-value dwellings that were not rated at all.[4] The most important excluded category was "cottages" occupied by working-class tenants. Comparison with the parliamentary franchise, which enfranchised occupants of "other buildings," suggests that roughly 10% of potential voters were thereby disenfranchised.[5] The *Municipal Franchise Act* of 1869 remedied this omission by extending the qualification to include "other buildings."

At first, "householder" was interpreted to mean a person occupying an entire dwelling, excluding those who shared accommodation. As multiple occupancy became more common in industrial towns during the 1870s, this interpretation increasingly disenfranchised poorer ratepayers. The *Parliamentary and Municipal Registration Act* of 1878 sought to clarify the issue, but ambiguities persisted until a court ruling in 1881 established the principle that multiple occupiers could qualify individually for the vote. Until then, especially in densely populated boroughs, many working-class tenants remained effectively excluded.

The 1835 franchise also required two and a half years of continuous residence in a rated property within the borough and the punctual payment of rates. This rule significantly limited the electorate, particularly in industrial cities where residential mobility was high. Keith-Lucas (1952, p. 60) illustrates this with the case of Leeds in 1837, where officials mistakenly examined only one year of rate books, tripling the number of municipal electors compared with parliamentary voters. This suggests that the two-and-a-half-year rule,

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[4] While the parliamentary franchise (from 1832) required that the property occupied by a householder be valued at more than £10, the municipal franchise imposed no explicit minimum value. In practice, however, a large share of property worth less than £10 was not rated. Until 1925, properties were assessed for taxation by 640 Boards of Guardians across 14,330 rating areas. The absence of uniform standards produced wide inconsistencies, and, as Waller (1983, p. 258) notes, "the assessments were riddled with antiquated and inconsistent procedures and more than a hint of favoritism, particularly under-assessment of wealthy districts."

[5] Keith-Lucas (1952, p. 61).

rather than the requirement to appear in the rate book per se, was the main barrier to entry. The *Municipal Franchise Act* of 1869 reduced the residence and rate-paying qualification to one year, enabling new residents to qualify more quickly but still excluding many mobile or indirectly rated voters.

A major ambiguity concerned whether tenants who paid rates indirectly through their landlords were entitled to vote. This issue, known as *compounding*, arose when landlords paid rates on behalf of tenants in low-value properties, often in return for a discounted payment to the overseer. The key question was whether such tenants counted as ratepayers. The *Small Tenements Rating Act* of 1850 (13 & 14 Vict. c. 99) permitted parishes to levy rates on landlords rather than tenants for properties valued under £6, while affirming that occupiers of such tenements retained the municipal franchise. The compounding system spread rapidly – by 1867 it had been adopted in 171 boroughs (Keith-Lucas 1952, p. 71) – but its implementation varied. In some boroughs, tenants whose names appeared in the rate book were accepted as voters, while those whose landlords paid on their behalf were often excluded unless they petitioned to substitute their own names every six months. A 1864 court ruling in Birmingham even declared the inclusion of compounders on the roll illegal (Hennock 1973, p. 11).

The *Representation of the People Act* of 1867 (30 & 31 Vict. c. 102) abolished compounding in parliamentary constituencies, which effectively disenfranchised all indirect ratepayers in both parliamentary and municipal elections in those boroughs. Compounding was reinstated by the *Assessed Rates Act* of 1869 (32 & 33 Vict. c. 41), which allowed it for properties valued up to £8 and confirmed that tenants paying rates were entitled to the municipal franchise. Yet disputes persisted until the *Parliamentary and Municipal Registration Act* of 1878 (41 & 42 Vict. c. 26) and an 1881 court decision finally settled the question in favor of indirect ratepayers (Davis and Tanner 1996).

Throughout the period, registration remained a prerequisite for voting. Electoral rolls were compiled annually by Poor Law Overseers from the rate books. Administrative inefficiencies often prevented eligible voters from being registered, as Davis and Tanner (1996, p. 311) documents for parliamentary elections; similar problems undoubtedly affected municipal registration. Although excluded voters could appeal to the revision courts, the process was costly and cumbersome, and few working-class men pursued it.[6]

Common Law disqualifications also excluded certain groups, including paupers, convicted criminals, minors, "lunatics," and aliens. The interpretation of these exclusions varied across boroughs, particularly as the responsibilities of Poor Law Guardians expanded to include services such as vaccination, school fees, and medical assistance. As a result, the boundary between pauper relief that disqualified and assistance that did not became increasingly blurred, though the disfranchisement of paupers largely persisted throughout the century.

The most significant group excluded in 1835, however, was women. While women had been allowed to vote in some boroughs before 1835, the new Act explicitly disfranchised them. This changed with the *Municipal Franchise Act* of 1869 (32 & 33 Vict. c. 55), which extended the vote to women ratepayers. Although the Act did not distinguish between married and unmarried women, the courts held that under Common Law a married woman's property belonged to her husband, effectively limiting the franchise to widows and spinsters. The *Married Women's Property Act* of 1882 (45 & 46 Vict. c. 75) allowed married women to own property in their own right, thereby extending eligibility in principle to some married women.

[6] Political organizations could also use the revision courts to challenge entries on the roll, further complicating the process.

Table 1: Overview of Acts of Parliament with implications for the Municipal Franchise, 1835 to 1994

Year	Parliamentary Act	Implications for the Municipal Franchise
1835	Municipal Corporation Act	The Act defined the municipal franchise as follows: every man who was an inhabitant householder within a borough or within seven miles thereof and who had occupied any house, warehouse, counting house or shop within the borough for the previous two and a half year, provided he had been rated for the whole of that period and had paid the rates, and was duly enrolled on the Burgess Roll. Those, who, within the previous twelve months, had received parochial relief or other alms [under the Poor Laws] were excluded, and provision was made to enable a tenant, in cases where the landlord was liable for the rate, to pay them himself and so quality for the franchise.
1850	The Small Tenements Rating Act	Vestry could resolve to rate owners instead of occupiers of tenements of a yearly rateable value not exceeding £6 (compounding). If the rate was paid, the occupier was entitled to the municipal franchise under the 1835 rule.
1867	The Representation of the People Act	The act reformed the Parliamentary franchise. It prohibited compounding in all parliamentary boroughs, which excluded indirect ratepayers from the municipal franchise.
1869	Assessed Rates Act	Allowed for compounding for properties not exceeding £8 of rateable value. If the rate was paid, the occupier was entitled to the municipal franchise.
1869	Municipal Franchise Act	Amending the Municipal Corporation Act by reducing the 2.5 years' occupation of premises to 1 year and extending the list of qualifying premises to include 'other buildings.' The amendment enfranchised women who satisfied the other franchise requirements.
1872	The National Secret Ballot Act	Introduced the secret ballot for Parliamentary and borough council elections.
1878	The Parliamentary and Municipal Registration Act	The act legally established that indirect ratepayers and that multi-occupiers were eligible to vote.
1882	Municipal Corporation Act	The Act codified that the municipal franchise had been extended to ratepayers who had occupied a premise in the borough for 1 year, not excluding females.
1882	The Married Women's Property Act	The Act granted married women the legal right to own and control their own property, wages, and investments as if they were single. It abolished the principle that married woman's property automatically belonged to her husband.

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Year	Parliamentary Act	Implications for the Municipal Franchise
1888	County Electors Act	Extended the franchise for the boroughs by inclusion of ten pound occupiers. A ten pound occupier is an individual entitled to the parliamentary vote under the Registration Act of 1885, requiring 12 months' occupation of any land or tenement in the area of £10 yearly value, six months' residence within 7 miles, 12 months' rating and having paid the rates.
1894	Local Government Act	The act introduced elected councils at both district and parish levels. District councils were based on the existing urban and rural sanitary districts. The MBs already had elected councils, so this affected Urban Districts that were not MBs.

3 Data and sources

This section outlines the data sources and documents two stylized facts about the evolution of local democracy in England and Wales from the establishment of municipal borough corporations in 1835 to 1897.[7] The data on the number of registered voters in municipal elections are hand-collected from the *UK Parliamentary Papers* (PP 1836, 1837–38, 1867, 1872, 1884–85, and 1897). Together with information on electors in 1878 reported in Vine (1879), these sources provide eight cross-sectional snapshots of the distribution of electors eligible to vote in the municipal borough corporations of England and Wales. The cross-sections correspond to the years 1835, 1837, 1852, 1865, 1871, 1878, 1884, and 1897.[8] The 1837 data are limited to parliamentary boroughs – that is, boroughs entitled to return one or two Members of Parliament to the House of Commons – rendering the sample too small for most of our analyses. The size of the sample varies across years, partly because some corporations failed to report accurate figures and partly due to the creation of corporations in new boroughs over time. In 1835, the sample includes 169 boroughs, rising to 303 by 1897. To the best of our knowledge, this represents the most comprehensive surviving record of voters who elected municipal councils in England and Wales between 1835 and 1913, excluding London.[9]

To quantify the extension of the franchise over time and across space, we require a form of normalization that accounts for variation in the size of the potential voter population

[7] Full references for all printed historical sources are provided in the bibliography at the end of the paper.

[8] PP (1867) reports the number of voters annually between 1852 and 1865, but only for a subset of corporations. We record the number of voters in 1852 (or the closest available year) and in 1865.

[9] Systematic data on the number of voters in each Metropolitan Borough are available from 1902 (Aidt and Mooney 2014), and partial information exists for voters in London vestries between 1871 and 1901. A systematic analysis of these data is left for future research.

across municipal corporations. To achieve this, we draw on demographic data from the *Population Census of Great Britain.* Information on population and inhabited houses is generally available from the printed editions of the decennial censuses (1831-1901) at the appropriate spatial units.[10] We interpolate linearly between census years to align with the years for which voter data are available. Using these data, we construct two measures of franchise extension between 1835 and 1897:

- *fran1*: Voters in % of the total population.
- *fran2*: Voters per 100 (inhabited) houses.

The first measure, *fran1*, normalizes the number of voters by the total population of the borough, as in common in the literature (e.g., Aidt, Dutta, and Loukoianova 2006). The second measure, *fran2*, normalizes the number of voters by the number of inhabited houses. The rationale for this normalization is that, throughout the period, eligibility to vote depended on the payment of local property taxes (the rate). This linked the franchise directly to the housing stock but not in a straightforward way: not all houses were rated (taxed), and more than one person could qualify for the vote in rated properties that were shared among multiple occupiers.

We assemble contextual information for the Municipal Corporations from several historical sources. The *Population Censuses* provide data on borough population and inhabited houses, from which we calculate population density (people per inhabited house) and measure urban growth as population growth between the years with voter data. From 1870 onward, the *Local Taxation Returns* report the assessed value of rateable properties, allowing us to construct a proxy for real property value per capita (*wealth*), adjusted for price changes using the Sauerbeck–Statist price index (base year 1871) from Mitchell (1988). We also collect data on real outstanding loans per capita from the same source.

[10] We use the total population because age- and gender-specific demographic information is generally not reported for individual corporations in the census volumes, and must, therefore, be approximated with information from census district or subdistrict data.

We use the *British and Irish Newspapers* dataset from the British Library (Ryan and McKernan 2021) to measure newspaper circulation per capita in each borough. Finally, from Schurer and Higgs (2014), we obtain the sectoral composition of employment and construct a Herfindahl–Hirschman (HH) index of occupational concentration.[11] We use $n = 10$ occupational categories to calculate the index. Table 2 reports summary statistics for the contextual variables.

Table 2: Descriptive statistics for brough characteristics

Variable	Obs	Std. Dev.	CV	Mean	Min	Max
Population	1,996	73505	2.23	33026	550	951441
Inhabited houses (in 100,000s)	1,626	0.11	1.89	0.06	0.002	1.19
Population density (logged)	1,626	0.16	0.10	1.64	-0.54	3.18
Population aged below 20 (%)	1,744	5.18	0.12	43.72	4.44	74.01
Average yearly pop. growth rate	1,693	4.52	3.41	1.33	-16.63	90.54
HH occupation index	1,787	0.09	0.30	0.30	0.15	0.95
Pop. employed in primary sector (%)	1,787	15.59	0.70	22.27	0.00	97.50
Pop. employed in secondary sector (%)	1,787	19.48	0.48	40.74	1.25	88.67
Pop employed in tertiary sector (%)	1,787	2.67	0.60	4.45	0.00	18.94
Active newspapers (per 1,000 people)	1,653	0.17	1.19	0.15	0.00	1.91
Real property value per capita	1,080	1.46	0.40	3.68	0.05	11.92
Loans per capita	717	1.09	1.38	0.79	0.00	15.62

Between 1835 and the turn of the century, the British Parliament enacted a series of reforms that gradually broadened eligibility to vote in municipal elections (see Table 1 and the discussion in Section 2). Our data reveal two stylized facts about this process. First, the franchise *expanded steadily* (Table 3; Figure 2, panel (a)). Relative to the total population, the franchise increased from 7% to 18%. Fewer than 40% of households had a voter in 1835, compared with nearly 90% in 1897. The most pronounced expansion occurred between 1865 and 1871, capturing the impact of the *Municipal Franchise Act* of 1869. Figure 2, panel (b) shows that the gradual process of franchise extension was similar in the main regions of England and in Wales.

[11] The index is defined as $HH = \sum_{i=1}^{n} s_i^2$, where s_i is the employment share of sector i. The index ranges from $1/n$ (perfect equality) to 1 (complete concentration).

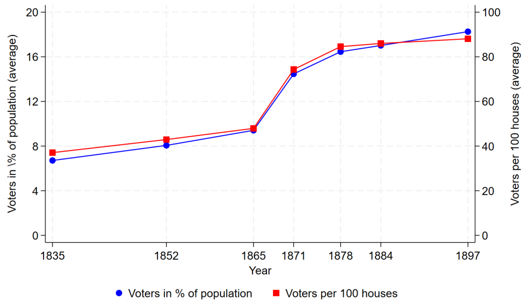
Second, the extension of the franchise was highly *uneven* across space. In 1835, the share of population on the electoral roll ranged from 0.44% in the 'least' democratic corporation to over 13% in the 'most' democratic; by 1897, the range had widened to 9–33%. Figures 3 and 4 show the distribution of the two franchise measures shifting rightward but without a visible compression, while the four maps in Figure 5 illustrates this persistence geographically. Figure 2, panel (c) and (d), plots the coefficient of variation (standard deviation relative to the mean). It declined over time – especially between 1865 and 1871, suggesting that the 1869 reform might both have broadened and partially equalized the franchise. The coefficient of variation in the North of England exhibits a marked increase relative to the other regions in 1852 (panel (d)), but otherwise the trends are similar.

While the first stylized fact is unsurprising given the sequence of reforms enacted by the British Parliament aimed at relaxing restrictions on the right to vote in municipal elections, the second is puzzling. We want to understand why the franchise was so uneven. Did the distribution of the franchise narrow or widen over the cause of the 19th century, i.e., did democratic rights for municipal elections get more even or did the initial disparity magnify? Was there convergence or divergence in the franchise extension? Did particular national reform compress the cross-corporation spread, or did it entrench – and perhaps even widen – pre-existing disparities in enfranchisement?

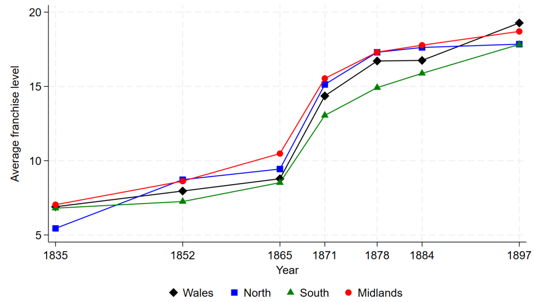
To answer these questions, we borrow well-established methods from the macroeconomic literature on income convergence between rich and poor countries (see Durlauf, Johnson, and Temple (2005) for a comprehensive literature review). Specifically, we examine 'classical' (β)-convergence (Barro and Sala-I-Martin 1992) in Section 4, where we want to understand whether 'undemocratic' boroughs tended to expand their franchise faster than 'democratic' ones. In Section 5, we build on Kremer, Willis, and You (2022) and study (β)-convergence in the franchise extension process across sub-periods. This enables us to investigate whether and how specific reforms affected the speed of convergence, i.e., whether they contributed to closing the democratic gap. In Section 6, we explore the panel structure of the data to understand how the structural characteristics of the boroughs affect the convergence process. In Section 7, we study (σ)-convergence in the franchise process (Quah 1993b, 1993a), i.e., we want to understand what happened to the spatial distribution of the franchise over the period.

Table 3: The franchise extension between 1835 and 1897

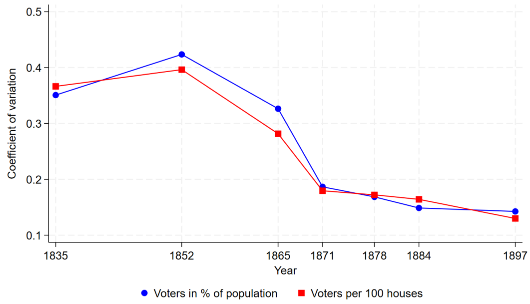
	N	mean	sd	cv	min	max
1835						
Voters in % of population	169	6.71	2.35	0.35	0.44	13.65
Voters per 100 houses	82	37.07	13.58	0.37	12.65	68.73
1852						
Voters in % of population	107	8.06	3.41	0.42	2.93	31.27
Voters per 100 houses	107	42.92	17.01	0.40	14.84	157.84
1865						
Voters in % of population	183	9.41	3.07	0.33	2.97	19.77
Voters per 100 houses	181	47.93	13.50	0.28	17.21	83.32
1871						
Voters in % of population	210	14.47	2.70	0.19	6.27	21.38
Voters per 100 houses	210	74.34	13.35	0.18	32.85	151.88
1878						
Voters in % of population	237	16.46	2.77	0.17	6.24	24.68
Voters per 100 houses	233	84.58	14.57	0.17	32.96	164.87
1884						
Voters in % of population	252	17.02	2.53	0.15	7.31	24.31
Voters per 100 houses	252	86.00	14.12	0.16	40.52	164.29
1897						
Voters in % of population	303	18.26	2.60	0.14	8.90	32.89
Voters per 100 houses	303	88.09	11.45	0.13	49.11	156.55



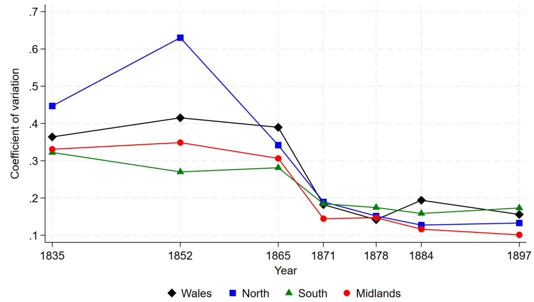
(a) The franchise in England and Wales



(b) Voters as % of population by region



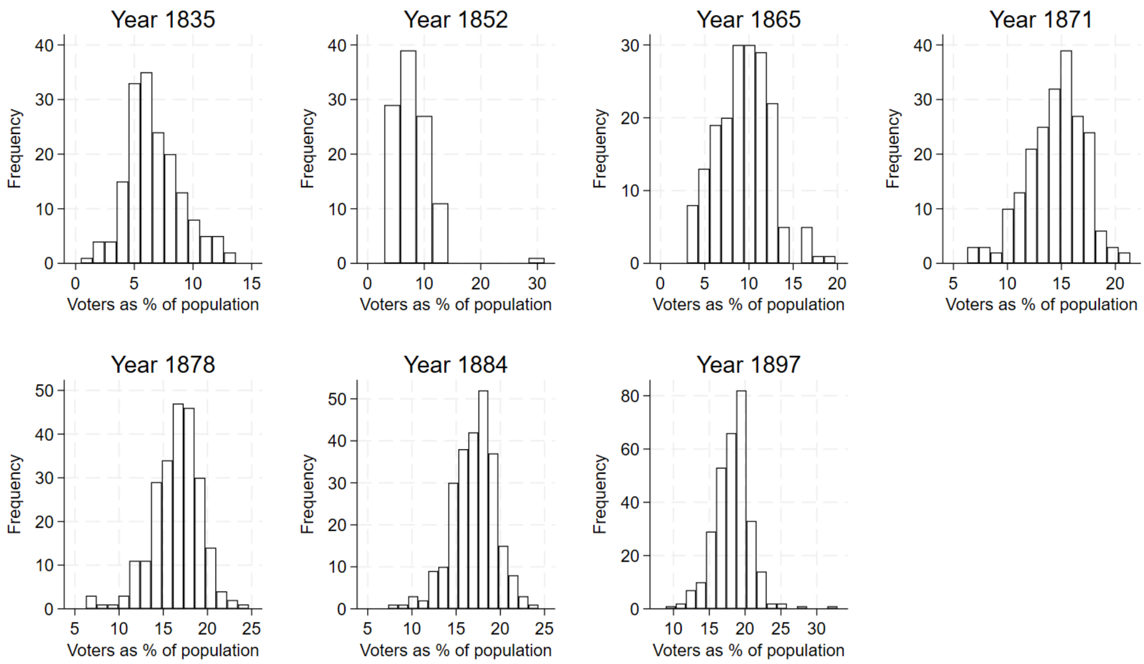
(c) Coefficient of Variation in England and Wales



(d) Coefficient of Variation (voters per capita) by region

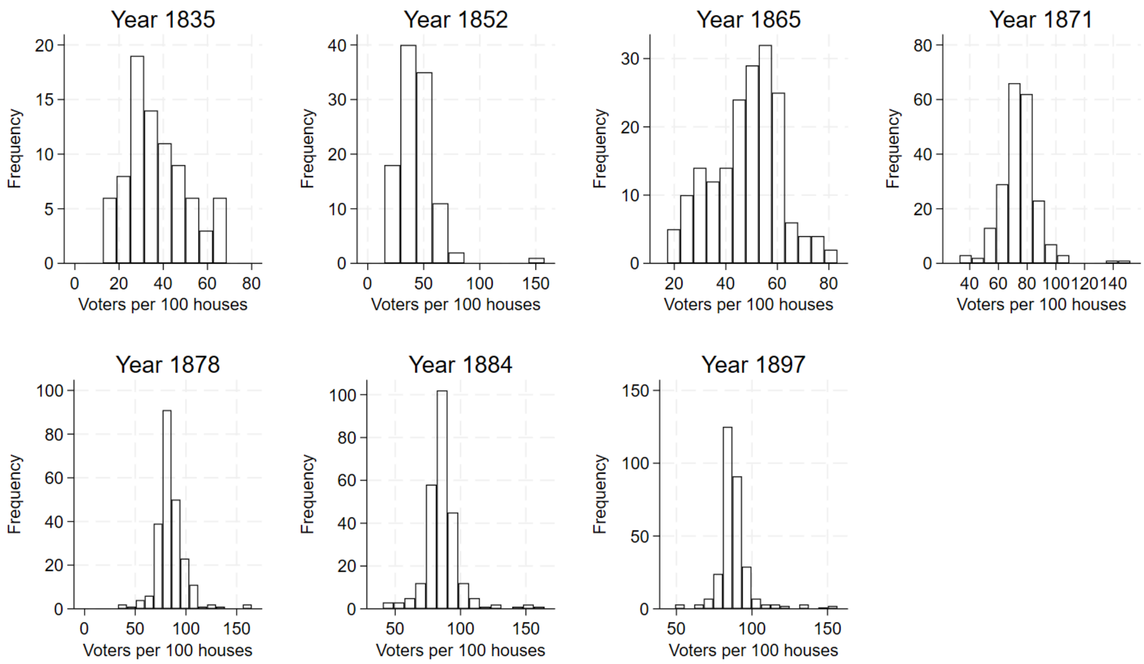
Figure 2: The evolution of the municipal franchise between 1835 and 1897

Note: Panel (a) shows the average of voters in % of the population and voters per 100 houses. Panel (b) shows the average voters in % of the population for three regions of England and for Wales. Panel (c) and (d) show the coefficient of variation (standard deviation/mean) for the same measures of franchise extension.



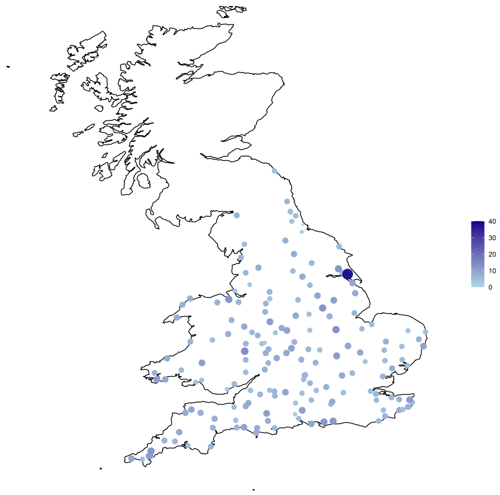
Note: The figure shows the frequency distribution of the extension of the franchise across time. The sample varies from year to year.

Figure 3: The evolution of the distribution of the voters in % of the population across the Municipal Corporations between 1835 and 1897

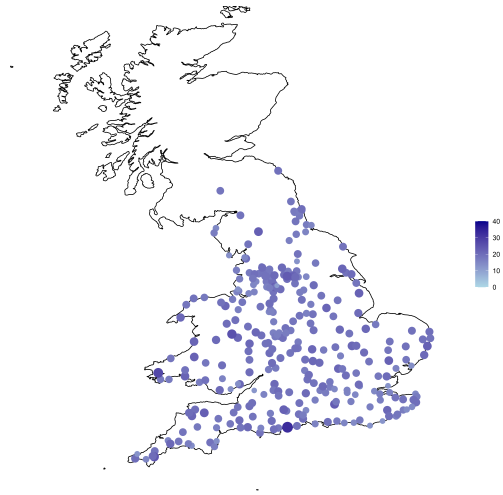


Note: The figure shows the frequency distribution of the extension of the franchise across time. The sample varies from year to year.

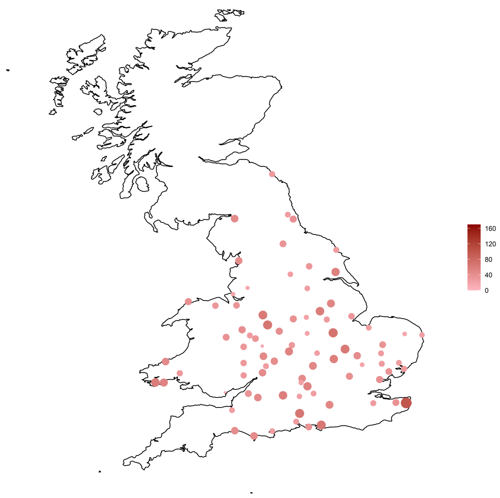
Figure 4: The evolution of the distribution of the voters per house across the Municipal Corporations between 1835 and 1897



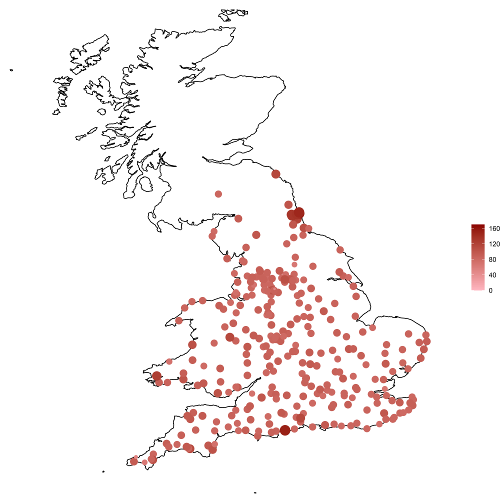
(a) Voters as % of population in 1835



(b) Voters as % of population in 1897



(c) Voters per 100 houses in 1835



(d) Voters per 100 houses in 1897

Figure 5: The geography of the municipal franchise, 1835 and 1897

4 'Classic' β-convergence

In our context, β-convergence occurs if boroughs with an initial narrow franchise experience, on average, a faster franchise extension than boroughs with a wider initial franchise. The starting point for the econometric analysis is a sequence of simple cross-section regressions inspired by Barro and Sala-I-Martin (1992):

$$\frac{log(fran_{i,t}) - log(fran_{i,t_0})}{t - t_0} = \alpha + \beta \frac{log(fran_{i,t_0})}{t - t_0} + u_{i,t_0} \tag{1}$$

where $fran_{i,t}$ is a measure of franchise extension in borough i at time t. For the analysis we present in the main text, we focus on $fran1$ – voters as a percentage of the total population.[12] The outcome variable is the (yearly) growth in the franchise between 1835 – the base year t_0 – and year $t \in \{1852, 1865, 1871, 1878, 1884, 1897\}$. On the right-hand side, the variable $log(fran_{i,t_0})$ is the base-year franchise, scaled by the number of years between the base year and the year of interest, and $u_{i,t}$ is the error term. The parameters of interest are β, which have a straightforward interpretation: a 1% increase in the franchise at time t_0 (scaled by the time interval) leads, on average, to a β% increase in the yearly growth rate of the franchise between 1835 and year t. These parameters therefore measure both the direction and the speed of convergence:

- if $\beta < 0$, then initially more 'undemocratic' boroughs, on average, see their franchise grow faster than more 'democratic' ones, and the democratic gap between them tends to shrink over time. In the extreme, if $\beta = -1$, the term $\frac{log(fran_{i,t_0})}{t-t_0}$ cancels out in equation (1), so that all boroughs tend to converge to the same franchise extension, α. We refer to this as β-convergence.

[12] We do this primarily because the data for $fran2$ – voters per 100 houses – are more limited than for $fran1$ in 1835 (82 versus 169 observations). Despite that, we can replicate all the results with $fran2$ and there are no substantive differences.

- if $\beta > 0$, the opposite holds and the democratic gap tends to widen over time. We refer to this as β-divergence.

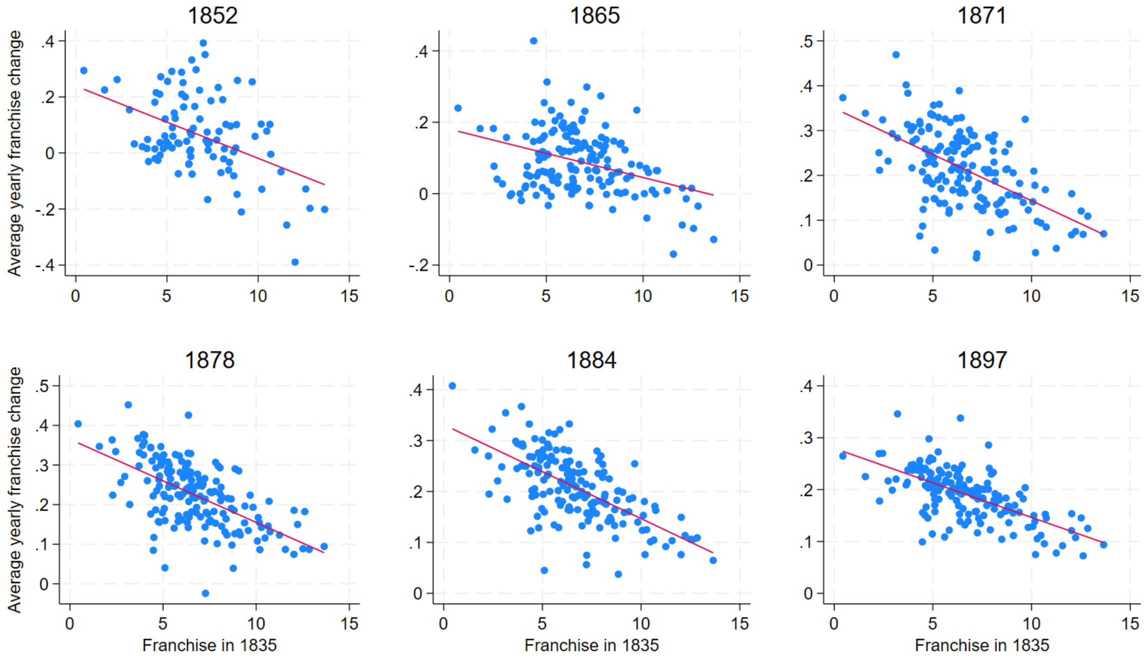
Equation (1) models *absolute* β-convergence (or -divergence): it shows how the initial franchise affects subsequent franchise growth, without accounting for observable differences across boroughs. However, boroughs differ along many dimensions beyond their initial franchise. Because they vary in size, population density, demographics, industrial structure, wealth, and other characteristics, they are likely to move toward different long-run positions along the franchise-extension spectrum, depending on how local conditions respond to national suffrage reforms and other macro shocks. In other words, convergence or divergence can be *conditional* rather than absolute. To allow for this, we augment equation (1):

$$\frac{log(fran_{i,t}) - log(fran_{i,t_0})}{t - t_0} = \alpha + \beta \frac{log(fran_{i,t_0})}{t - t_0} + X_{i,t}\gamma + u_{i,t_0} \qquad (2)$$

where $X_{i,t}$ is a vector of controls for borough i measured at time t.[13] In the main specifications, it includes the number of houses (a measure of size), population density, and the Herfindahl–Hirschman index of employment concentration. The estimate of β from equation (2) captures the degree of *conditional* β-convergence (or divergence). For example, if $\beta < 0$, then 'undemocratic' boroughs experience, on average, faster franchise growth than 'democratic' boroughs, conditional on their structural characteristics.

One issue with modeling franchise convergence and divergence with the same methodology used to model GDP is that, unlike GDP, the franchise is bounded. This means that boroughs that are 'very democratic' in the sense of being close to the relevant upper bound, by construction, must experience a growth slowdown, which mechanically con-

[13] We condition on the structure characteristics of each borough at the end of each sub-period rather than at the beginning (in 1835) because for many of them we only have information from 1852 onward. Conceptually, this means that we assume that it is change in borough characterics

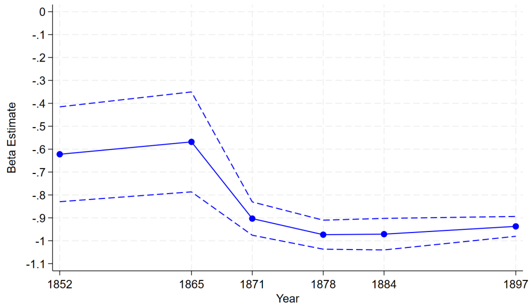


Note: Each panel of the figure plots the average yearly growth rate of the franchise (voters in percentage of the population) as a function of the initial franchise in 1835 for the time period indicated by the year above each panel.

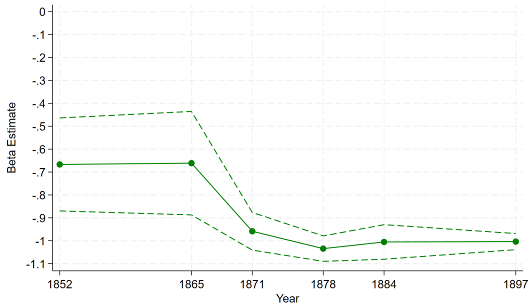
Figure 6: Franchise convergence by year (1835-1897): scatter plots

tributes to β-convergence. In particular, $fran1$ is bounded between 0 and 100, as it is impossible to have more voters than population. Since children and paupers never qualified for the vote, the *de facto* upper bound on $fran1$ is, of course, lower than 100%, but nevertheless, even in the most 'democratic' borough, in which 32.89% of the population could vote in 1897 (see Table 3), there would have been ample scope for further growth. To judge how serious a problem this is, we re-estimate everything with $fran2$. Since this normalizes the number of voters by the number of houses, the upper bound is fuzzier (but ultimately there is a limit to how many voters can inhabit the same house) and, arguably, is less likely to bind. It does not make any substantive difference for the estimates of β.

Figure 6 plots the raw data for each of the six regressions in equation (1), together with the corresponding regression line. For each $t \in \{1852, 1865, 1871, 1878, 1884, 1897\}$, we observe a clear downward-sloping relationship, indicating that β-convergence occurred



(a) Absolute convergence



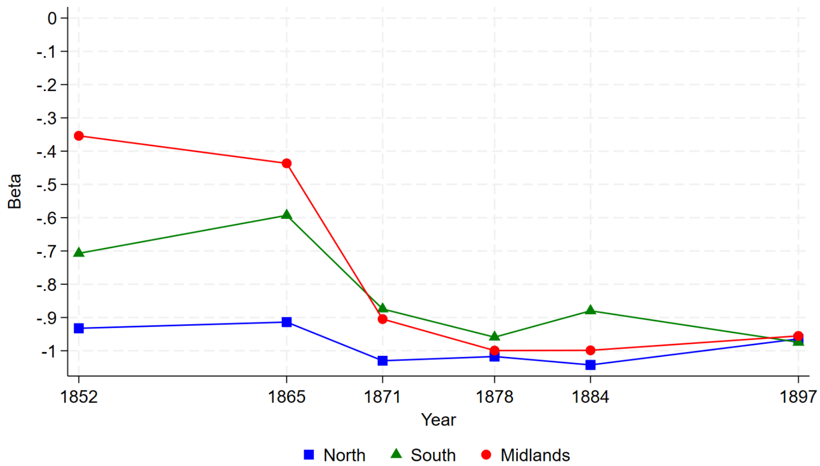
(b) Conditional convergence

Note: Panel (a) shows the estimates of absolute β-convergence, i.e., the β coefficients (the dots) from equation (1) with 95% confidence intervals (the dashed lines). Panel (b) shows the estimates of conditional β-convergence, i.e., the β coefficients (the dots) from equation (2) with 95% confidence intervals (the dashed lines). Here, the estimates control for the contemporary values of houses, population density and HH occupation index.

Figure 7: Estimates of the speed of (classic) β-convergence (1835-1897)

both over the full period from 1835 to 1897 and within each sub-period. Figure 7 summarizes the regression results. The dots show the estimated β coefficients for absolute convergence in panel (a) and for conditional convergence in panel (b), each based on the period from 1835 to the year indicated on the x-axis, with 95% confidence intervals (the dotted lines). Comparing panel (a) and (b) makes it clear that conditional convergence appears slightly faster than absolute convergence, although the difference is small and stable across the six time horizons. The implication is that all boroughs – regardless of their starting point or structural characteristics – tend to converge towards the same long-run position. From panels (a) and (b), we see that the speed of convergence ranges between -0.7 and -0.6 before accelerating after 1871, when the β estimate approaches -1. Taken together, the results suggest that, over the period as a whole, the initial level of the franchise – whether very democratic or very undemocratic – matters little: all boroughs eventually converge, on average, to the same franchise level.

We conducted several robustness checks. Re-estimating equations (1) and (2) using the alternative franchise measure (voters per 100 houses), changing the baseline year from 1835 to 1852, and varying the control variables and their functional forms (including lagged and first-differenced versions) all yielded similar results. Finally, when examining patterns by borough characteristics – county-borough status, incorporation date, parliamentary borough status, and region – only regional differences proved noteworthy and are reported in Figure 8 for the three main regions of England.[14] Two patterns stand out from this figure. First, the β estimate for the North of England remains close to -1 throughout the sample period, indicating that boroughs with initially narrow franchises consistently expanded fast enough to catch up with the more democratic ones. Second, in the South and Midlands, convergence was modest till around 1865: less democratic boroughs grew faster but not fast enough to close the gap. From 1871 onward, however, this pattern reversed, and by 1897 the speed of convergence was similar across all regions. The contrast between the industrializing North and the South and Midlands, with their smaller incorporated market towns, suggests that economic structure might have shaped the convergence process at least up to the *Municipal Franchise Act* of 1869. We investigate this further in Section 6.



Note: The figure shows the estimates of conditional β-convergence for the boroughs within three English regions, i.e., the β coefficients (the dots) from equation (1) Here, the estimates control for the contemporary values of houses, population density and HH occupation index.

Figure 8: Estimates of the speed of (classic) β-convergence (1835-1897) by region

[14] We exclude Wales due to data limitations (there are only seven Welsh boroughs with data in 1835).

5 β-convergence and national reforms

In this section, we turn our attention to the role that the sequence of national reforms listed in Table 1 played for convergence in the franchise. To do this, we follow Kremer, Willis, and You (2022) and rather than relating the franchise in 1835 to subsequent franchise growth (as we did above), we split the sample into six sub-periods - 1835 to 1852, 1852 to 1865, 1865 to 1871, 1871 to 1878, 1878 to 1884, and 1884 to 1897 – and estimate the effect that the franchise extension at the beginning of each sub-period has on franchise growth over that sub-period. Since the national reforms were timed to coincide with these sub-periods, this allows us to study how they affected the process of β-convergence over that sub-period. Specifically, we estimate the following sequence of β-convergence regression models:

$$\frac{log(fran_{i,T_E}) - log(fran_{i,T_B})}{T_E - T_B} = \alpha + \beta \frac{log(fran_{i,T_B})}{T_E - T_B} + X_{i,T_E}\gamma + u_{i,T_B}, \tag{3}$$

where T_B indexes the year beginning a given sub-interval and T_E indexes the year ending the sub-interval. If we impose $\gamma = 0$, the β coefficient in equation (3) captures the speed of absolute β-convergence over the relevant sub-period. If we include the vector of controls, X_{i,T_E}, we estimate the speed of conditional convergence.[15]

Figure 9 summarizes the results. Panels (a) and (b) present the estimated β coefficients (depicted as dots) for absolute and conditional β-convergence, respectively, along with their 95% confidence intervals (shown as dashed lines). Each point estimate indicates the speed of convergence corresponding to the sub-period ending in the year displayed

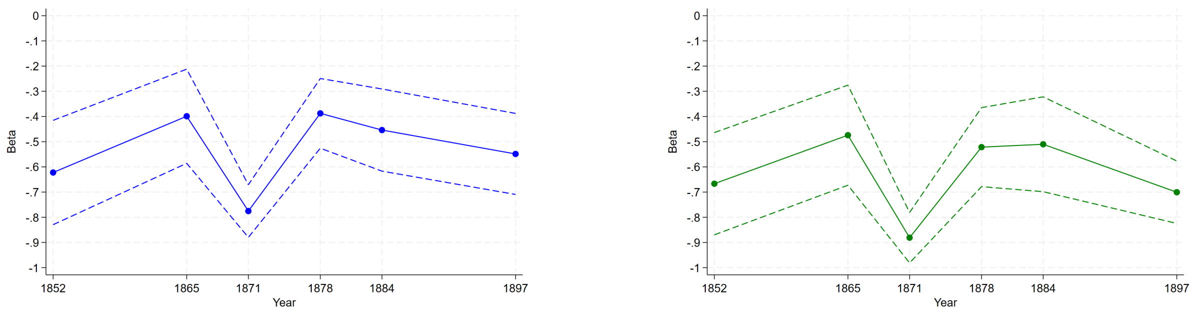
[15] We include the number of houses, population density, and the HH occupation concentration index. For each sub-period, we include the values corresponding to its end year as we did in Section 4.It makes little difference if we instead use the values at the beginning of each sub-period from 1852 onward.

on the x-axis. Consistent with Section 4, conditional β-convergence proceeds somewhat faster than absolute convergence, although the difference is negligible.

The β-coefficients display a wave-like pattern: a sub-period-by-sub-period slowdown in the speed of convergence up to 1865-1871, when the process accelerates markedly. The speed then returns to its previous level during the 1870s, followed by a gradual acceleration throughout the 1880s and 1890s. The acceleration between 1865 and 1871 coincides with the Municipal Franchise Act of 1869.[16] This act lowered the residency requirement from 2.5 to 1 year, expanded the range of qualifying properties, and extended the vote to unmarried and widowed women who met the other criteria. The effect was not only a substantial increase in the average franchise extension, but also a doubling of the speed of convergence (from -0.4 to -0.8). It is likely that the reduction in the residency requirement was the main driver, as the 2.5-year rule excluded many potential voters in rapidly growing towns with high intra-urban mobility compared to more static market towns, and, therefore, would have the effect of extending the franchise more in initially "undemocratic" boroughs that were growing fast.

It is noteworthy that the speed of convergence between 1871 and 1878 fell back to around -0.4, similar to its level in the 1860s before the Municipal Franchise Act. It, therefore, appears that the Secret Ballot Act of 1872 did little to equalize the municipal franchise. In contrast, the sequence of reforms between 1878 and 1884 – the Parliamentary and Municipal Registration Act of 1878, which clarified the rights of indirect ratepayers; the Municipal Corporations Act of 1882, which codified the one-year residency requirement; and the Married Women's Property Act of 1882, which opened a path for married women to qualify for the vote – raised the speed of convergence from -0.4 to -0.45. This acceleration continued into the 1890s, following the County Electors Act of 1888, which

[16] The Assess Rates Act of 1869, which reintroduced compounding in the parliamentary boroughs, is unlikely to have influenced the acceleration in convergence since compounding was permitted in both 1865 and 1871.



(a) Absolute convergence

(b) Conditional convergence

Figure 9: Absolute and conditional β-convergence for six sub-periods (1835 - 1897)

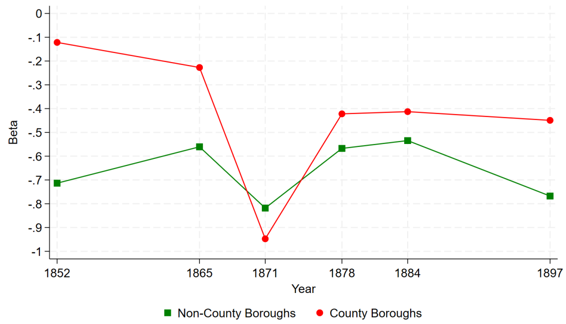
Note: Panel (a) and (b) show the estimates of absolute and conditional β-convergence, i.e., the β coefficients (the dots) from equation (3), respectively, with 95% confidence intervals (the dashed lines). Each point estimate represent the speed of convergence for the sub-period that ends with the year shown on the x-axis. In panel (b), the estimates control for the contemporary values of houses, population density and HH occupation index.

granted parliamentary voters who did not otherwise qualify the right to vote in municipal elections.

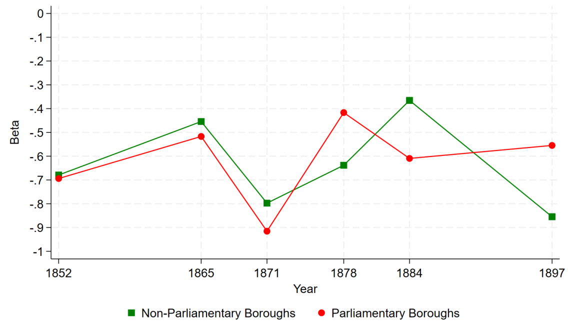
To gain further insight into how changes in the franchise rules affected convergence, we examine heterogeneity across different types of boroughs. In Figure 10, panel (a), we distinguish between boroughs that became county boroughs in 1888 or subsequently, and those that did not. The county boroughs were the largest and most self-sufficient towns, considered capable of assuming county responsibilities.[17] We observe that the Municipal Franchise Act of 1869 had a particularly strong effect among the county boroughs, increasing the speed of convergence from -0.2 to -0.95. While the Act also accelerated convergence in the smaller towns that did not become county boroughs, the overall increase (see Figure 9) appears to be driven primarily by the large county boroughs – consistent with the reduction in the residency requirement being the main causal factor.

[17] Under the Local Government Act 1888, any borough with at least 50,000 inhabitants in 1881 automatically became a county borough. Smaller boroughs could apply for the same status with government approval, and six did so successfully during the 1890s; the smallest was Canterbury, with a population of about 24,000 in 1881.

In panel (b), we divide the sample according to whether a borough had representation in the House of Commons. We find little difference in convergence between the two groups until the 1890s, when the unrepresented boroughs experienced a marked increase in convergence, whereas the parliamentary boroughs, if anything, exhibited a slight slowdown. This suggests that the County Electors Act of 1888 – which affected only the franchise in parliamentary boroughs – was not the main driver of convergence during the 1890s.



(a) By county borough status



(b) By parliamentary borough status

Figure 10: Heterogeneity in conditional β-convergence for six sub-periods (1835 - 1897) in different types of boroughs

Note: See the note to Figure 9. Panel (a) presents conditional β-convergence estimates for the boroughs that became county boroughs in 1888 compared with the rest; panel (b) shows estimates for parliamentary boroughs that had the right to elect members of the House of Commons compared with the rest. Each point estimate represents the speed of convergence for the sub-period ending in the year shown on the x-axis.

6 β-convergence within a panel setting

In this section, we take advantage of the panel dimension of our dataset, which allows us to include time and borough fixed effects. Time (or period) fixed effects control for period-specific shocks common to all boroughs (such as recessions or policy changes), ensuring that the estimate of β-convergence is identified from within-period variation across boroughs. Borough fixed effects control for unobserved, time-invariant borough characteristics (such as geography or culture), ensuring that both the speed of β-convergence and the effect of any conditioning variables are identified from within-borough variation over time in the initial franchise extension (or in the conditioning variables). The specification we estimate is:

$$\frac{log(fran_{i,p+1}) - log(fran_{i,p})}{T_p} = \beta \frac{log(fran_{i,p})}{T_p} + X_{i,p}\gamma \ + \alpha_i + \mu_p + u_{i,p}, \tag{4}$$

where $p \in \{1, \dots, 6\}$ indexes the six sub-periods of our data, and T_p denotes the number of years between sub-periods $p-1$ and p. The parameters μ_p and α_i are the time and borough fixed effects, respectively.

Table 4 reports the results. Columns (1) and (2) report estimates of the speed of absolute convergence, and columns (3) to (5) report on conditional convergence. The inclusion of unit fixed effects in β-convergence regressions remains a point of debate in the macroeconomic literature. Kremer, Willis, and You (2022) argue that fixed effects absorb meaningful cross-borough differences and therefore treat them as nuisance parameters; in their view, "convergence" refers to whether boroughs, on average, reach the same franchise level regardless of any omitted, time-invariant differences between them. By contrast, Acemoglu and Molina (2021) contend that unit fixed effects are essential precisely because they allow the researcher to net out unobserved, time-invariant characteristics. For them, "convergence" concerns whether boroughs reach the same franchise level *conditional on* holding such characteristics constant.

For completeness, we report both specifications, and it is evident that this makes a substantial difference. From columns (1) and (2), we observe that the speed of absolute β-convergence is much slower without borough fixed effects than with (-0.62 versus -0.90). The same is true for conditional β-convergence (columns (3) and (4)). This suggests that we underestimate the speed of convergence if we do not net out unobserved factors and instead identify the speed from within-borough variation. The source of variation (within or between boroughs) also has implications for how the conditioning factors influence franchise growth. For example, we see that boroughs that experience an increase in their Herfindahl-Hirschman index experience slower subsequent franchise growth (column (4)).

In column (5), we expand the vector of conditioning factors to include variables related to employment shares, newspaper circulation, population growth, and the age distribution. This expansion makes little difference for the estimate of β, but boroughs that experience higher population growth tend to have slower subsequent franchise growth.

Table 4: Panel specification: β-convergence (1835-1897)

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.62***	-0.90***	-0.71***	-0.89***	-0.91***
	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)
Houses (in 100,000)			0.01*	-0.02	-0.04**
			(0.00)	(0.02)	(0.02)
Log population density			-0.06***	-0.07***	-0.07***
			(0.01)	(0.02)	(0.02)
HH occupation index			-0.00	-0.04**	-0.04**
			(0.01)	(0.02)	(0.02)
Share employed, primary sector					0.04
					(0.03)
Share employed, secondary sector					0.04
					(0.03)
Share employed, tertiary sector					0.09
					(0.12)
Newspapers per 1,000 people					-0.01
					(0.01)
Avg. yearly population growth					-0.16*
					(0.09)
Fraction of population below 20					0.02
					(0.03)
Period effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	1,080	1,080	1,069	1,069	931
R-squared	0.72	0.81	0.75	0.82	0.83
Boroughs	252	252	248	248	217

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The panel specification enables us to examine whether the time-varying, borough-specific characteristics included in Table 4, column (5), accelerate or slow down the convergence process. To do so, we augment equation (4) with interactions between selected borough characteristics and the lagged value of franchise, and report the results in Table A1. We find that convergence proceeds faster when population density is higher or when the newspaper market is larger, whereas it is slowed by an expansion of the secondary sector and by a younger population.

Table 5: The interaction between β-convergence (1835-1897) and borough-specific characteristics

	Franchise growth (logged)			
	(1)	(2)	(3)	(4)
Lag franchise	-0.71***	-0.94***	-0.91***	-1.09***
	(0.07)	(0.04)	(0.03)	(0.10)
Log population density	-0.04**			
	(0.02)			
Lag franchise × Log population density	-0.12***			
	(0.04)			
Share employed, secondary sector		0.00		
		(0.02)		
Lag franchise × Share employed, secondary sector		0.09***		
		(0.03)		
Newspapers per 1,000 people			0.01	
			(0.01)	
Lag franchise × Newspapers per 1,000 people			-0.07*	
			(0.04)	
Fraction of population below 20				-0.13
				(0.08)
Lag franchise × Fraction of population below 20				0.42*
				(0.22)
Year effects	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes
Observations	1,069	1,069	934	1,065
R-squared	0.82	0.82	0.83	0.82
Number of id	248	248	217	248

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space. *** p<0.01, ** p<0.05, * p<0.1.

6.1 Selected robustness checks

We have conducted a wide range of robustness checks, which are reported in full in the Appendix. Here, we briefly summarise the most important ones.

- **Omitted variables** Between-estimator regressions show that boroughs with higher or lower average franchise levels do not systematically grow faster or slower. This supports the view that convergence is driven by within-borough changes rather than time-invariant (unobserved) differences.

- **Heterogeneous effects** Residual regressions show no systematic remaining variation linked to franchise levels or borough traits, and excluding extreme-franchise boroughs (outliers) leaves results largely unchanged.

- **Alternative specifications** Conditioning the convergence regressions on measures of borough wealth and the stock of outstanding loans (from 1871 onward), changing functional form, using logged or lagged controls, and focusing on level changes or initial conditions all leave the main convergence findings intact. Moreover, most results related to the conditioning factors remain stable in sign and significance.

- **Alternative measures of the franchise extension** Using voters per 100 houses yields similar convergence estimates, indicating results are not driven by upper-bound saturation.

- **Unbalanced panel** Restricting the sample to continuously observed boroughs produces results very similar to the main analysis. Most coefficients on conditioning factors remain unchanged, though houses and the HH occupation index lose significance.

- **Spatial correlation** Applying Conley–Kelly spatial standard errors (Conley and Kelly 2025) leaves the estimated convergence rate robust and all results related to the estimate of β remain highly significant. Some covariate effects weaken, notably population density and newspaper circulation, while others (e.g., youth share, secondary-sector employment) remain significant.

7 σ-convergence

Having established the franchise extension process in the boroughs exhibit β-convergence with $\beta \approx -0.85$, we now turn to a related but conceptually distinct measure of convergence: σ-convergence. The two capture fundamentally different aspects of the convergence process. β-convergence focuses on the (conditional) mean dynamics of individual boroughs. A negative β-coefficient implies that boroughs with initially restricted suffrage tend, on average, to experience faster subsequent growth. The key object of interest is thus whether there is mean-reverting behaviour. σ-convergence, by contrast, concerns the cross-sectional distribution of franchise levels, and whether that distribution becomes tighter or wider over time, that is, whether inequality in franchise levels is actually shrinking.

It is entirely possible for one type of convergence to be present without the other. Crucially, what econometricians refer to as Galton's fallacy can explain why (Stocking 1968). In our context, the fallacy is committed when a negative correlation between initial levels and subsequent growth is taken as proof that dispersion must be shrinking. This reasoning is flawed: a purely mechanical mean-reversion process can generate negative β-coefficients without producing any reduction in cross-sectional inequality. Conversely, a reduction in dispersion can occur for reasons entirely unrelated to mean reversion – such as strong common shocks or common institutional reforms.

For this reason, we need to view the two as complementary. β-convergence provides evidence of (conditional) catch-up behaviour at the borough level, while σ-convergence tests whether the cross-sectional inequality in franchise levels is actually diminishing. The two together offer a comprehensive picture: β-convergence indicates tendencies, whereas σ-convergence reveals outcomes.

7.1 Modelling σ-covergence

To study σ-convergence, we need to model the evolution of the entire franchise distribution over time. We adopt the approach developed by Quah (1993b, 1996b), which models transitional patterns within the cross-sectional distribution of the franchise and estimates the associated steady-state distribution. In other words, this method allows us to ask how likely it is for an "undemocratic" borough to remain "undemocratic," how likely it is to take off and become more "democratic," and whether "democratic" boroughs are likely to remain so or might instead regress and become less "democratic" over time.

To ease exposition of how this works, suppose the franchise distribution consists of just two points or states, "wide" and "narrow" franchise.[18] Let the transition probabilities be summarized in the following transition matrix:

	narrow $t+1$	wide $t+1$
narrow t	p_1	$1-p_1$
wide t	$1-p_2$	p_2

Table 6: Transition probabilities in the franchise distribution

Note: Narrow = narrow franchise; wide = wide franchise. The franchise at time t is measured vertically and the franchise at $t+1$ horizontally.

where

- p_1 = the probability that a ("undemocratic") borough with a narrow franchise at time t still has a narrow franchise at time $t+1$.
- $1-p_1$ = the probability of a democratic transition from a narrow to a wide franchise.

[18] This method deals with absolute convergence. It is feasible to condition the transition matrix on observables (see Quah 1997). However, for our purposes, this is not necessary.

- p_2 = the probability that a ("democratic") borough with a wide franchise at time t still has a wide franchise at time $t+1$.

- $1-p_2$ = the probability of a democratic regression from wide to narrow franchise.

A franchise exhibits σ-convergence when its overall dispersion declines. For instance, if $p_1 = 0$ and $p_2 = 1$, we have complete σ-convergence because all boroughs with a narrow franchise transition into a wide franchise, while all those with a wide franchise remain with a wide franchise: the distribution collapses to a point. For given transition probabilities, we define the long-run distribution as a stationary state in which the fractions of "democratic" and "undemocratic" boroughs are the same at time t and at time $t+1$. Thus, the long-run distribution satisfies:

$$\begin{pmatrix} p_1 & 1-p_2 \\ 1-p_1 & p_2 \end{pmatrix} \begin{pmatrix} q \\ 1-q \end{pmatrix} = \begin{pmatrix} q \\ 1-q \end{pmatrix}, \tag{5}$$

where q is the fraction of "undemocratic" and $1-q$ is the fraction of "democratic" boroughs in the long run.[19] We can solve for q:

$$q = \frac{1-p_2}{2-p_1-p_2}. \tag{6}$$

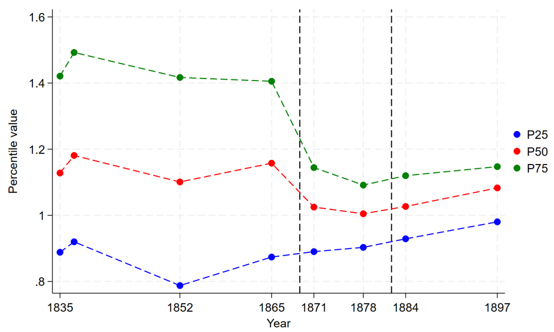
From this expression, we see that although it is more likely for a "democratic" borough to remain "democratic" than for an "undemocratic" borough to remain "undemocratic" ($p_2 > p_1$), this does not imply that all boroughs will eventually become "democratic." Unless either p_1 or p_2 equals 1, there will always be some "undemocratic" and some "democratic" boroughs. "Undemocratic" boroughs can become "democratic" (with probability $1-p_2$), and "democratic" boroughs can become "undemocratic" (with probability $1-p_1$), but the overall fraction of "democratic" and "undemocratic" boroughs remains constant.

[19] Technically speaking, $(q, 1-q)$ is the eigenvector of the transition matrix that is associated with the eigenvalue 1.

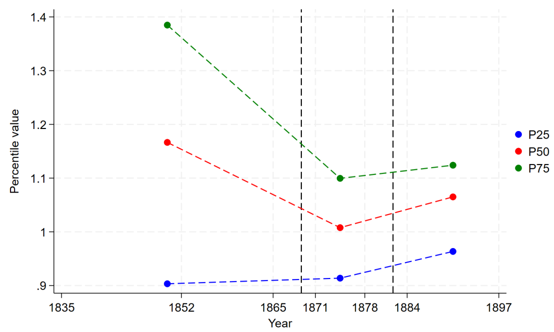
7.2 Results

"Democratic" and "undemocratic" are, of course, relative concepts. To characterize the evolution of the cross-sectional franchise distribution empirically, we track the four quartiles rather than the two halves used in the illustrative example above.[20] To compare the distributions across periods, we normalize each borough's franchise level by the sample average for that year. Figure 11a shows the evolution of the 25th, 50th, and 75th percentiles of the franchise distribution over time. The gaps between the percentiles remain stable throughout 1835–1865. Between 1865 and 1871, the gaps narrow significantly, and they remain stable thereafter.

Since our panel is unbalanced (because new boroughs were created over time), and because it is desirable to "balance" it to some extent in order to track the same boroughs through time, we collapse it into three time periods. Specifically, for each borough with at least one observation, we compute the average franchise level between 1835 and 1865 (the early period), between 1871 and 1878 (the middle period), and between 1884 and 1897 (the late period). Figure 11b shows the evolution of the percentiles for this "three-period" panel; the pattern is similar to that in Figure 11a.



(a) Full Sample



(b) Collapsed sample

Figure 11: Normalized trends in voters per capita, by quartiles (1835-1897)

[20] This follows standard practice in the economic growth literature (see Quah 1996a, 1997; Jones 1997).

Based on the collapsed three-period sample, we construct three transition matrices that capture transitions from the early period to the middle period, the middle period to the late period, and the early period to the late period, respectively. This periodization enables us to quantify the impact of key parliamentary reforms on the distribution of the franchise: the Municipal Franchise Act of 1869, which reduced the 2.5-year occupation-of-premises requirement to 1 year and granted some women the right to vote; and the Parliamentary and Municipal Registration Act of 1878 and the Municipal Corporation Act of 1882, which established that indirect ratepayers and tenants were eligible to vote. Table 7 shows the results. The left-most column, titled "Number", reports the number of boroughs that began in each quartile of the distribution in the first period considered. Each row of the table then shows the proportion of those boroughs that transition to each quartile by the end of the period. The bottom row presents the limit distribution that would result if the transition matrix were multiplied by itself an infinite number of times.

Panel (A) shows the transition matrix between the early (1835–1865) and middle (1871–1878) periods. This captures the impact of the Municipal Franchise Act of 1869. We observe clear evidence of σ-convergence. Boroughs that begin in the first three quartiles tend to move into the first two quartiles, while those that begin in the fourth quartile tend to shift into the first three. Consequently, the limiting distribution indicates that the majority of boroughs (71%) settle in the two lower quartiles. This suggests that the 1869 Act pushed most boroughs in the middle and upper parts of the franchise distribution downwards, while also lifting some boroughs from the first quartile upward, producing a concentration of boroughs in the lower half of the distribution.

Panel (B) presents the transition matrix for the middle (1871–1878) to late (1884–1897) period. This reflects the effects of the Parliamentary and Municipal Registration Act of 1878 and the Municipal Corporation Act of 1882. Here, evidence of σ-convergence is limited. The diagonal transition probabilities (in bold) are relatively large: boroughs that begin in the first quartile tend to remain in the bottom two quartiles; those starting in the second quartile mostly remain in the middle quartiles; and boroughs that begin in the third or fourth quartile usually stay in the upper part of the distribution. As a result, the limiting distribution shows that 90% of boroughs end up in the top three quartiles, with only 10% in the first. Thus, whereas the 1869 Act pushed boroughs downward in the franchise distribution, the 1878–1882 reforms appear to have pulled them upward. In the long run, only a small fraction of "undemocratic" boroughs persist, while the vast majority cluster in the upper three quartiles.

Panel (C) shows the transitions from the early (1835–1865) to the late (1884–1897) period as a whole, allowing us to examine the cumulative pattern of σ-convergence over the full time frame. Three findings emerge. First, most boroughs transition into the first three quartiles. Very few end up in the fourth quartile by the final period: boroughs starting in the top quartile tend to move into the middle quartiles rather than remaining at the top. The limiting distribution confirms this pattern, with 88% of boroughs ending up in the first three quartiles, leaving only a small number of high-democratic outliers in the long run. Second, the diagonal elements (in bold) indicate weak persistence within the first three quartiles. Across the transition, most boroughs either remain in their initial quartile or move to an adjacent one. Third, within the bottom three quartiles, there is some evidence of divergence. The limiting distribution predicts that most boroughs (around 64%) end up in the middle quartiles, while roughly 25% end up in the first quartile. Thus, although the share of high-democratic outliers declines markedly over time, a notable proportion of low-democratic outliers persists. Indeed, the long-run proportions in the first, second, and third quartiles are relatively similar.

Comparing Panel (C) with Panels (A) and (B) clarifies why this overall pattern emerges. The downward movement induced by the 1869 Act is largely offset by the upward movement associated with the 1878 and 1882 Acts. Taken together, these opposing forces lead most boroughs, in the long run, to converge towards the middle of the distribution.

Table 7: Transition Matrix

Number	Quartile	1st	2nd	3rd	4th
Panel A: Early to Middle					
(52)	1st	**0.48**	0.29	0.15	0.08
(21)	2nd	0.33	**0.33**	0.29	0.05
(23)	3rd	0.39	0.30	**0.26**	0.04
(102)	4th	0.24	0.30	0.28	**0.18**
Limit		0.40	0.31	0.23	0.07
Panel B: Middle to Late					
(72)	1st	**0.46**	0.38	0.17	0.00
(74)	2nd	0.11	**0.45**	0.35	0.09
(62)	3rd	0.05	0.11	**0.60**	0.24
(28)	4th	0.04	0.11	0.39	**0.46**
Limit		0.10	0.21	0.45	0.24
Panel C: Early to Late					
(52)	1st	**0.38**	0.19	0.33	0.10
(21)	2nd	0.24	**0.38**	0.24	0.14
(23)	3rd	0.22	0.26	**0.43**	0.09
(102)	4th	0.09	0.34	0.39	**0.18**
Limit		0.25	0.29	0.35	0.12

Notes: Early period = 1835–1865; middle period = 1871–1878; late period = 1884–1897.

7.3 Robustness checks

We conduct two robustness checks to verify that our findings are not artifacts of the data. First, convergence in voters per capita may simply reflect a mechanical slowdown at the frontier, since boroughs with very high franchise levels have limited room for further growth. To address this, we re-construct transition matrices using the alternative measure –voters per 100 houses – which is less likely to be de facto bounded. The results, reported in the appendix, closely mirror those in Table 7, indicating that the patterns we document are not driven by frontier effects.

Second, insofar as franchise levels were shaped directly by underlying borough characteristics, convergence in those characteristics might explain the observed franchise convergence. To judge if this the case, we examine changes in their dispersion over time. Although some characteristics exhibit declines in the coefficient of variation, these are generally small (around 0.05–0.08). Only population and newspapers per capita show larger reductions (0.80 and 1.00 between 1852 and 1897, respectively). Overall, convergence in borough characteristics appears limited and cannot account for the main patterns we identify.

8 Conclusion

This paper has examined how a common legal framework governing municipal elections in nineteenth-century England and Wales generated substantial and persistent spatial variation in local democratic institutions. Despite the uniformity of the Municipal Corporations Act of 1835 and its subsequent amendments, municipalities evolved along markedly different democratic trajectories. Our newly assembled dataset, covering the full population of incorporated towns from 1835 to 1897, reveals that the share of residents eligible to vote varied dramatically across space and time. This heterogeneity is a fundamental and previously overlooked feature of Victorian local democracy.

Our analysis of convergence dynamics highlights two central findings. First, we document strong evidence of β-convergence. Municipalities with initially small electorates expanded their voting populations significantly faster than those starting with relatively broad franchises. This pattern holds across the period as a whole and implies that initial democratic differences, while large, do not persist mechanically. Instead, left to natural demographic and economic processes, municipalities tendedâat least in principleâto grow toward broadly similar franchise levels.

Second, we show that this process of convergence was not smooth but shaped decisively by national reforms. The Municipal Franchise Act of 1869 emerges as the pivotal driver of β-convergence. By reducing the residency requirement for voting, the Act particularly benefited larger, more mobile towns in which population turnover had previously impeded the acquisition of voting rights. Conversely, we find that β-convergence is weaker in dense municipalities, where the barriers to securing voting rights likely remained higher. These results underscore the importance of institutional design in determining who can claim political rights in practice.

Turning to σ-convergence, we find a very different picture. Despite clear β-convergence, the overall dispersion of the franchise changed only modestly across the century. Sub-period analysis reveals why: the 1869 reform compressed the distribution somewhat, but the reforms of 1878 and 1882, which clarified voting rights for tenants in often crowded and rented accommodation, counteracted this effect and expanded the franchise more rapidly in municipalities that had previously lagged for different structural reasons. The combined impact of these reforms caused most municipalities to converge toward the middle of the distribution without substantially reducing overall inequality in democratic participation.

These findings contribute to several strands of literature. They provide new evidence for the study of democratic reform by showing how uniform national rules can generate highly uneven local democratic outcomes. They also enrich the literature on Victorian local governance by uncovering the institutional and demographic forces that shaped the electoral foundations of local policy-making. More broadly, our results speak to the relationship between de jure and de facto political institutions: even when formal rules are identical, local conditions and the sequencing of reforms can produce persistent differences in democratic practice.

Finally, by tracing these dynamics over six decades, the paper opens new avenues for understanding how institutional reforms interact with local socio-economic environments to shape political participation. The lessons extend beyond the historical setting: uniform legal frameworks alone cannot ensure uniform democratic outcomes.

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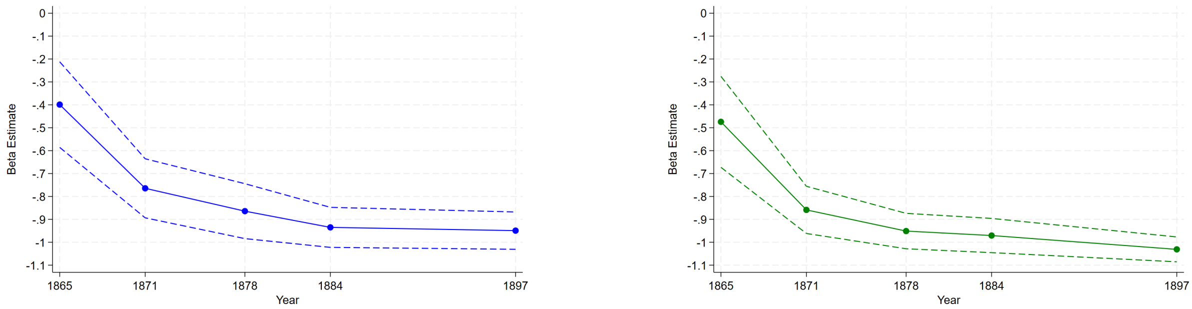
Appendix

A1 Robustness checks: ’classic’ β-convergence

As noted in the main text, we conducted several robustness checks. First, we explored an alternative baselin year to ensure the results weren’t driven by temporary differences in 1835. The figure below show the the data and regression results when we consider 1852 - rather than 1835 - as the baseline as year. Clearly, results remain largely unchanged from the original.



(a) Absolute convergence

(b) Conditional convergence

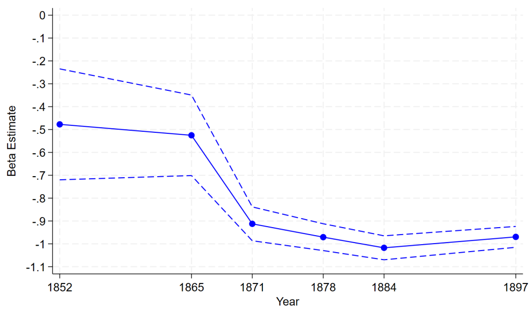
Figure A1: Trends in classic β-convergence (1852–1897), base year 1852

Additionally, there is a potential issue with analyzing the evolution of voters per capita through the β-convergence methodology. franchise is necessarily bound between 0 and 100. Any evidence of convergence we find may be driven by a “slow-down” at the frontier, since boroughs with very high levels of franchise are restricted as to how much they can grow[21]. For this reason, we run the analysis where we normalize the number

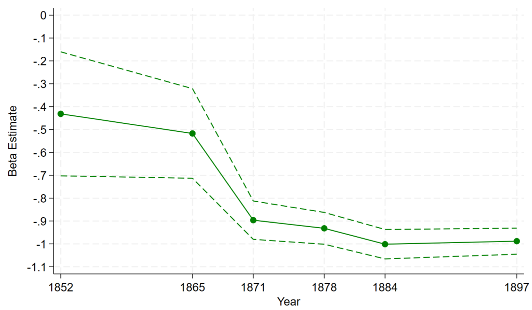
[21] Recall from Table (2) that the maximum value that franchise reaches in our sample is 32.89% (out of the potential 100%), which only marginally decreases the potential for franchise growth. Nevertheless, one can argue that 32.89% is still close to a potential maximum threshold, since children and poor members of the population are never enfranchised throughout the 1835-1897 period.

of voters by houses instead. Voters per 100 houses is by definition unbound since there can be multiple voters per house, and thus comparing results between the two franchise measures allows us to determine whether our results are biased.

The figure below shows the results for the regressions employing the alternative franchise measure. We find the overall estimates to be very close to our main specification, suggesting our results are not driven by a slow-down at the frontier.



(a) Absolute convergence



(b) (Conditional convergence

Figure A2: Trends in classic β-convergence (1835 - 1897), voters per 100 houses

A2 Robustness checks: β-convergence and national reforms

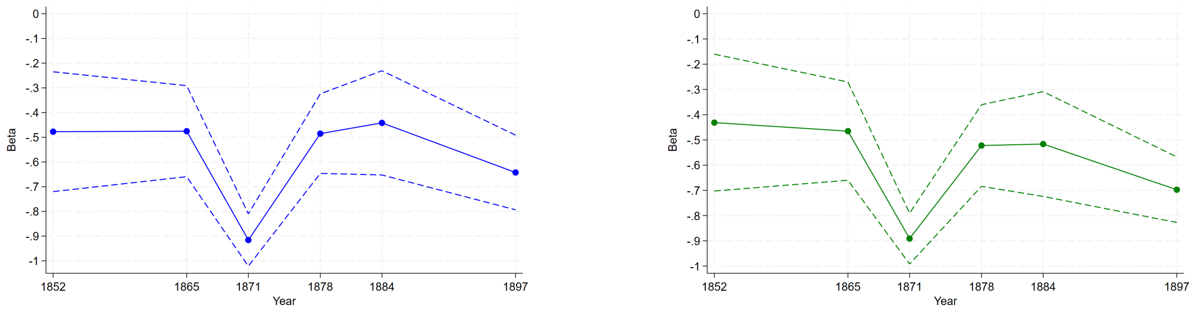
As stated on the main text, there are two potential problems with analyzing the evolution of voters per capita through the β-convergence methodology. First, franchise is necessarily bound between 0 and 100. Any evidence of convergence we find may be driven by a "slow-down" at the frontier, since boroughs with very high levels of franchise are restricted as to how much they can grow[22]. For this reason, we run the analysis where we normalize

[22] Recall from Table (2) that the maximum value that franchise reaches in our sample is 32.89% (out of the potential 100%), which only marginally decreases the potential for franchise growth. Nevertheless, one can argue that 32.89% is still close to a potential maximum threshold, since children and poor members of the population are never enfranchised throughout the 1835-1897 period.

the number of voters by houses instead. Voters per 100 houses is by definition unbound since there can be multiple voters per house, and thus comparing results between the two franchise measures allows us to determine whether our results are biased.

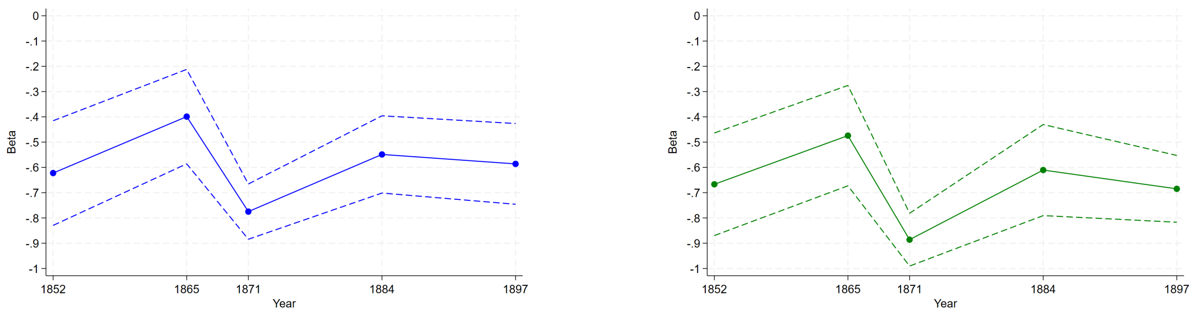
Second, since the Municipal Franchise Act of 1869 enfranchised women alongside men, it is possible that the effects in convergence and franchise growth from 1871 onwards are driven solely by the enfranchisement of women, with trends among the pre-existing male pool of voters remaining largely unchanged.

The results are summarized in the figures below and remain largely unchanged from our main specification, leading us to conclude that our results aren't driven by either gender bias or a slow-down at the frontier.



(a) Absolute convergence **(b)** Conditional convergence

Figure A3: Trends in absolute and conditional β-convergence (1835 - 1897), voters per 100 houses



(a) Absolute convergence **(b)** Conditional convergence

Figure A4: Trends in absolute and conditional β-convergence (1835 - 1897), voters per 100 houses

A3 Robustness checks: β-convergence with a panel setting

Yearly trends

We are interested on whether the impact of borough characteristics on franchise growth changed over time. We do this by interacting borough characteristics with yearly dummies. All specifications include the number of houses, population density and the HH occupation index as controls. Most controls borough characteristics have uniform effects across time, with three exceptions.

First, the impact of houses and density differs by year. We find that the number of houses has no significant effect on growth until 1865-1871, where an additional 100,000 houses increase average yearly franchise growth by 0.14pp. The effect persists in 1871-1878, but becomes only marginally significant. Similarly, we find that density has only a marginal impact on growth in earlier periods. However, this effect becomes bigger in 1865-1871, at which point a 1% increase in density is associated with an 0.10% decrease in franchise growth. This effect disappears for the last period of our sample 1884-1897.

Second, we find that secondary and tertiary sector employment, which weren't significant for the overall regression, are strongly significant when we decompose their effects by year. Both effects are insignificant for earlier periods, but secondary sector employment becomes significant in 1865-1871: specifically, boroughs with close to full secondary sector employment, experience, on average, 0.04% higher yearly franchise growth in 1865-1871, 1871-1878 and 1878-1884. The effect of secondary sector employment disappears for the final period of our sample, 1884-1897, at which point tertiary sector employment has a strong, positive effect on franchise growth.

Finally, the effect of newspapers is only significant (and positive) in the 1835-1852 period. Specifically, an additional newspaper increases franchise growth in 1835-1852 by 0.05%, but is insignificant thereafter.

Table A1: Yearly trends in franchise growth (1835 to 1897)

	Franchise growth (logged)				
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.89***	-0.92***	-0.91***	-0.90***	-0.92***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Houses (in 100,000)	-0.16				
	(0.13)				
1871 × Houses (in 100,000)	0.14**				
	(0.07)				
1878 × Houses (in 100,000)	0.14*				
	(0.07)				
Log population density		-0.03*			
		(0.02)			
1871 × Log population density		-0.07***			
		(0.02)			
1878 × Log population density		-0.05***			
		(0.02)			
1884 × Log population density		-0.04**			
		(0.02)			
Share employed, secondary sector			0.01		
			(0.02)		
1871 × Share employed, secondary sector			0.04**		
			(0.02)		
1878 × Share employed, secondary sector			0.04**		
			(0.02)		
1884 × Share employed, secondary sector			0.03**		
			(0.02)		
Share employed, tertiary sector				-0.21	
				(0.20)	
1897 × Share employed, tertiary sector				0.32**	
				(0.15)	
Newspapers (per 1,000 people)					0.05**
					(0.02)
1865 × Newspapers (per 1,000 people)					-0.04*
					(0.02)
1871 × Newspapers (per 1,000 people)					-0.07**
					(0.03)
1878 × Newspapers (per 1,000 people)					-0.06**
					(0.03)
1884 × Newspapers (per 1,000 people)					-0.07**
					(0.03)
1897 × Newspapers (per 1,000 people)					-0.05**
					(0.03)
Year effects	yes	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes	yes
Observations	1,069	1,069	1,069	1,069	934
R-squared	0.82	0.83	0.83	0.82	0.83
Boroughs	248	248	248	248	217

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: This table estimates the following regression:

$$\frac{\log(fran_{i,p+1}) - \log(fran_{i,p})}{T_p} = \alpha_i + \beta\frac{\log(fran_{i,p})}{T_p} + \gamma x_{i,p} + \mu_p + \eta(x_{i,p} \times \mu_p) + u_{i,p}.$$

$x_{i,p}$ is a borough characteristic. Only significant interaction terms are shown. Controls include houses, population density, and HH occupation index.

Regional trends

It is possible that the results differ across regions. Overall, we find no evidence of regional variation in franchise convergence.

We run Equation 4 and analyze trends according to three regions: North, Midlands and South of England. We find that β-convergence is slightly larger in the North and the Midlands (-0.93 and -0.95) than in the South (-0.86). We also find that, in the North, the occupation variables had a positive (but small) significant effect on franchise growth; and, in the Midlands, boroughs with larger population growth tend to have the slowest franchise growth. Turning to the determinants ofβ-convergence, we find that our main results are driven by the Midlands: the effect of density, secondary sector employment and newspapers is only significant for that region. We also find the number of houses decreases convergence in that region. We also find that higher population growth increases convergence in South England boroughs, but has no discernible effect elsewhere.

Table A2: β-convergence (1835 to 1897): North of England

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.71***	-0.94***	-0.76***	-0.93***	-0.98***
	(0.08)	(0.05)	(0.08)	(0.06)	(0.06)
Houses (in 100,000)			-0.00	-0.01	-0.05*
			(0.01)	(0.03)	(0.03)
Log population density			-0.03***	-0.09***	-0.10***
			(0.01)	(0.03)	(0.04)
HH occupation index			-0.00	0.01	0.04
			(0.01)	(0.05)	(0.06)
Share employed, primary sector					0.28**
					(0.11)
Share employed, secondary sector					0.25***
					(0.08)
Share employed, tertiary sector					0.79**
					(0.32)
Newspapers per 1,000 people					-0.01
					(0.02)
Avg. yearly population growth					-0.02
					(0.06)
Fraction of population below 20					-0.02
					(0.04)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	244	244	244	244	223
R-squared	0.795	0.866	0.802	0.872	0.881
Boroughs	62	62	62	62	58

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3: β-convergence (1835 to 1897): South of England

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.49***	-0.84***	-0.63***	-0.86***	-0.91***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Houses (in 100,000)			-0.01	-0.03	-0.11**
			(0.01)	(0.04)	(0.04)
Log population density			-0.06***	-0.07***	-0.07***
			(0.01)	(0.02)	(0.02)
HH occupation index			0.01	-0.05**	-0.03
			(0.01)	(0.02)	(0.03)
Share employed, primary sector					0.03
					(0.05)
Share employed, secondary sector					0.10**
					(0.04)
Share employed, tertiary sector					-0.02
					(0.17)
Newspapers per 1,000 people					-0.01
					(0.01)
Avg. yearly population growth					-0.11
					(0.14)
Fraction of population below 20					-0.02
					(0.04)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	376	376	376	376	329
R-squared	0.67	0.77	0.72	0.78	0.81
Boroughs	82	82	82	82	71

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A4: β-convergence (1835-1897), Midlands

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.75***	-0.93***	-0.80***	-0.95***	-0.94***
	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)
Houses (in 100,000)			0.01	0.04**	0.03
			(0.01)	(0.02)	(0.02)
Log population density			-0.09***	-0.09**	-0.10**
			(0.01)	(0.04)	(0.04)
HH occupation index			0.00	-0.01	-0.01
			(0.01)	(0.02)	(0.03)
Share employed, primary sector					0.06
					(0.05)
Share employed, secondary sector					-0.01
					(0.04)
Share employed, tertiary sector					0.07
					(0.21)
Newspapers per 1,000 people					-0.00
					(0.01)
Avg. yearly population growth					-0.35**
					(0.16)
Fraction of population below 20					0.07*
					(0.04)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	360	360	349	349	318
R-squared	0.76	0.82	0.79	0.82	0.85
Boroughs	82	82	78	78	72

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A5: Determinants of β- convergence (1835-1897): By Region

	Franchise growth (logged)			Franchise growth (logged)		
	North	South	Midlands	North	South	Midlands
	(1)	(2)	(3)	(4)	(5)	(6)
Lag franchise	-0.89***	-0.71***	-0.46**	-0.96***	-0.86***	-0.95***
	(0.12)	(0.11)	(0.22)	(0.07)	(0.07)	(0.04)
Log population density	-0.09**	-0.03*	0.02			
	(0.03)	(0.02)	(0.05)			
Lag franchise × Log population density	-0.02	-0.10*	-0.32**			
	(0.06)	(0.06)	(0.14)			
Avg. yearly population growth				-0.14*	0.36**	-0.31
				(0.08)	(0.17)	(0.36)
Lag franchise × Avg. yearly population growth				0.53*	-1.48**	-0.09
				(0.31)	(0.65)	(1.00)
Year effects	yes	yes	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes	yes	yes
Observations	244	376	349	244	376	349
R-squared	0.87	0.78	0.83	0.87	0.79	0.85
Number of boroughs	62	82	78	62	82	78

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Table A6: Determinants of β-convergence (1835 to 1897): Midlands

	Franchise growth (logged)			
	(1)	(2)	(3)	(4)
Lag franchise	-0.97***	-0.94***	-1.02***	-0.93***
	(0.04)	(0.04)	(0.05)	(0.04)
Houses (in 100,000)	-0.02			
	(0.02)			
Lag franchise × Number of houses	0.19***			
	(0.07)			
Share employed, primary sector		0.07		
		(0.05)		
Lag franchise × Share employed, primary sector		-0.08*		
		(0.04)		
Share employed, secondary sector			-0.07**	
			(0.03)	
Lag franchise × Share employed, secondary sector			0.12***	
			(0.04)	
Newspapers per 1,000 people				0.06**
				(0.03)
Lag franchise × Newspapers per 1,000 people				-0.18***
				(0.06)
Year effects	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes
Observations	349	349	349	321
R-squared	0.83	0.83	0.83	0.82
Number of id	78	78	78	72

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Borough's parliamentary status

We compare results among boroughs which could elect members of the House of Commons (so-called parliamentary boroughs) and those which did not. The results were quite similar in both groups. The only distinction is that, in boroughs without parliamentary status, a higher fraction of the population employed in the primary and secondary sectors was associated with slightly higher franchise growth, and more active newspapers were associated with slightly lower franchise growth. Turning to convergence, the effect of density was sizable for parliamentary boroughs, but negligible for others. We also find the number of houses decreases convergence in non-parliamentary boroughs.

Table A7: β-convergence (1835 to 1897): Boroughs without Parliamentary Status

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.53***	-0.88***	-0.63***	-0.89***	-0.96***
	(0.08)	(0.07)	(0.08)	(0.07)	(0.08)
Houses (in 100,000)			-0.00	0.31*	-0.08
			(0.03)	(0.18)	(0.17)
Log population density			-0.07***	-0.08***	-0.11***
			(0.01)	(0.02)	(0.03)
HH occupation index			0.01	-0.09**	0.02
			(0.02)	(0.04)	(0.04)
Share employed, primary sector					0.11**
					(0.05)
Share employed, secondary sector					0.12***
					(0.04)
Share employed, tertiary sector					0.33
					(0.27)
Newspapers per 1,000 people					-0.03***
					(0.01)
Avg. yearly population growth					-0.19
					(0.15)
Fraction of population below 20					-0.03
					(0.04)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	343	343	332	332	260
R-squared	0.62	0.74	0.67	0.76	0.78
Boroughs	96	96	92	92	73

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A8: β-convergence (1835 to 1897): Boroughs with Parliamentary Status

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.66***	-0.90***	-0.75***	-0.90***	-0.91***
	(0.05)	(0.03)	(0.04)	(0.03)	(0.03)
Houses (in 100,000)			0.01	-0.01	-0.03
			(0.00)	(0.02)	(0.02)
Log population density			-0.05***	-0.06***	-0.05**
			(0.01)	(0.02)	(0.02)
HH occupation index			-0.01	-0.03*	-0.05**
			(0.01)	(0.02)	(0.02)
Share employed, primary sector					0.03
					(0.03)
Share employed, secondary sector					0.01
					(0.03)
Share employed, tertiary sector					0.18
					(0.13)
Newspapers per 1,000 people					0.00
					(0.01)
Avg. yearly population growth					-0.16
					(0.10)
Fraction of population below 20					0.05
					(0.03)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	737	737	737	737	671
R-squared	0.76	0.84	0.79	0.85	0.85
Boroughs	156	156	156	156	144

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A9: Determinants of β-convergence (1835 to 1897): Parliamentary Borough Status

	Franchise growth (logged)							
	$PB = 0$	$PB = 1$	$PB = 0$	$PB = 1$	$PB = 0$	$PB = 1$	$PB = 0$	$PB = 1$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag franchise	-0.77***	-0.71***	-0.92***	-0.91***	-0.95***	-0.95***	-0.94***	-0.91***
	(0.13)	(0.08)	(0.07)	(0.04)	(0.07)	(0.04)	(0.07)	(0.03)
Log population density	-0.06***	-0.03						
	(0.02)	(0.03)						
Lag franchise × Log population density	-0.08	-0.12**						
	(0.07)	(0.05)						
Houses (in 100,000)			0.15	-0.03				
			(0.18)	(0.02)				
Lag franchise × Houses (in 100,000)			1.20***	0.07				
			(0.45)	(0.05)				
Share employed, secondary sector					0.01	-0.02		
					(0.03)	(0.02)		
Lag franchise × Share employed, secondary sector					0.13**	0.09***		
					(0.05)	(0.03)		
Newspapers per 1,000 people							0.01	0.03*
							(0.02)	(0.02)
Lag franchise × Newspapers per 1,000 people							-0.13**	-0.08*
							(0.06)	(0.05)
Year effects	yes	yes	yes	yes	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes	yes	yes	yes	yes
Observations	332	737	332	737	332	737	260	674
R-squared	0.76	0.85	0.76	0.85	0.76	0.85	0.78	0.85
Number of id	92	156	92	156	92	156	73	144

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

County-borough status

We perform a further distinction: between boroughs that became county boroughs in 1888 or subsequently, and those that did not. We find that density, secondary and tertiary sector employment and newspapers impacted convergence in boroughs with county status, while the fraction of population aged below 20 was only significant in non-county boroughs.

Table A10: β-convergence (1835 to 1897): Boroughs without County Status

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.62***	-0.88***	-0.68***	-0.89***	-0.90***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Houses (in 100,000)			0.02	0.01	-0.14**
			(0.02)	(0.06)	(0.07)
Log population density			-0.05***	-0.07***	-0.07***
			(0.01)	(0.02)	(0.02)
HH occupation index			-0.00	-0.03*	-0.03
			(0.01)	(0.02)	(0.02)
Share employed, primary sector					0.03
					(0.03)
Share employed, secondary sector					0.05
					(0.03)
Share employed, tertiary sector					0.10
					(0.14)
Newspapers per 1,000 people					-0.01
					(0.01)
Avg. yearly population growth					-0.23**
					(0.10)
Fraction of population below 20					0.01
					(0.03)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	806	806	799	799	682
R-squared	0.69	0.77	0.72	0.78	0.79
Boroughs	191	191	188	188	162

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A11: β-convergence (1835 to 1897): Boroughs with County Status

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.60***	-0.90***	-0.73***	-0.89***	-0.92***
	(0.07)	(0.05)	(0.07)	(0.05)	(0.05)
Houses (in 100,000)			0.00	-0.01	-0.02
			(0.01)	(0.02)	(0.03)
Log population density			-0.07***	-0.08	-0.05
			(0.01)	(0.05)	(0.05)
HH occupation index			-0.02	-0.04	0.01
			(0.01)	(0.04)	(0.05)
Share employed, primary sector					0.12
					(0.11)
Share employed, secondary sector					0.05
					(0.06)
Share employed, tertiary sector					0.26
					(0.26)
Newspapers per 1,000 people					-0.01
					(0.05)
Avg. yearly population growth					0.04
					(0.07)
Fraction of population below 20					0.04
					(0.07)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	274	274	270	270	249
R-squared	0.77	0.88	0.83	0.88	0.90
Boroughs	61	61	60	60	55

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A12: Determinants of β-convergence (1835 to 1897): County Borough Status

	Franchise growth (logged)									
	$CB=0$	$CB=1$	$CB=0$	$CB=1$	$CB=0$	$CB=1$	$CB=0$	$CB=1$	$CB=0$	$CB=1$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Lag franchise	-0.78***	-0.49***	-0.92***	-0.98***	-0.88***	-0.86***	-0.91***	-0.89***	-1.11***	-1.04***
	(0.09)	(0.11)	(0.04)	(0.06)	(0.04)	(0.05)	(0.04)	(0.05)	(0.11)	(0.32)
Log population density	-0.05**	-0.04								
	(0.02)	(0.06)								
Lag franchise × Log population density	-0.07	-0.26***								
	(0.05)	(0.07)								
Share employed, secondary sector			0.01	-0.00						
			(0.02)	(0.06)						
Lag franchise × Share employed, secondary sector			0.06*	0.14***						
			(0.03)	(0.05)						
Share employed, tertiary sector					0.21	0.40*				
					(0.18)	(0.20)				
Lag franchise × Share employed, tertiary sector					-0.39	-0.74**				
					(0.41)	(0.30)				
Newspapers per 1,000 people							0.01	0.09		
							(0.01)	(0.07)		
Lag franchise × Newspapers per 1,000 people							-0.04	-0.39***		
							(0.04)	(0.14)		
Fraction of population below 20									-0.17*	-0.04
									(0.09)	(0.21)
Lag franchise × Fraction below 20									0.49**	0.30
									(0.24)	(0.64)
Year effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	799	270	799	270	799	270	685	249	795	270
R-squared	0.78	0.90	0.79	0.89	0.78	0.89	0.78	0.90	0.79	0.88
Number of id	188	60	188	60	188	60	162	55	188	60

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

A3.1 Incorporation date

We compare between boroughs incorporated before and after 1835. We find the impact of density on franchise growth is larger among boroughs incorporated after 1835. We find no other substantial differences between these boroughs. In addition, we looked for patterns according to population density and HH occupation index quintiles, but likewise find no substantial differences. The impacts of density and secondary sector employment were driven by the boroughs incorporated soones than 1835.

Table A13: β-convergence (1835 to 1897): Boroughs Incorporated After 1835

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.58***	-0.88***	-0.71***	-0.86***	-0.92***
	(0.08)	(0.07)	(0.06)	(0.07)	(0.08)
Houses (in 100,000)			0.00	-0.04	-0.07*
			(0.01)	(0.03)	(0.04)
Log population density			-0.06***	-0.15**	-0.18**
			(0.01)	(0.06)	(0.08)
HH occupation index			-0.01	0.01	0.12*
			(0.01)	(0.05)	(0.06)
Share employed, primary sector					0.15
					(0.09)
Share employed, secondary sector					0.07
					(0.09)
Share employed, tertiary sector					0.50
					(0.35)
Newspapers per 1,000 people					-0.03*
					(0.02)
Avg. yearly population growth					0.03
					(0.07)
Fraction of population below 20					-0.02
					(0.03)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	218	218	207	207	180
R-squared	0.78	0.88	0.84	0.89	0.90
Boroughs		76		72	65

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A14: β-convergence (1835 to 1897): Boroughs Incorporated Before 1835

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.62***	-0.90***	-0.70***	-0.91***	-0.92***
	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)
Houses (in 100,000)			0.01	0.01	-0.02
			(0.01)	(0.02)	(0.02)
Log population density			-0.06***	-0.07***	-0.07***
			(0.01)	(0.02)	(0.02)
HH occupation index			-0.01	-0.04**	-0.05***
			(0.01)	(0.02)	(0.02)
Share employed, primary sector					0.04
					(0.03)
Share employed, secondary sector					0.05
					(0.03)
Share employed, tertiary sector					0.03
					(0.12)
Newspapers per 1,000 people					-0.01
					(0.01)
Avg. yearly population growth					-0.20*
					(0.11)
Fraction of population below 20					0.03
					(0.03)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	862	862	862	862	751
R-squared	0.70	0.80	0.74	0.80	0.82
Boroughs	176	176	176	176	152

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A15: Determinants of β-convergence: By Incorporation Date

	Franchise growth (logged)					
	After 1835	Before 1835	After 1835	Before 1835	After 1835	Before 1835
	(1)	(2)	(3)	(4)	(5)	(6)
Lag franchise	-0.63***	-0.69***	-0.89***	-0.95***	-0.96***	-1.12***
	(0.17)	(0.08)	(0.07)	(0.04)	(0.17)	(0.11)
Log population density	-0.13**	-0.03				
	(0.06)	(0.02)				
Lag franchise × Log population density	-0.15	-0.14***				
	(0.10)	(0.05)				
Share employed, secondary sector			-0.05	0.01		
			(0.04)	(0.02)		
Lag franchise × Share employed, secondary sector			0.05	0.08**		
			(0.04)	(0.04)		
Fraction of population below 20					-0.11	-0.13
					(0.15)	(0.09)
Lag franchise × Fraction of population below 20					0.24	0.46*
					(0.37)	(0.24)
Year effects	yes	yes	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes	yes	yes
Observations	207	862	207	862	207	858
R-squared	0.90	0.81	0.90	0.81	0.90	0.81
Number of boroughs	72	176	72	176	72	176

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Convergence in borough characteristics

Throughout this section, we argued that borough characteristics impact franchise convergence and growth. However, it is possible that borough characteristics also directly determine the baseline level of the franchise. This compromises our results in two ways. First, the effects of borough characteristics on convergence and growth would be biased upwards, since they also impact the baseline franchise level. Second, if borough characteristics converge among themselves, then the franchise would also converge mechanically across samples simply because its determinants have been converging, rather than because any government policies or yearly trends affected the extension of voting rights.

To account for this possibility, we test for evidence of β-convergence for each borough characteristic. We start by estimating an analog of Equation 3, for each borough characteristic:

$$\frac{log(x_{i,T_E}) - log(x_{i,T_B})}{T_E - T_B} = \alpha + \beta \frac{log(x_{i,T_B})}{T_E - T_B} + u_{i,T_B} \quad (7)$$

We use year 1871 as the first year for the real property value and loans per capita variables, and 1852 for all other variables. The results are summarized in Figure A5 below. For the vast majority of variables, the β estimates remain close to 0 throughout time, indicating that the lagged effect of the variable has little to no effect on its subsequent growth rate. The most notable exception is population aged below 20, where β estimates remain close to -1 (suggesting perfect convergence) across most years but skyrockets to 3 in 1871: that is, for most years of the sample, boroughs with younger populations are "aging" faster than those with older populations, but between 1861-1875, the pattern is inverted: boroughs with younger populations become even younger, and those with older populations even older (on average). The average yearly population growth rate, the number of newspapers, and the real property value per capita, also show signs of mild convergence, with the period of 1865-1871 seeing substantially more convergence.

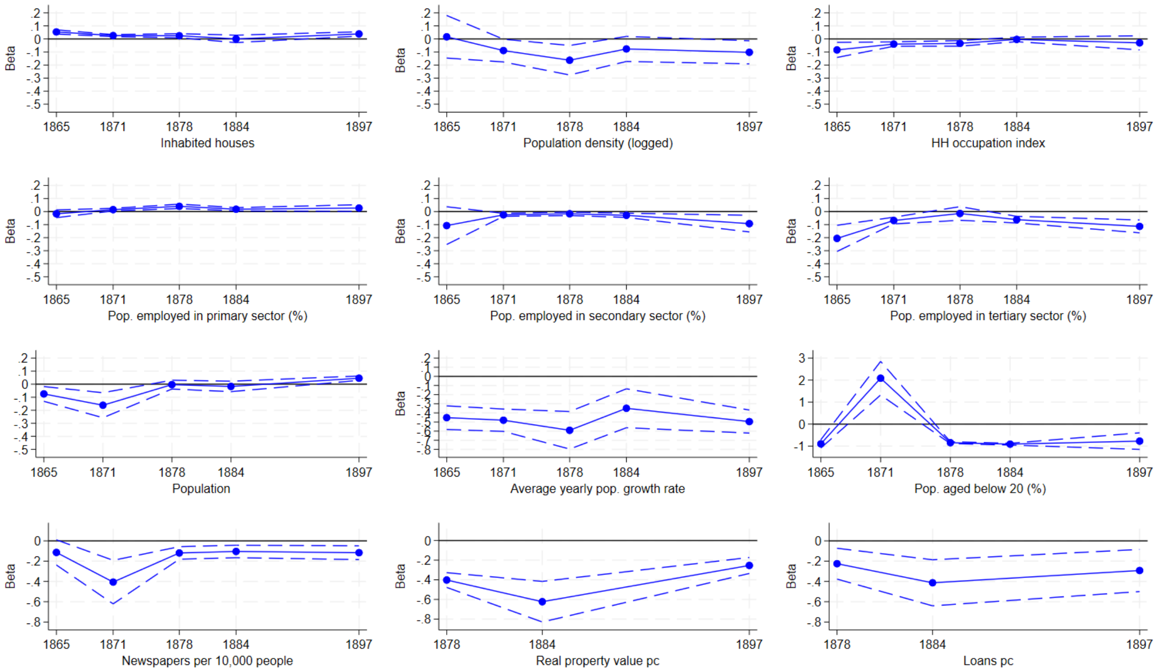


Figure A5: β-convergence for control variables

We also estimate an analog of Equation 4 to determine whether convergence existed, conditional on borough fixed effects.

$$\frac{log(x_{i,p+1}) - log(x_{i,p})}{T_p} = \alpha_i + \beta \frac{log(x_{i,p})}{T_p} + \alpha_i + \mu_p + u_{i,p} \tag{8}$$

The findings are summarized in Table A16, where - to save space - we report only the β estimates. Again, most variables report no convergence. Population density, newspapers and property value are - on average - converging mildly. Population growth and loans per capita show strong signs of convergence, and population aged below 20 shows full convergence.

Table A16: β-convergence for controls (1835-1897)

Variable	$\hat{\beta}$	Years
Population	-0.30***	1835-1897
	(0.06)	
Inhabited houses (in 10,000)	-0.03***	1835-1897
	(0.01)	
Population density (logged)	-0.37***	1835-1897
	(0.03)	
Population aged below 20 (%)	-1.02***	1852-1897
	(0.02)	
Average yearly pop. growth rate	-0.84***	1852-1897
	(0.04)	
HH occupation index	-0.10***	1852-1897
	(0.02)	
Pop. employed in primary sector (%)	-0.02**	1852-1897
	(0.01)	
Pop. employed in secondary sector (%)	-0.08***	1852-1897
	(0.02)	
Pop. employed in tertiary sector (%)	-0.19***	1852-1897
	(0.04)	
Active newspapers per 10,000 people	-0.69***	1835-1897
	(0.09)	
Real property value pc	-0.74***	1871-1897
	(0.06)	
Loans pc	-0.90***	1871-1897
	(0.06)	

Between Estimator

We run a between-estimator of Equation 4 to test for time-invariant differences across boroughs. We find that the coefficient on lagged franchise is statistically insignificant for both the absolute and conditional convergence regressions. In other words, boroughs with higher or lower average franchise levels do not systematically experience higher or lower average franchise growth. This result is consistent with our hypothesis that convergence is driven primarily by within-borough changes in contemporary characteristics and legislative reforms, rather than persistent, time-invariant differences between boroughs.

Table A17: Conditional β-convergence (1835 to 1897): Between Estimator

	Franchise growth (logged)		
	(1)	(2)	(3)
Lag franchise	-0.01	0.00	-0.01
	(0.02)	(0.02)	(0.02)
Houses (in 100,000)		0.02***	0.04***
		(0.01)	(0.01)
Log population density		0.01**	0.02**
		(0.01)	(0.01)
HH occupation index		-0.02*	-0.03**
		(0.01)	(0.02)
Share employed, primary sector			-0.02
			(0.01)
Share employed, secondary sector			-0.01
			(0.01)
Share employed, tertiary sector			-0.10
			(0.07)
Newspapers per 1,000 people			0.00
			(0.01)
Avg. yearly population growth			-0.17*
			(0.07)
Fraction of population below 20			0.08**
			(0.04)
Observations	1,080	1,069	931
R-squared	0.00	0.07	0.17
Boroughs	252	248	217

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Heterogeneous effects by franchise size

It is possible that the size of the franchise and borough characteristics had heterogeneous effects on franchise growth across observations: that is, when the franchise level was higher, a 1 percentage increase had a different effect on franchise growth than when franchise was lower. We estimate Equation 4 and regress the residuals on lagged franchise and the borough characteristics. This allows us to test whether any systematic variation related to the franchise level remains unexplained by the pooled specification. A significant coefficient in this second regression would suggest that the relationship between lagged franchise and franchise growth may not be fully captured by a single common slope. We find all coefficients to be either statistically insignificant or very close to 0, so we dismiss this possibility.

Table A18: Heterogeneous effects of franchise and borough characteristics size (no fixed effects)

	Residuals				
	Absolute convergence	Conditional convergence			
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.03***	-0.02***			
	(0.01)	(0.01)			
Houses (in 100,000)			-1.07		
			(2.12)		
Log population density				-0.04	
				(0.02)	
HH occupation index					-0.07
					(0.06)
Observations	1,019	1,012	1,012	1,012	1,012
Boroughs	214	212	212	212	212

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A19: Heterogeneous effects of franchise and borough characteristics size (fixed effects model)

	Residuals				
	Absolute convergence	Conditional convergence			
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.01**	-0.01**			
	(0.01)	(0.01)			
Houses (in 100,000)			-0.95		
			(1.79)		
Log population density				-0.02	
				(0.02)	
HH occupation index					-0.02
					(0.07)
Observations	1,019	1,012	1,012	1,012	1,012
Boroughs	214	212	212	212	212

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Outliers

Another possibility is that our results are driven by outlier boroughs with the highest or lowest franchise level. To account for this possibility, we run the analysis excluding the top quartile of franchise observations. The results remain largely the same. There are only two relevant changes. First, the coefficients on occupation in primary and secondary sectors become significant and positive: hinting at how occupation structure may matter more to more democratic boroughs. We also run the analysis excluding both the top and bottom quartiles, with similar results.

Table A20: β-convergence (1835 to 1897): Excluding top quartile

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.67***	-0.93***	-0.77***	-0.92***	-0.96***
	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)
Houses (in 100,000)			0.01	-0.01	-0.04
			(0.01)	(0.03)	(0.03)
Log population density			-0.07***	-0.07***	-0.06***
			(0.01)	(0.02)	(0.02)
HH occupation index			0.00	-0.03	-0.05***
			(0.01)	(0.02)	(0.02)
Share employed, primary sector					0.08**
					(0.03)
Share employed, secondary sector					0.09***
					(0.03)
Share employed, tertiary sector					0.02
					(0.13)
Newspapers per 1,000 people					-0.01
					(0.01)
Avg. yearly population growth rate					-0.22*
					(0.11)
Fraction of population below 20					-0.02
					(0.03)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	796	796	787	787	688
R-squared	0.73	0.82	0.77	0.82	0.84
Boroughs	229	229	225	225	198

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A21: Determinants of β-convergence (1835 to 1897): Excluding top outliers

	Franchise growth (logged)			
	(1)	(2)	(3)	(4)
Lag franchise	-0.70***	-0.98***	-0.95***	-1.04***
	(0.09)	(0.05)	(0.04)	(0.11)
Log population density	-0.03			
	(0.02)			
Lag franchise × Log population density	-0.14***			
	(0.05)			
Share employed, secondary sector		0.03		
		(0.02)		
Lag franchise × Share employed, secondary sector		0.11***		
		(0.04)		
Newspapers per 1,000 people			0.01	
			(0.02)	
Lag franchise × Newspapers per 1,000 people			-0.06	
			(0.05)	
Fraction of population below 20				-0.09
				(0.08)
Lag franchise × Fraction of population below 20				0.24
				(0.22)
Year effects	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes
Observations	787	787	689	785
R-squared	0.83	0.83	0.83	0.82
Number of id	225	225	198	225

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Table A22: β-convergence (1835 to 1897): Excluding top and bottom quartiles

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.57***	-0.91***	-0.63***	-0.92***	-0.96***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)
Houses (in 100,000)			0.01	-0.01	-0.03
			(0.01)	(0.05)	(0.05)
Log population density			-0.04***	-0.04**	-0.03
			(0.01)	(0.02)	(0.02)
HH occupation			0.01	-0.03*	-0.05**
			(0.01)	(0.02)	(0.02)
Share employed, primary sector					0.04
					(0.04)
Share employed, secondary sector					0.08*
					(0.04)
Share employed, tertiary sector					0.06
					(0.15)
Active municipal newspapers per 1,000 people					0.02*
					(0.01)
Avg. yearly population growth rate					-0.28*
					(0.16)
Fraction of population below 20					0.01
					(0.03)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	529	529	522	522	457
R-squared	0.64	0.75	0.67	0.76	0.79
Boroughs	209	209	205	205	181

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A23: Determinants of β-convergence (1835 to 1897): Excluding top and bottom outliers

	Franchise growth (logged)			
	(1)	(2)	(3)	(4)
Lag franchise	-0.65***	-0.95***	-0.98***	-0.82***
	(0.14)	(0.08)	(0.08)	(0.11)
Log population density	0.01			
	(0.03)			
Lag franchise × Log population density	-0.17**			
	(0.07)			
Share employed, secondary sector		0.03		
		(0.03)		
Lag franchise × Share employed, secondary sector		0.07*		
		(0.04)		
Newspapers per 1,000 people			0.03**	
			(0.02)	
Lag franchise × Newspapers per 1,000 people			-0.03	
			(0.05)	
Fraction of population below 20				0.05
				(0.07)
Lag franchise × Fraction under 20				-0.17
				(0.17)
Year effects	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes
Observations	522	522	458	521
R-squared	0.77	0.77	0.78	0.76
Number of id	205	205	181	205

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Borough wealth

We account for differences in financing and wealth across boroughs by leveraging data on real property value and loans per capita. Since these variables are only available from 1871 onwards, we estimate Equation 4 for that period. We find both loans and per capita have a small effect on franchise growth, but have no significant effect on convergence, suggesting - surprisingly - wealth wasn't the primary driver of franchise extension.

Table A24: β-convergence (1871 to 1897): Loans and property value

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.64***	-0.94***	-0.75***	-0.99***	-0.99***
	(0.04)	(0.03)	(0.05)	(0.03)	(0.03)
Houses (in 100,000)			0.01**	-0.10***	-0.11***
			(0.01)	(0.03)	(0.03)
Log population density			-0.07***	-0.11***	-0.11***
			(0.01)	(0.04)	(0.04)
HH occupation index			-0.01	-0.01	0.04
			(0.01)	(0.03)	(0.04)
Real property value per capita / 100			-0.16*	0.42***	0.27*
			(0.09)	(0.15)	(0.14)
Loans per capita/100			0.05	0.26***	0.29***
			(0.07)	(0.08)	(0.08)
Share employed, primary sector					0.03
					(0.04)
Share employed, secondary sector					0.03
					(0.04)
Share employed, tertiary sector					0.42**
					(0.17)
Newspapers per 1,000 people					-0.00
					(0.01)
Avg. yearly population growth					-0.21
					(0.14)
Fraction of population below 20					0.10**
					(0.04)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	877	877	598	598	532
R-squared	0.74	0.85	0.78	0.88	0.90
Boroughs	252	252	213	213	189

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A25: Determinants of β-convergence (1871 to 1897): Loans and property value

	Franchise growth (logged)	
	(1)	(2)
Lag franchise	-0.93***	-0.96***
	(0.04)	(0.04)
Real property value per capita/100	0.79***	
	(0.19)	
Lag franchise × Real property value per capita/100	-0.95*	
	(0.51)	
Loans per capita/100		0.14
		(0.14)
Lag franchise × Loans per capita/100		0.20
		(0.39)
Year effects	yes	yes
Borough effects	yes	yes
Observations	815	633
R-squared	0.86	0.87
Number of id	239	221

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Alternative specifications

We run four alternative specifications of the main model. First, we estimate Equation 4 using the franchise level, instead of log. We do this to asses whether our results are sensitive to the functional form. We find that the coefficients are largely unchanged, becoming around 0.05 points smaller in magnitude.

Table A26: β-convergence (1835 to 1897): Franchise level

	Franchise growth (not logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise (not logged)	-0.47***	-0.85***	-0.57***	-0.85***	-0.87***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Houses (in 100,000)			0.06	-0.40*	-0.63**
			(0.07)	(0.24)	(0.28)
Log population density			-0.67***	-0.97***	-0.95***
			(0.08)	(0.21)	(0.24)
HH occupation index			-0.07	-0.52**	-0.61**
			(0.09)	(0.21)	(0.24)
Share employed, primary sector					0.27
					(0.31)
Share employed, secondary sector					0.10
					(0.33)
Share employed, tertiary sector					0.79
					(1.52)
Newspapers per 1,000 people					-0.11
					(0.12)
Avg. yearly population growth					-1.79*
					(1.08)
Fraction of population below 20					0.21
					(0.37)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	1,080	1,080	1,069	1,069	931
R-squared	0.58	0.71	0.62	0.72	0.74
Boroughs	252	252	248	248	217

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A27: Determinants of β-convergence (1835 to 1897): Franchise level

	Franchise growth (not logged)			
	(1)	(2)	(3)	(4)
Lag franchise	-0.42**	-0.92***	-0.86***	-1.42***
	(0.16)	(0.05)	(0.04)	(0.19)
Log population density	-0.61**			
	(0.24)			
Lag franchise × Log population density	-0.28***			
	(0.11)			
Share employed, secondary sector		-0.08		
		(0.23)		
Lag franchise × Share employed, secondary sector		0.14**		
		(0.06)		
Active municipal newspapers per 1,000 people			0.10	
			(0.19)	
Lag franchise × Newspapers per 1,000 people			-0.13	
			(0.09)	
Fraction of population below 20				-2.07**
				(0.90)
Lag franchise × Fraction of population below 20				1.25***
				(0.42)
Year effects	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes
Observations	1,069	1,069	934	1,065
R-squared	0.73	0.73	0.73	0.73
Number of id	248	248	217	248

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Second, we focus on the effects of borough characteristics on franchise growth. We start by considering whether it is the percentage change - rather than the level change - in borough characteristics that impact franchise growth, and so estimate Equation 4 using logged versions of the characteristics. We find these are statistically insignificant for their impact on growth, and the coefficients remain unchanged for the determinats of β-convergence regressions.

Table A28: Conditional β-convergence (1835 to 1897): logged borough characteristics

	Franchise growth (logged)		
	(1)	(2)	(3)
Lag franchise	-0.71***	-0.90***	-0.93***
	(0.04)	(0.03)	(0.04)
Log houses (in 1,000)	0.00**	-0.00	-0.00
	(0.00)	(0.00)	(0.01)
Log population density	-0.06***	-0.07***	-0.11***
	(0.01)	(0.02)	(0.02)
Log HH occupation index	-0.00	-0.01	-0.01
	(0.00)	(0.01)	(0.01)
Log share employed, primary sector			0.01
			(0.01)
Log share employed, secondary sector			0.02
			(0.02)
Log share employed, tertiary sector			-0.0003
			(0.0071)
Log newspapers per 1,000 people			-0.0001
			(0.0030)
Log avg. yearly population growth			-0.002
			(0.002)
Log fraction of population below 20			0.01
			(0.01)
Year effects	no	yes	yes
Borough effects	yes	yes	yes
Observations	1,069	1,069	679
R-squared	0.76	0.82	0.84
Boroughs	248	248	201

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A29: Determinants of β-convergence (1835-1897): Logged borough characteristics

	Franchise growth (logged)				
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.98***	-0.72***	-0.88***	-0.99***	-0.74***
	(0.04)	(0.07)	(0.03)	(0.04)	(0.08)
Log houses (in 100,000)	-0.00				
Lag franchise × Log houses (in 100,000)	0.01***				
	(0.00)				
Log population density		-0.04**		-	
		(0.02)			
Lag franchise × Log population density		-0.12***			
		(0.04)			
Log share employed, secondary sector			0.00		
			(0.00)		
Lag franchise × Log share employed, secondary sector			0.03***		
			(0.01)		
Log newspapers per 1,000 people				0.01*	
				(0.00)	
Lag franchise × Log newspapers per 1,000 people				-0.02***	
				(0.01)	
Log fraction of population below 20					-0.07*
					(0.04)
Lag franchise × Log fraction of population below 20					0.19**
					(0.09)
Year effects	yes	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes	yes
Observations	1,069	1,069	1,069	820	1,065
R-squared	0.82	0.82	0.82	0.84	0.82
Number of boroughs	248	248	248	217	248

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Third, we consider whether it is possible that it is not current, but rather past, borough characteristics that affect growth. We estimate Equation 4 using lagged controls, and find most controls to be statistically insignificant, with two exceptions. First, the coefficient on population density is significant, and the size of the coefficient (-0.53) is over 7 times larger than in the main regression (-0.07). Second, the coefficient on occupation in the secondary sector is sizable (0.40), whereas it is insignificant in the main regression. This suggests that past population density and occupation in secondary sector have a strong effect on franchise growth. In the interaction terms regressions, we find that some coefficients lose their significance when the variables are lagged, whereas others change in size but not sign.

Table A30: Conditional β-convergence (1852 to 1897): Lagged borough characteristics

	Franchise growth (logged)		
	(1)	(2)	(3)
Lag franchise	-0.73***	-0.96***	-0.96***
	(0.04)	(0.03)	(0.03)
Lag Houses (in 100,000)	0.12**	0.29*	-0.12
	(0.05)	(0.15)	(0.18)
Lag log population density	-0.45***	-0.52***	-0.53***
	(0.06)	(0.08)	(0.10)
Lag HH occupation index	-0.03	-0.09	-0.01
	(0.06)	(0.15)	(0.19)
Lag share employed, primary sector			0.29*
			(0.17)
Lag share employed, secondary sector			0.40**
			(0.13)
Lag share employed, tertiary sector			0.99
			(0.93)
Lag newspapers per 1,000 people			-0.07
			(0.06)
Lag avg. yearly population growth			0.23
			(0.22)
Lag fraction of population below 20			0.03
			(0.17)
Year effects	yes	yes	yes
Borough effects	no	yes	yes
Observations	967	967	666
R-squared	0.76	0.83	0.85
Boroughs	248	248	152

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A31: Determinants of β-convergence (1852 to 1897): Lagged borough characteristics

	Franchise growth (logged)	
	(1)	(2)
Lag franchise	-0.91***	-0.94***
	(0.04)	(0.03)
Lag share employed, secondary sector	0.76***	
	(0.28)	
Lag franchise × Lag share employed, secondary sector	-0.75*	
	(0.45)	
Lag newspapers per 1,000 people		0.57**
		(0.24)
Lag franchise × Lag newspapers per 1,000 people		-1.64***
		(0.59)
Year effects	yes	yes
Borough effects	yes	yes
Observations	967	845
R-squared	0.84	0.84
Number of id	248	217

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Fourth, building on the point above, we consider whether it is the change in borough characteristics (rather than its current or lagged values) which affect franchise growth. We estimate Equation 4 using the average yearly change in borough characteristics, and find no statistically significant effects. The interaction term regressions remain statistically significant and while the size of the coefficients changes, their sign does not.

Table A32: Conditional β-convergence (1852 to 1897): Average yearly change in borough characteristics

	(1)	(2)	(3)
Lag franchise	-0.62***	-0.91***	-0.92***
	(0.04)	(0.03)	(0.03)
Δ Number of houses	-0.08	-0.96	-0.85
	(0.24)	(0.79)	(0.83)
Δ Log population density	-0.03	-0.06	0.00
	(0.11)	(0.07)	(0.09)
Δ HH occupation index	-0.42*	-0.28	-0.05
	(0.22)	(0.34)	(0.29)
Δ Share employed, primary sector			-0.96*
			(0.40)
Δ Share employed, secondary sector			-0.17
			(0.38)
Δ Share employed, tertiary sector			0.69
			(2.09)
Δ Active municipal newspapers per 1,000 people			0.00
			(0.06)
Δ Avg. yearly population growth rate			-0.47
			(0.37)
Δ Fraction of population below 20			-0.15
			(0.22)
Year effects	yes	yes	yes
Borough effects	no	yes	yes
Observations	967	967	831
R-squared	0.72	0.82	0.84
Boroughs	248	248	217

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A33: Determinants of β-convergence (1852 to 1897): Average yearly change in borough characteristics

	Franchise growth (logged)			
	(1)	(2)	(3)	(4)
Lag franchise	-0.90***	-0.89***	-0.94***	-0.90***
	(0.03)	(0.03)	(0.03)	(0.03)
Δ Log population density	-1.23**			
	(0.61)			
Lag franchise $\times$ Δ Log population density	3.09**			
	(1.56)			
Δ Share employed, tertiary sector		7.29**		
		(3.59)		
Lag franchise $\times$ Δ Share employed, tertiary sector		-19.38*		
		(9.94)		
Δ Newspapers per 1,000 people			-0.66***	
			(0.24)	
Lag franchise $\times$ Δ Newspapers per 1,000 people			1.87***	
			(0.67)	
Δ Fraction of population below 20				-1.74**
				(0.86)
Lag franchise $\times$ Δ Fraction of population below 20				4.14**
				(1.96)
Year effects	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes
Observations	967	967	845	953
R-squared	0.83	0.82	0.83	0.84
Number of id	248	248	217	248

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Finally - in the spirit of classic β-convergence, we consider whether it is the initial level of the borough characteristics that impacts franchise growth, rather than its yearly fluctuations. Estimating this regression renders no statistically significant results.

Table A34: β-convergence (1852 to 1897): Initial Value of Borough Characteristics

	Conditional convergence		
	(1)	(2)	(3)
Lag franchise	-0.68***	-0.91***	-0.95***
	(0.04)	(0.04)	(0.03)
Houses (in 100,000) (initial)	0.56**	0.33	0.68
	(0.26)	(0.78)	(1.01)
Log population density (initial)	-0.88***	-0.50*	-0.49
	(0.16)	(0.29)	(0.36)
HH occupation index (initial)	0.09	0.35	-0.18
	(0.18)	(0.36)	(0.46)
Share employed, primary sector (initial)			0.00
			(0.54)
Share employed, secondary sector (initial)			-0.01
			(0.52)
Share employed, tertiary sector (initial)			-7.44*
			(4.46)
Newspapers per 1,000 people (initial)			0.86
			(0.53)
Average yearly population growth (initial)			1.93
			(1.51)
Fraction of population below 20 (initial)			1.60
			(2.32)
Year effects	yes	yes	yes
Borough effects	no	yes	yes
Observations	839	839	720
R-squared	0.74	0.82	0.83
Boroughs	190	190	163

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A35: Determinants of β-convergence (1852 to 1897): Initial Value of Borough Characteristics

	Franchise growth (logged)			
	(1)	(2)	(3)	(4)
Lag franchise	-0.93***	-0.97***	-0.94***	-1.31***
	(0.04)	(0.04)	(0.03)	(0.10)
Initial houses (in 100,000)	-0.17			
	(0.73)			
Lag franchise × Initial houses	5.03***			
	(1.85)			
Initial share employed, secondary sector		-0.38		
		(0.38)		
Lag franchise × Initial share employed, secondary sector		2.80***		
		(1.05)		
Initial newspapers per 1,000 people			1.18*	
			(0.70)	
Lag franchise × Initial newspapers			-3.82*	
			(2.24)	
Initial fraction of population below 20				-1.00
				(2.23)
Lag franchise × Initial fraction below 20				17.85***
				(4.32)
Year effects	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes
Observations	839	839	742	835
R-squared	0.82	0.82	0.83	0.83
Number of boroughs	190	190	168	189

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Alternative measures of franchise

There are two potential problems with analyzing the evolution of voters per capita through the β-convergence methodology. First, franchise is necessarily bound between 0 and 100. Any evidence of convergence we find may be driven by a "slow-down" at the frontier, since boroughs with very high levels of franchise are restricted as to how much they can grow[23]. For this reason, we run the analysis where we normalize the number of voters by houses instead. Voters per 100 houses is by definition unbound since there can be multiple voters per house, and thus comparing results between the two franchise measures allows us to determine whether our results are biased.

The estimates for voters per 100 houses are close to our main results. The β estimates are only slightly larger, at about 0.05 extra points for the fixed-effects regressions. Hence, we conclude our results are NOT driven by a "slow-down" at the frontier. Furthermore, the signs and significance levels of borough characteristics on growth remain largely unchanged, with the only exception being that the effect of population density becomes positive. This discrepancy can be explained by a mechanical effect. After all, density is simply the population normalized by the number of houses. Since, in this specification, the number of voters is also normalized by the number of houses, we are essentially picking up the positive correlation between population and the number of voters.

[23] Recall from Table (2) that the maximum value that franchise reaches in our sample is 32.89% (out of the potential 100%), which only marginally decreases the potential for franchise growth. Nevertheless, one can argue that 32.89% is still close to a potential maximum threshold, since children and poor members of the population are never enfranchised throughout the 1835-1897 period.

Table A36: β-convergence: (1835 to 1897): Voters per 100 houses

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.71***	-0.95***	-0.73***	-0.95***	-0.97***
	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)
Number of houses (in 100,000)			0.01*	-0.04*	-0.05**
			(0.00)	(0.02)	(0.02)
Log population density			0.03***	0.05***	0.04**
			(0.01)	(0.02)	(0.02)
HH occupation index			-0.00	-0.06**	-0.03
			(0.01)	(0.02)	(0.03)
Share employed, primary sector					-0.0008
					(0.0330)
Share employed, secondary sector					0.04
					(0.03)
Share employed, tertiary sector					0.19
					(0.16)
Newspapers per 1,000 people					-0.01
					(0.01)
Avg. yearly population growth					-0.14
					(0.10)
Fraction of population below 20					0.02
					(0.03)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	1,021	1,021	1,011	1,011	883
R-squared	0.74	0.82	0.75	0.83	0.84
Boroughs	252	252	248	248	217

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A37: Determinants of β-convergence (1835 to 1897): Voters per 100 houses

	Franchise growth (logged)					
	(1)	(2)	(3)	(4)	(5)	(6)
Lag franchise	-0.96***	-1.16***	-0.95***	-1.00***	-0.96***	-1.11***
	(0.03)	(0.06)	(0.03)	(0.03)	(0.03)	(0.07)
Houses (in 100,000)	-0.05***					
	(0.02)					
Lag franchise × Houses (in 100,000)	0.06*					
	(0.03)					
Log population density		-0.01				
		(0.02)				
Lag franchise × Log population density		0.13***				
		(0.03)				
Share employed, primary sector			-0.02			
			(0.03)			
Lag franchise × Share employed, primary sector			-0.04*			
			(0.02)			
Share employed, secondary sector				0.01		
				(0.03)		
Lag franchise × Share employed, secondary sector				0.07***		
				(0.02)		
Newspapers per 1,000 people					0.03**	
					(0.01)	
Lag franchise × Newspapers per 1,000 people					-0.08***	
					(0.02)	
Fraction of population below 20						-0.19**
						(0.09)
Lag franchise × Fraction of population below 20						0.33**
						(0.14)
Year effects	yes	yes	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes	yes	yes
Observations	1,011	1,011	1,011	1,011	886	1,007
R-squared	0.83	0.84	0.83	0.83	0.83	0.83
Number of id	248	248	248	248	217	248

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Second, since the Municipal Franchise Act of 1869 enfranchised women alongside men, it is possible that the effects in convergence and franchise growth from 1871 onwards are driven solely by the enfranchisement of women, with trends among the pre-existing male pool of voters remaining largely unchanged. Hence, we also estimate the regressions using male voters as % of male adults as an alternative franchise measure. The estimated coefficients on lagged franchise and borough characteristics are close to our original results. While the coefficients on newspapers and fraction of the population below 20 become significant, these are very small (close to 0).

Table A38: β-convergence (1835 to 1897) - Male voters as % of male adults

	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise (logged)	-0.68***	-0.89***	-0.75***	-0.88***	-0.91***
	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Houses (in 100,000)			0.01	-0.01	-0.03
			(0.00)	(0.02)	(0.02)
Log population density			-0.05***	-0.05**	-0.07**
			(0.01)	(0.03)	(0.03)
HH occupation index			-0.00	-0.03	-0.02
			(0.01)	(0.03)	(0.02)
Share employed, primary sector					0.02
					(0.03)
Share employed, secondary sector					0.04
					(0.03)
Share employed, tertiary sector					0.08
					(0.14)
Newspapers per 10,000 inhabitants					-0.01
					(0.01)
Avg. yearly population growth					0.00
					(0.07)
Fraction of population below 20					0.23***
					(0.03)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	781	781	781	781	684
R-squared	0.70	0.77	0.73	0.78	0.82
Boroughs	248	248	248	248	217

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Since there is no gender-disaggregated voting data for 1878, we have five periods as opposed to the usual six in other regressions: 1835-1852, 1852-1865, 1865-1871. 1871-1884 and 1884-1897.

Table A39: Determinants of β-convergence (1835 to 1897): Male voters in % of male adults

	Franchise growth (logged)			
	(1)	(2)	(3)	(4)
Lag franchise	-0.89***	-0.57***	-0.87***	-0.87***
	(0.04)	(0.08)	(0.04)	(0.04)
Houses (in 100,000)	-0.04*			
	(0.02)			
Lag franchise × Houses	0.13*			
	(0.07)			
Log population density		0.03		
		(0.04)		
Lag franchise × Log population density		-0.22***		
		(0.05)		
Share employed, tertiary sector			0.28*	
			(0.16)	
Lag franchise × Share employed, tertiary sector			-0.64*	
			(0.38)	
Newspapers per 1,000 people				0.02
				(0.02)
Lag franchise × Newspapers per 1,000 people				-0.11**
				(0.05)
Year effects	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes
Observations	781	781	781	686
R-squared	0.78	0.79	0.78	0.78
Number of id	248	248	248	217

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space. Since there is no gender-disaggregated voting data for 1878, we have five periods as opposed to the usual six in other regressions: 1835-1852, 1852-1865, 1865-1871. 1871-1884 and 1884-1897.

Balanced panel

There is a high turnover of boroughs in our data, with many entering and leaving the sample. The number of observations in our data goes from 169 in 1835 to 303 in 1897, varying inconsistently in-between. Hence, we restrict our analysis to 92 boroughs, which we observe for every period in our sample. For the fixed-effects regressions, the results remain largely unchanged from our main tables, with the coefficients shrinking by about 0.05 points. The size and signs of borough characteristics remain unchanged, with the exception that the coefficients on houses and the HH occupation index become insignificant.

Table A40: β-convergence (1835 to 1897): Balanced panel data

	Franchise growth (logged)				
	Absolute convergence		Conditional convergence		
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.58***	-0.83***	-0.67***	-0.84***	-0.84***
	(0.05)	(0.04)	(0.05)	(0.04)	(0.05)
Houses (in 100,000)			0.01	0.01	-0.02
			(0.01)	(0.03)	(0.02)
Log population density			-0.06***	-0.07***	-0.06***
			(0.01)	(0.02)	(0.02)
HH occupation index			-0.00	-0.03	-0.04
			(0.01)	(0.02)	(0.02)
Share employed, primary sector					0.04
					(0.04)
Share employed, secondary sector					0.04
					(0.03)
Share employed, tertiary sector					-0.11
					(0.16)
Active municipal newspapers per 1,000 people					-0.01
					(0.01)
Avg. yearly population growth rate					-0.13
					(0.10)
Fraction of population below 20					-0.0003
					(0.0437)
Year effects	yes	yes	yes	yes	yes
Borough effects	no	yes	no	yes	yes
Observations	552	552	552	552	480
R-squared	0.67	0.75	0.71	0.76	0.77
Boroughs	92	92	92	92	80

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A41: Determinants of β-convergence (1835 to 1897): Balanced panel data

	Franchise growth (logged)				
	(1)	(2)	(3)	(4)	(5)
Lag franchise	-0.85***	-0.67***	-0.89***	-0.84***	-0.95***
	(0.04)	(0.04)	(0.08)	(0.06)	(0.04)
(0.17)					
Houses (in 100,000)	-0.06***				
	(0.02)				
Lag franchise × Houses (in 100,000)	0.19*				
	(0.10)				
Log population density		-0.04			
		(0.02)			
Lag franchise × Log population density		-0.11**			
		(0.05)			
Share employed, secondary sector			-0.00		
			(0.00)		
Lag franchise × Share employed, secondary sector			0.00		
			(0.00)		
Newspapers per 1,000 people				0.01	
				(0.02)	
Lag franchise × Newspapers per 1,000 people				-0.07	
				(0.06)	
Fraction of population below 20					-0.00
					(0.00)
Lag franchise × Fraction of population below 20					0.00
					(0.00)
Year effects	yes	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes	yes
Observations	552	552	480	480	480
R-squared	0.77	0.77	0.77	0.77	0.76
Number of id	92	92	80	80	80

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

Spatial Correlation

Convergence regressions inherently exhibit spatial features and are therefore susceptible to inflated t-statistics, through two channels. First, any observed association between franchise levels and growth may reflect spatially correlated regional trends rather than a causal relationship. Second, strong similarity among neighboring boroughs introduces spatial autocorrelation.

To address this concern, we employ the spatial inference framework of Conley and Kelly (2025), which adjusts standard errors for spatial correlation. Our baseline convergence estimates $\hat{\beta}$ remain robust across all specifications. However, some covariate effects change. In the franchise-growth regressions, the number of houses loses statistical significance, while population growth becomes significant. In the convergence regressions, the share of population under 20 and secondary-sector employment continue to be associated with slower convergence, whereas the relationships with population density and newspaper circulation become statistically insignificant.

Table A42: β-convergence (1835 to 1897): Robust to spatial correlation

	Franchise growth (logged)		
	(1)	(2)	(3)
Lag franchise	-0.90***	-0.89***	-0.91***
	(0.03)	(0.03)	(0.02)
Houses (in 100,000)		-0.02	-0.04
		(0.02)	(0.03)
Log population density		-0.07***	-0.07***
		(0.02)	(0.03)
HH occupation index		-0.04	-0.04**
		(0.03)	(0.02)
Share employed, primary sector			0.04
			(0.03)
Share employed, secondary sector			0.04
			(0.04)
Share employed, tertiary sector			0.09
			(0.20)
Newspapers per 1,000 people			-0.01
			(0.01)
Avg. yearly population growth			-0.16**
			(0.08)
Fraction of population below 20			0.02
			(0.03)
Year effects	yes	yes	yes
Borough effects	yes	yes	yes
Observations	1,080	1,069	931
R-squared	0.83	0.84	0.85
Boroughs	252	248	217

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Standard errors were computed using a spatial adjustment model with 9 basis splines to model spatial trends, 1 principal component for dimensionality reduction (obtained from the optimal basis that minimizes a Bayes Information Criterion), and 7 clusters to account for local correlation (obtained from a Monte Carlo simulator of placebo tests). The results are robust to alternative choices of the number of clusters. For more information, visit Conley and Kelly (2025).

Table A43: Determinants of β-convergence (1835 to 1897): Robust to spatial correlation

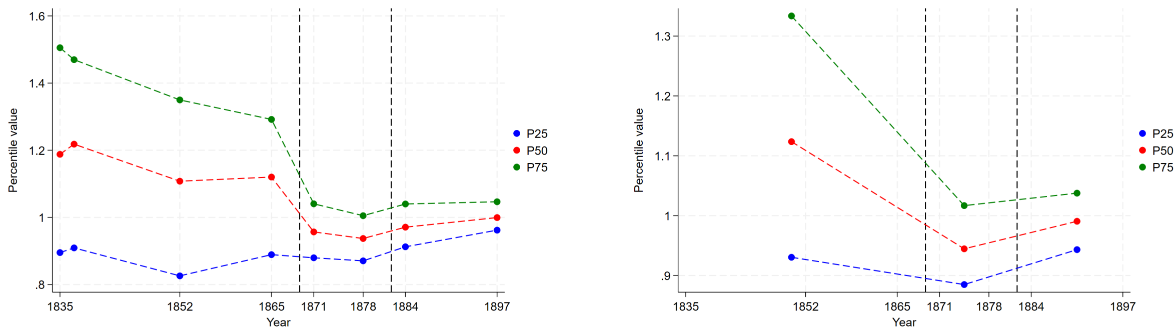
	Franchise growth (logged)			
	(1)	(2)	(3)	(4)
Lag franchise	-0.71***	-0.94***	-0.91***	-1.09***
	(0.13)	(0.04)	(0.02)	(0.10)
Log population density	-0.04			
	(0.04)			
Lag franchise × Log population density	-0.12			
	(0.08)			
Share employed, secondary sector		0.00		
		(0.03)		
Lag franchise × Share employed, secondary sector		0.09***		
		(0.02)		
Newspapers per 1,000 people			0.01	
			(0.03)	
Lag franchise × Newspapers per 1,000 people			-0.07	
			(0.07)	
Fraction of population below 20				-0.13*
				(0.09)
Lag franchise × Fraction of population below 20				0.42**
				(0.22)
Year effects	yes	yes	yes	yes
Borough effects	yes	yes	yes	yes
Observations	1,069	1,069	934	1,065
R-squared	0.84	0.84	0.85	0.84
Number of id	248	248	217	248

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note 1: Standard errors were computed using a spatial adjustment model with 9 basis splines to model spatial trends, 1 principal component for dimensionality reduction (obtained from the optimal basis that minimizes a Bayes Information Criterion), and 7 clusters to account for local correlation (obtained from a Monte Carlo simulator of placebo tests). The results are robust to alternative choices of the number of clusters. For more information, visit Conley and Kelly (2025).
Note 2: All regressions contain year and borough fixed effects, and control for the number of houses, log population density and HH occupation index. We exclude these from the table in order to save space.

A4 Robustness checks: σ-convergence

We conduct two robustness checks to verify that our findings are not artifacts of the data. First, convergence in voters per capita may simply reflect a mechanical slowdown at the frontier, since boroughs with very high franchise levels have limited room for further growth. To address this, we re-construct transition matrices using the alternative measure –voters per 100 houses – which is less likely to be de facto bounded. The results, reported below, closely mirror those in Table 7, indicating that the patterns we document are not driven by frontier effects.



(a) Raw **(b)** Matrix calculations

Figure A6: Normalized franchise trends (1835-1897), voters per 100 houses

Table A44: Transition Matrix, Voters per 100 Houses

(Number)	1st quartile	2nd quartile	3rd quartile	4th quartile
Panel A: Early to Middle Period (1835-1865 to 1871-1878)				
(46)	0.43	0.26	0.20	0.11
(13)	0.46	0.31	0.15	0.08
(23)	0.35	0.39	0.13	0.13
(108)	0.36	0.32	0.18	0.14
Limit	0.42	0.30	0.17	0.11
Panel B: Middle to Late Period (1871-1878 to 1884-1897)				
(90)	0.28	0.09	0.07	0.09
(64)	0.43	0.44	0.30	0.09
(46)	0.23	0.42	0.48	0.42
(33)	0.06	0.05	0.15	0.39
Limit	0.10	0.33	0.43	0.14
Panel C: Early to Late Period Transition (1835-1865 to 1884-1897)				
(46)	0.20	0.39	0.26	0.15
(13)	0.15	0.23	0.54	0.08
(23)	0.26	0.35	0.22	0.17
(108)	0.14	0.37	0.40	0.09
Limit	0.20	0.32	0.35	0.13

Second, insofar as franchise levels were shaped directly by underlying borough characteristics, convergence in those characteristics might explain the observed franchise convergence. To judge if this the case, we examine changes in their dispersion over time. Findings are summarized in Figure A7. Although some characteristics exhibit declines in the coefficient of variation, these are generally small (around 0.05–0.08). Only population and newspapers per capita show larger reductions (0.80 and 1.00 between 1852 and 1897, respectively). Overall, convergence in borough characteristics appears limited and cannot account for the main patterns we identify.

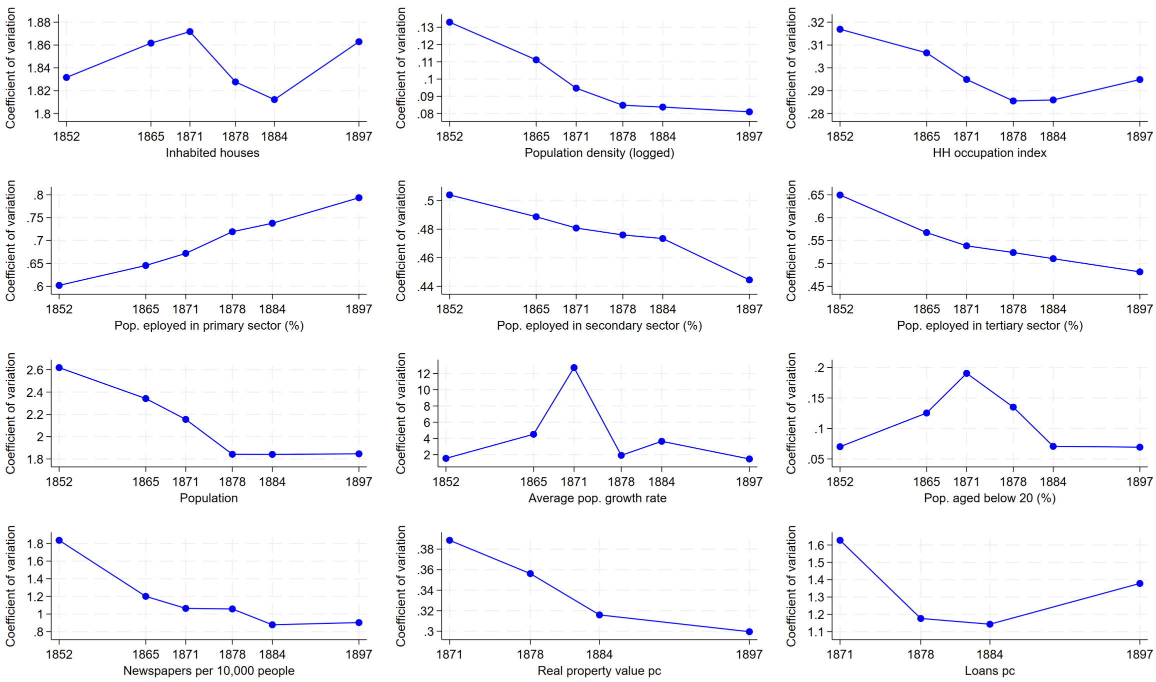


Figure A7: σ-convergence for control variables