People and the Poor Law: Measuring Poverty in Post-Famine Ireland 1872–1914*

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Abstract

Socio-economic conditions are widely believed to have improved for those who survived the Great Irish Famine as depopulation realigned Ireland with its narrowing economic prospects. Yet, the scale and sources of this improvement remain uncertain, particularly for the poorest. I construct a new annual measure of absolute poverty spanning forty years and 158 Poor Law Unions, this paper shows that while poverty declined on average, improvement was uneven and prone to volatility during times of crises. Econometric analysis finds an inconsistent role for depopulation, which weakened through time as Unions became less poor. Instead, broader demographic shifts and agricultural composition emerge as the key drivers of poverty reduction.

Keywords: poverty, multi-dimensional, agriculture, convergence, demography, economic history of Ireland.

JEL Codes: J11, N33, N53, O15, Q15.

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1 Introduction

The Great Famine (1845–52) cast a long shadow over Irish social, political, and economic history. Although the blight that caused the failure of the potato crop was not localised to Ireland, it was Ireland experienced the last of Europe's great Famines, with one-million dead, while another million emigrated from Irish shores, the majority of which never returned (Ó Gráda, 1994). Since then, scholars and policy-makers have sought to understand the causes and consequences of the Great Famine, and how such a disaster could have unfolded on the doorstep of one of the most developed economies of the world.

The scale and extent of Irish poverty are thought to have been the reason why Ireland was so exposed to the risk posed by the blight. The dominant interpretation of Irish poverty long emphasised the role of over-population; particularly the proliferation of potatoes as a cheap food source, and the lack of preventative checks at marriage, which led to a boom in the pre-Famine population (Connell, 1950). Other scholars emphasised the role of poor land quality, the subdivision of agricultural land, and the demise of cottage textile industries that heightened economic insecurity and exposure to the risk of agricultural shocks (Cullen, 1972). While well reasoned, this over-population hypothesis had little statistical basis, and recent explorations downgrade the effect of population on poverty to modest at best (Fernihough and Ó Gráda, 2022; Mokyr, 1983).

By the post-Famine period there is evidence that the Irish economy was growing and modernising. Analysis of real wage convergence and productivity appear to confirm the conventional wisdom that socio-economic conditions undoubtedly improved for those who survived the Famine or who did not migrate (Ó Gráda, 1994). Indeed, other studies of indirect measures of average living standards such as increasing bank balances, consumption, and commercialisation provide corroborating evidence. However, beyond analysis of national averages, the sources and extent of this improvement remain open to debate. In particular, we know little about if, when, and how, post-Famine growth was inclusive – whether it created new economic opportunities for the poorest, reduced poverty and improved living conditions. Moreover, unlike in the pre-Famine period, the over-population argument has largely went unchallenged in the post-Famine decades, and mass migration is widely believed to be the primary driver of economic growth and improved average living standards (Hatton and Williamson, 1998; O'Rourke, 1995).

I contribute to this discussion by constructing an annual, spatially disaggregated index of absolute poverty across forty-years of Ireland's post-Famine period. The unit of analysis is the 158 Poor Law Unions – a level of disaggregation that is conducive to both a detailed descriptive and econometric analysis across the period. By means of a Principal Component

Analysis, I combine four different poverty indicators; workhouse and out-relief admissions, average length of workhouse stay, and Union means adjusted expenditure, to create a single measure of absolute poverty over time.

My analysis reveals that absolute poverty scores did decline, but the year-on-year change was volatile, particularly in areas where poverty was highest at the start of the period. Consequently, the decline was uneven, and although many poor western unions improved relative to their eastern peers, persistent pockets of poverty remained. Some Unions remained characterised by economic insecurity, where poverty scores tended to increase sharply during periods of poor weather and poor harvests, indicating that regardless of Irish economic development during this period, many household's fortunes were firmly rooted to the soil.

As an extension to this analysis, I explore what socio-economic characteristics are associated with falling poverty scores. I harmonise the poverty index with detailed demographic, occupational, and agricultural data from the province volumns of the 1881-1911 Census' of Ireland, and annual agricultural reports of the Department of Agriculture and Technical Instruction of Ireland. Given that this period corresponds with the "Age of Mass Migration", I focus on the association between depopulation and changes in poverty using the measure of population pressure proposed by Fernihough and Ó Gráda (2022). Although leveraging the panel structure of my data enhances the statistical power of my estimates and improves my ability to control for unobserved confounders compared to cross-sectional approaches, simultaneity bias between the poverty and the explanatory variables prevents causal inference.

Using a Two-Way-Fixed-Effects estimator, I find that population pressure is inconsistently related to changes in poverty scores, with depopulation associated with falling poverty rates in earlier decades and amongst poorer Unions. In comparison, demographic shifts and agricultural composition emerge as potentially more influential factors. This highlights that Irish poverty reduction was shaped by a complex interplay of a number of alternative factors over time, providing sufficient grounds to question the role of depopulation in the post-Famine period.

This paper proceeds as follows. Section 2 discusses the relevant literature and highlights the gaps in the understanding of changes in post-Famine living standards and the potential drivers of this association. In Section 3 I highlight that while the longevity of the Poor Law offers the possibility to undertake a spatially disaggregated exploration of poverty, the policy adapted to changing social values. As such, I discuss changes to Poor Relief in detail since without accounting for them, any measure of poverty would be inconsistent overtime. Section 4 describes my main Poor Law data over the period after adjusting for policy changes, Section 5 proposes a method to create a single multi-dimensional measure of poverty and

describes changes to this measure overtime. Section 6 continues with my estimation strategy and results, while Section 7 concludes.

2 The Cause and Consequence of Irish Destitution

It is argued that Irish economic and demographic history are inseparable (Mokyr, 1983). Explorations of birth, death, and marriage rates, fertility, and emigration dominate the literature of the eighteenth and early nineteenth centuries, and are united by a common hypothesis: that given the fixed quantity and quality of land, over-population was the cause and consequence of Ireland's destitution. Influenced by Malthusian economic thought, this view was widely held by policy-makers at the time (Ó Gráda, 1994), who observing too many people subsisting on poor quality land, interpreted high unemployment, low wages, and poor living standards as the symptoms of excess labour supply (Mokyr, 1983). Following a visit to Ireland in 1817, Malthus proposed that the redistribution of the rural population to urban centres could lead to significant productive gains in agriculture and resolve unemployment issues in rural areas (Ricardo, 2005). Later, the Whatley Poor Inquiry (1833–1836) reproduced these ideas and argued that the best way to improve socio-economic conditions was a state-aided emigration scheme to remove unemployed labourers from Ireland's poorest regions (Doran, 2021; British Parliamentary Papers, 1836).

The subsequent Nicholls Poor Inquiry (1836–1837) made a similar finding, and branded over-population in Ireland as a great evil. Nicholls claimed that as long as there was an over-supply of Irish labourers, wages and living standards would not improve, with the gains of any economic development strategy inevitably eroded by an increase in population (British Parliamentary Papers, 1837). Although none of these figures could have predicted the destruction of the Great Famine (1845–1852), changing economic conditions after the Famine appeared to exonerate their economic beliefs. The 1863 Hancock Inquiry into the Irish economy noted a material improvement in living conditions since the Famine, and commended Irish communities abroad who's remittances had created a sizeable "migration fund" that reduced the relative costs of passage and allowed the poorest to emigrate, improving their own fortunes abroad as well as those they left behind (Hancock, 1863).

Between 1851 and 1881, the Irish population had declined by 21 per cent (Ó Gráda, 1994), and emigration was promoted as the most effective solution to Irish poverty. Throughout the latter half of the nineteenth century, policy-makers focused on encouraging emigration from areas where economic distress was highest. In 1883, working with the Quaker philanthropist James H. Tuke, the Government introduced an emigration scheme that subsidised the relocation of over 2,000 families from the poorest, most westerly regions in Ireland. Building

on Tuke's proposals to improve conditions in areas where too many people were still believed to subsist on poor quality land (Tuke, 1880), the Government later established the Congested Districts Board to accelerate agricultural development and redistribute the population to better quality land (British Parliamentary Papers, 1893).

To administrators at the time, de-population not only had a strong academic foundation, but appeared to benefit those living in poverty. By 1908, the Royal Commission on Congestion in Ireland noted the transformation of living standards in the West since 1891 and argued that redistributing the population was the best tool to improve conditions (British Parliamentary Papers, 1908).[1] Labour scarcity was associated with rising incomes and the decline of small holdings, while the transition to pasture farming increased the value of Irish output, bank deposits were growing, and the proliferation of rail, roads, and telegraph networks led unprecedented market access across the country (Fernihough and Lyons, 2022; Ó Gráda, 1994).

2.1 The Causes of Growth

2.1.1 Demographic Destiny: Migration, Wages, and Virtuous Cycles

Like administrators of the time, early historical explorations of the causes of the Great Famine attributed pre-Famine poverty to over-population. Connell (1950) claimed that land subdivision, declining living conditions, and the reliance on the potato as a cheap and abundant source of food drove early marriages and high marital fertility in the eighteenth century. For Connell, excess Famine mortality accelerated Ireland's transition to a modern economy by enabling the consolidation of land and improving living standards. With rising living standards, early marriage is discouraged and marital fertility falls, meaning higher living standards are maintained (Ó Gráda, 1994). Cullen (1972) argued that Connell's claims about early marriage were practically unfounded, and instead attributed over-population to falling death-rates. Qualifying his argument, Cullen claimed that poverty was only a serious problem in areas where good quality land was scarce where farmers appeared to organise their land on a subsistence, rather than a commercial basis.

Mokyr (1983) challenged this over-population orthodoxy and argued the claim lacked empirical evidence. Using county level returns from the 1841 Census ($n = 32$) he regressed income per capita on various proxies of population pressure to explore whether over-population explained cross-sectional differences in poverty. Mokyr found no evidence to support the claim and advised economic historians to look beyond convenient population

[1] Although the Commission also acknowledged assisted emigration was in many cases preferable, they noted it was no longer a practical – or popular – policy.

dynamics to explain nineteenth century poverty. Fernihough and Ó Gráda (2022) improve Mokyrs approach using civil parish-level ($n = 2,437$) and a better measures of land quality and poverty. Confirming Mokyr's results, they find that population only explains between 14–16 per cent of the variation in poverty, with a larger role being suggested by geographical peripherality and language.

While the over-population hypothesis has gradually lost ground in pre-Famine economic history, it remains largely unchallenged in the post-Famine era, where de-population is credited with improving living conditions. Excess famine mortality and high out-migration are thought to have created acute labourer shortages that improved worker's bargaining power, beginning a process of real wage growth, similar as to what occurred following the Black Death in Europe (Kennedy et al., 1988). That said, real wage growth estimates tend to vary, ranging from 40–100 per cent as in the case of farm workers (O'Rourke, 1995; Boyer et al., 1994), and skilled and unskilled urban workers (Williamson, 1994). For Hatton and Williamson (1994), initial wage growth creates conditions for a virtuous cycle of growth via the mechanism of migration.

Initially, the poor motivated by high wages abroad and poor socio-economic conditions at home cannot migrate as the costs of passage are unaffordable – such were the findings of the Whatley Poor Law Inquiry in 1836 (Hancock, 1863). As wages rise, poverty traps weaken, which encourages further out-migration and wage growth, while migrant networks and remittances further reinforce existing migratory trends.[2] Eventually, migration "push" factors weaken when living standards become sufficient, reducing migration rates and bringing an "Age of Mass Migration" to a close (Hatton and Williamson, 1998).

Ó Gráda and O'Rourke (1997) test this hypothesis and find evidence that prior to 1852 poverty traps did constrain migration. Their findings reiterate that with the twin effects of Famine excess mortality, and Famine driven emigration, the Irish economy began to adapt – labour became scarcer, wages increased, early marriage and birth rates fell, and the Malthusian elements of the Irish economy began to disintegrate. Some effort has been made to refine this argument. Since migration is selective, it may be the case that Ireland lost its "best and brightest" leaving only the less productive behind. Reiterating that mass migration undoubtedly increased incomes for poor labourers and small landowners who did not travel, Gomellini and Ó Gráda (2019) find no evidence that these gains were tempered by a brain drain.

Ireland's improvement was so pronounced that Hatton and Williamson (1998) argues it

[2]The falling costs of passage have also been attributed to the boom Irish emigration (Hatton and Williamson, 1994; Ó Gráda, 1994). Moreover, Fernihough and Lyons (2022) find that infrastructure also played a role, where areas with more access to ports tended to have higher emigration rates and faster switch to pastoral farming.

was the central force that brought an end to Irish mass migration to the USA. Moreover, it has been argued that depopulation and real wage growth contributed substantially – if not primarily – to a convergence in living standards with European and American peers (O'Rourke, 1995; Ó Gráda, 1994; Kennedy et al., 1988). Boyer et al. (1994) and Taylor and Williamson (1997) simulate a scenario where there was no out-migration in Ireland during the post-Famine period. Although these counterfactuals depend on assumptions about the mobility of capital, their results suggest a positive, albeit imprecise, effect of emigration on real wage increase. Boyer et al. (1994) suggest wages would be between 66–88 percent of their 1908 level if there was no emigration, while Taylor and Williamson (1997) put this figure at around 31 per cent in 1910. While informative, studies based on national averages cannot distinguish who actually benefited from Irish economic growth during this period, and cannot claim with certainty that depopulation substantially improved living-conditions for the very poorest members of society.

2.2 Alternative Explanations

Given that few countries have experienced such a demographic upheaval as caused by the Great Famine and subsequent out-migration, it is unsurprising why it has dominated the post-Famine literature. That said, if population only had a weak role in defining poverty prior to the Famine, it is unclear why this relationship would become incontrovertible after the crises. A number of studies have explored alternative mechanisms behind Ireland's changing fortunes during this period, and instead emphasise the role of traditional growth factors. This literature argues that the Ireland of 1911 was not simply the same Ireland as 1861 – just with less people (Brownlow, 2005). The economy had changed drastically over this half century, with Cullen (1972) emphasising real gains from capital accumulation, technological change, and growing trade.

Challenging the population hypothesis with new regional estimates of UK GDP, Geary and Stark (2015, 2002) find that while Irish post-Famine growth was impressive, it slowed after the 1870s relative to its European peers. Decomposing this change, they find that while there was a role for depopulation in this growth, it was primarily driven by traditional growth factors such as capital accumulation and total factor productivity growth. Crafts (2005) extended this approach and emphasised that UK growth during this time was export-led, driven through globalisation and economic integration. For Brownlow (2005), the Ulster linen industry is it most likely driver of this effect in Ireland, where productivity gains were driven by the importation of skills and technical knowledge from other regions. Indeed, as early as 1841–1851, Bielenberg (2009) observes that higher quality housing tended to be

concentrated in industrialising Ulster townlands. That said, it is unclear how this argument reconciles with the typical development trajectories of some industrialising economies, where economic growth can be accompanied by rising poverty, greater inequality, and declining living standards for the poorest (Škare and Družeta, 2016; Fosu, 2015; Kuznets, 1955).

While it is evident that the Irish economy grew in the post-Famine period, the sources and extent of this growth remain debated. Moreover, it is uncertain whether this growth was inclusive and created new economic opportunities for the poorest, reducing poverty and improving living conditions. Analyses of real-wage convergence are severely constrained by data limitations, relying either on average wage estimates with untestable representativeness or on sector-wide returns or other incomplete levels of aggregation where analysis across the socio-economic spectrum is impossible. Similarly, studies that emphasise the role of productivity and traditional growth factors confine analysis to industry, sector, or regional level, making it unclear how, when, or if these improvements correspond to an increase in living conditions for the poorest.

This paper addresses these limitations by developing an annual and spatially disaggregated index of absolute poverty over forty years of Ireland's post-Famine period. My unit of analysis is the 158 Poor Law Union – a level of disaggregation allows for greater nuance in both the description of Irish poverty, and different econometric specifications to explain its change over time. My approach differs from both the pre and post-Famine literature since I focus on a direct measure of poverty overtime, rather than an indirect proxy of poverty. This is partly due to the greater availability of post-Famine data, but also because the relationship between poverty and proxies such as illiteracy and low-quality housing blurs in the latter half of the nineteenth century, as government interventions in housing and schooling intensified.

3 Policy Context

3.1 Establishment of the Poor Law 1838

The Whately Poor Inquiry (1833–1836) provides the first detailed account of poverty and living conditions in Ireland.[3] The Commission gathered evidence from every Irish parish and reported that nearly half experienced rising poverty and worsening economic conditions. This deterioration was driven primarily by falling incomes and declining living standards among the poorest households (Doran, 2021). D'Arcy (1989) index of daily money wages for

[3]Prior to this, Irish poverty data are scarce, although it has been argued that the ample supply of turf and potatoes meant the Irish were relatively better off than some populations in Great Britain and elsewhere in Europe (Ó Gráda, 1994).

unskilled labourers appears to corroborate this, with the index noting a collapse in labourer's wages by nearly 40 per cent between 1810 and 1827.

In response to increases in poverty and shortage of employment opportunities (British Parliamentary Papers, 1837), the Poor Relief (Ireland) Act (1838) established the first, rudimentary welfare system in Ireland that operated consistently for nearly a century.[4] Modelled after the English Poor Law, it endeavoured to provide a guarantee that no persons in poverty would starve by establishing a workhouse system to replace a patchwork system of poor relief provided by charitable institutions and state aided hospitals, bringing, for the first time, a basic minimum level of support to the majority of the country (Ó Gráda, 2011; Patriquin, 2006; Crossman, 2006b), and placed the financial responsibility of assisting the poor on the shoulders of Irish landowners (Gray, 2012). More generally, the Act drew a broad distinction between the causes and effects of poverty, with the Poor Law focused on alleviating the symptoms of poverty, rather than addressing its underlying causes.[5] Consequently, the Irish Poor Law was principally designed to relieve poverty rather than enabling local authorities to systematically intervene in the local economy and mitigate poverty over the long-run.[6]

To operationalise the workhouses, the Irish Poor Law was initially overseen by England's Poor Law Commissioners, who were tasked with dividing Ireland into Poor Law Unions. A workhouse would reside within each Union, and a Board of Guardians would be established to deal with its day-to-day operation. These boards were composed of both elected and ex officio Guardians, where ex officios included all unpaid Justices of the Peace and clergy residing within the Union (Crossman and Gray, 2011; Poor Relief (Ireland) Act, 1838). The main responsibility of Guardians was to agree an annual property tax on landowners within the Union that was sufficient to ensure the financial stability of the Union and enable the workhouse to meet the demand for poor relief (Crossman, 2006a). This tax was unprecedented in Ireland, and was thought by policy makers in England to be an effective stick to incentivise landowners to improve their estates and employ the rural poor (Gray, 2012).

The tax was levied within the electoral divisions of the Union, and while some Unions

[4]The Poor Law was abolished by the newly established Irish Free State in 1922, and was systematically dismantled in Northern Ireland between 1946–48 (Crossman and Gray, 2011).

[5]Between 1833–36, the Whatley Poor Inquiry rejected the implementation of a workhouse system in Ireland and advocated systematic interventions to reduce the causes of poverty such as assisted migration, investment in education, agriculture, and infrastructure (Doran, 2021; Ó Ciosáin, 2014).

[6]That said, the Act also provided for the possibility of raising funds to sponsor migration of poor individuals to the British colonies, but this accounted for a small share of Poor Relief. For example, in 1880, Unions only spent at total of £2,870 sponsoring migration, compared to over £481,700 spent on workhouse relief (British Parliamentary Papers, 1881a).

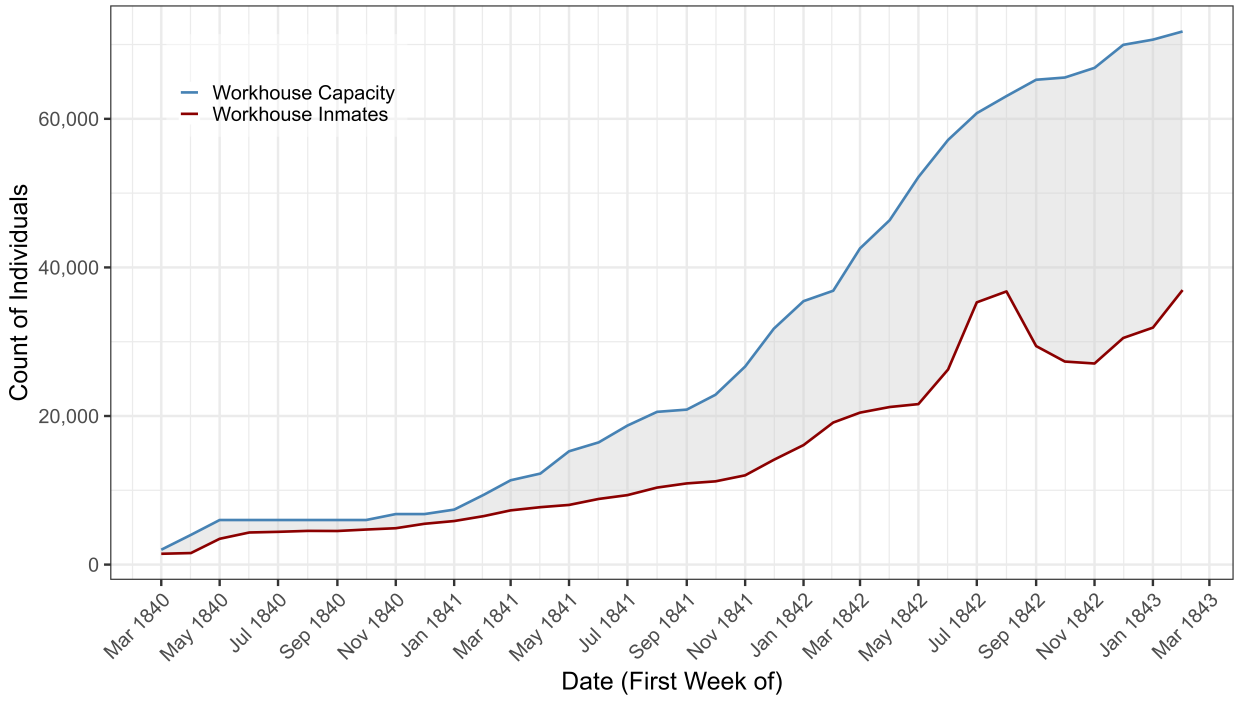
opted to impose an equal rate, others levied the tax according to the proportion of workhouse inmates who had previously resided there (O'Brien, 1985). While unpopular and a source of contention for most Boards of Guardians (Crossman, 2006b; O'Connor, 1995; O'Brien, 1985), it also embedded inequalities in land quality into the Poor Law and undermined relief efforts. Unions with the lowest land quality had populations most likely to seek workhouse relief during times of crises. Yet these same Unions had the weakest tax base, could raise the least from property taxes to fund relief, and, because tax rates were high to generate sufficient revenue, were the most likely to face landowner dissent. Consequently, the extent that a Union could relieve those most in need was revenue constrained.

Within a year of the Poor Act, Ireland had been divided into 130 Poor Law Unions and by 1840, the Commissioners ordered the construction of 113 new workhouses, the adaptation of 5 pre-existing institutions, and announced their intention to agree construction contracts with the remaining 12 Unions (British Parliamentary Papers, 1841). Building costs amounted to over £1.1 million,[7] where roughly 18 per cent of this figure was from Union revenues to furnish the workhouses and prepare for opening (British Parliamentary Papers, 1845, 1841). By March 1843, ninety-eight workhouses were open, twelve awaited final inspection and approval from Commissioners, while the remaining twenty were subject to delays (Crossman and Gray, 2011).

When fully operational, the 130 Irish workhouses were designed to accommodate around 90,000 persons per day (British Parliamentary Papers, 1845), higher than the 100 workhouses and accommodation for 80,000 estimated by the Government's inquiry in 1836 (Gray, 2012). Even so, as shown by Figure 1, the workhouse system operated well within its capacity in its early years. In its first year, the 12 workhouses that had opened were located in the urban centres such as Dublin and Cork, and occupancy was high. From April 1841, occupancy rates fell as the rural workhouses came online, with the number of workhouses increasing to 38 by the end of the year, and to 88 by December 1842. Although relief tended to be highly seasonal, and peaking during the winter months January – March (British Parliamentary Papers, 1873), by January 1843, only 33,595 persons were relieved in a system that, at the time, was capable of catering for over 70,000. By the last week in March in 1845, Irish workhouses were only at 52 per cent capacity, while in the same week the following year as the Famine began to take hold, workhouses were only 58 per cent full (British Parliamentary Papers, 1846).

[7] Figure is for the construction of 127 workhouses as of 1844.

Figure 1: Time series describing workhouse inmates, capacity, and occupancy rates 1840–43



Note: Shaded area indicates excess capacity. Inmate data from British Parliamentary Papers (1843), capacity data from British Parliamentary Papers (1841), and workhouse opening dates from British Parliamentary Papers (1846).

Historians have attributed the under-utilisation of the workhouse to its inflexibility and austere regime (Ó Gráda, 2011, 1994). Eligibility was determined by need, and relief could only be offered to those who did not own or rent property, and had no access to any land to grow their own crops (Crossman, 2006b). Consequently, in times of crop failure, small farmers and labourers would be forced to surrender their small plots of land if they intended to apply for Poor Relief (Daly, 1981). Given that males had more socio-economic opportunities than women at this time, it is unsurprising that workhouse relief was highly gendered. Female inmates over the age of 15 accounted for 41 per cent of the workhouse population on average between 1840–43, children accounted for 38 per cent, while males over 15 accounted for only 20 percent, roughly half the population of their female peers (British Parliamentary Papers, 1843). Moreover, the elderly, those with disability, and non-married adults made up a large share of the population (Crossman, 2006b; Ó Gráda, 1994). Clearly, for those who could work, it was preferable to face the uncertainty of precarious employment than face the certainty provided by the workhouse (Ó Gráda, 2011).

The Great Famine of 1845–1853 quickly exposed the inflexibility of the Poor Law, particularly in Unions where property tax revenues were low. As the crises worsened,

Workhouses were overwhelmed, causing Unions in the worst stricken western areas into insolvency and complete collapse (Ó Gráda, 2011). In some cases, workhouses were dangerously overcrowded, and serious outbreaks of contagious diseases caused mortality rates to soar (Crossman and Gray, 2011). The crises led to the overhaul of the Poor Law system in 1847 where the Irish Poor Law was wholly separated from the English system, and a new Irish Poor Law Commission established. Moreover, to create flexibility in relief practices, Guardians were permitted to offer Out-Relief to the elderly, disabled, widows with children, and orphans (Poor Law Extension Act, 1847). Out-relief could only be granted to "able-bodied" individuals if the workhouse was full or under medical quarantine. Out-Relief usually took the form of a small weekly cash or in-kind payment for no more than two months of the year (Ó Gráda, 2002). That said, the suspension of government funded relief after 1847 without subsidising poorer western unions redirected the full brunt of the Famine onto the Poor Law (Ó Gráda, 2011). In western Unions, up to 70 to 80 per cent of the population were in receipt of Poor Relief (Daly, 1981; Cullen, 1972), and a total of 834,000 persons were in receipt of out-relief in June in both 1848 and 1849 (Crossman and Gray, 2011).

3.2 Reconstitution in 1872

By 1849, 33 additional Unions were established with their workhouses constructed in the early 1850s (Gray, 2012) bringing the total to 168, while the number of the population seeking relief began to subside with the crises. Throughout the next two decades, the Poor Law Unions became the natural conduit to implement various socio-economic reforms overseeing new sewerage and wastewater projects, public works, subsiding child education costs and providing free medical treatment (Gray, 2009). To reduce child mortality rates in the workhouse, out-relief was extended to orphaned children under five-years-old in 1862 and to under ten-years-olds in 1865, fostering children out to local families (Clarke, 2011).[8] In 1872, the regulation of Irish Unions was again overhauled with the abolition of the Irish Poor Law Commission (1847–1871), and the creation of the Local Government Board for Ireland (LGB) which absorbed all responsibilities from the Commissioners as well as receiving additional devolved powers from the Lord Lieutenant, Privy Council, and Chief Secretary, over town councils, municipal and town commissioners (Local Government (Ireland) Act, 1872).

By 1872, most Unions continued to offer both workhouse and out-door relief, while running various hospitals and infirmaries for the sick or disabled. The LGB was markedly more flexible in its administration of the Irish Poor Law than its predecessors, and working

[8] This was again extended to under 15-years-olds in 1898.

in co-operation with the Government, frequently introduced temporary measures to mitigate economic crises, in recognition of the inability of Guardians to raise sufficient revenues from property tax (British Parliamentary Papers, 1898).

A period of bad weather beginning in 1877 culminated in the return of the potato blight, sharp decline in employment, and famine conditions across the country by 1879, particularly in the west (British Parliamentary Papers, 1880, 1881a). While this economic crises or "Little Famine" was mitigated with substantial charitable and government support from outside the Poor Law,[9] the crises still overwhelmed the financial resources of 19 of the poorest and hardest hit Unions. Eager to prevent a disastrous collapse of Unions similar to that seen during the Great Famine, the LGB provided emergency funding to these Unions in 1880, followed by additional grants to 5 Unions the next year (British Parliamentary Papers, 1884).

By 1890, the potato crop had failed a total of nine times since the Great Famine (British Parliamentary Papers, 1891), and in most of these occasions required extraordinary financing for adequate relief to be granted. Out-Relief was the most flexible form of relief available to Guardians during times of crises, however the LGB was increasingly concerned about corruption, fraud, and the fact that emergency funding encouraged the elderly to substitute traditional familial support mechanisms for Out-Relief (British Parliamentary Papers, 1892). Since Guardians were unwilling to remove the elderly from Out-Relief registers after the crises, there was a concern that higher claimant ratios could endanger Union solvency.

In lieu of emergency grant funding, the Government established a centrally funded public works scheme in 1890 to divert applicants away from the Poor Law. Public works projects were intended to maximise public benefit, and permitted "able-bodied" men and landowners to access relief (British Parliamentary Papers, 1891). Works were open for up to two-months at a time and were undertaken in 1890–91 and 1894. Even though these individuals were technically in receipt of out-relief, since these works were diversionary projects financed and operated by the Government, those relieved were not counted in Union level poverty figures. These public works were a measure of last resort, and due to the high risk of fraudulent activity on works, were approved prudently and only following an LGB inspection into local economic conditions. For example, when the potato crop partially failed in 1896, the LGB only amended out-relief rules in affected areas in anticipation of a further crises, but did not commission public works as the crop failure was not sufficient enough to cause a scarcity in potatoes (British Parliamentary Papers, 1897).

To address the inefficiencies of government-run works, the LGB devised a new public works programme that would enforce means-testing and reduce the ability of fraudulent

[9]Such as the Mansion House Committees Relief Fund, and the (Potato) Seed Supply Act of 1880.

activity through impersonation (British Parliamentary Papers, 1898). Motivated by a serious failure of the potato crop in 1897, Commissioners argued that the scheme was necessary to prevent western Unions from becoming overwhelmed with relief applications. Through this scheme, the Union had to petition its relevant County council for public works, who in turn would apply to the LGB for all affected Unions within its geographical area. If approved by the LGB, the Government would subsidise between 50–75 per cent of the total cost of the works with the remaining funds coming from the Union's account. The public works were to be run by the Union, and subject to LGB auditors.

Consequently, individuals working on these public works and Government subsidies were counted in Union annual reports, unlike previous public works schemes. In 1898, 11 predominantly western unions had public work schemes approved due to a failure of the potato crop, as well as seven in 1904, five in 1905, six in 1906,[10] one in 1907, and four in 1908–1909. Therefore, since the policy adapted both to changing social value and in response to economic crises, it is essential that policy context and changes in the administration of the Poor Law are accounted for to create a consistent measure of poverty overtime.

4 Data

4.1 Poverty and the Poor Law

The reports of the Local Government Board (LGB) of Ireland are the primary data source for this paper. These reports were compiled by the Board annually and forwarded to the Lieutenant-General and General Governor of Ireland to ensure that the government was fully informed of all responsibilities that were discharged locally through Poor Law Unions. As such, these reports and their associated appendices provide an extensive quantitative history of the Irish Poor Law, making it possible to reconstruct a rich and spatially disaggregated picture of Irish absolute poverty from the reconstitution of the LGB in 1872 to the out-break of the First World War in 1914.[11]

For this paper, annual poverty data has been transcribed for all 158 Unions across forty-

[10] These grants were issued by the LGB using a technicality in the 1905 Unemployed Workmen Act. This act was intended to provide assistance to unemployed tradesmen in the urban centres until the First World War. Except for this year, the LGB did not attempt to use this technicality again to funnel financial resources into the West.

[11] After the outbreak of the War, the UK Government passed the Local Government (Emergency Provisions) Act, 1916, which aimed to resolve administrative issues caused by the redeployment of civil servants to the war effort and cut expenditure on local administration (Hansard vol 21 17th april 1916 lord Hylton). Consequently the Local Government Board was excepted from providing appendices with its detailed statistical reporting to its annual reports.

three years[12], providing an extensive description of Irish poverty throughout the post-Famine period. In this paper, I focus on a subset of variables to describe poverty including the number of persons who are inmates at the workhouse, in receipt of out-relief, average length of workhouse stay in days, and Union expenditure on Poor Relief as a share of Union land valuations i.e. a measure of means adjusted expenditure.

Historians have long been aware of the incomparability of Poor Law practices across Ireland (Crossman, 2006a). In non-crises years, Union land valuations constrain tax revenues and poor relief in areas that are most impoverished, meaning that the absolute number of persons receiving poor relief will be less than in wealthier Unions. In crises years, this comparability issue becomes worse since the LGB tended to relax out-relief rules in affected Unions while the Government provided emergency finance or relief works, causing relief figures to soar. For example, in 1886, 20,244 persons were on relief lists in the Oughterard Union (Co. Galway) equivalent to 98 per cent of the total population in 1881. The following year when emergency measures were dissolved, the number relieved fell by 95 per cent to just 1,098 (British Parliamentary Papers, 1888, 1887).

To ensure that poverty figures are comparable between Unions and across time, I scale this poverty data in two ways. Firstly, poverty headcounts (workhouse and out-relief) are cost adjusted. Since the amount that a Union could spend on relief depends on its land valuations, cost-adjusted headcounts directly accounts for natural variations in relief practices linked to revenue, while smoothing volatility driven by windfalls from emergency relief practices, or changing out-relief rules. As such, any increase in cost adjusted poverty headcounts describes the increased urgency to relieve more individuals for every £1 spent, measuring the relative – rather than the absolute – effect on poverty headcounts.

There are a number of dimensions of poverty that, due to data limitations, have been excluded from this analysis, including Union sponsored migration, number of children who are foundlings and/or fostered, number of births occurring in the workhouse, and workhouse mortality rates. Instead, I indirectly account for these dimensions by calculating a measure of Union means adjusted expenditure by dividing the total amount spent on poor relief by Union valuations, and can be interpreted as the amount spent on relief in pence for every £1 of Union land valuations. Since the effect of emergency grant support is already captured by changes in poverty headcount measures, I systematically subtract emergency grant support from Union expenditures before calculating means adjusted expenditure. This prevents "double counting" periods of economic crises, ensuring the measure that proxies

[12]There were 163 Unions in 1872, but due to amalgamations this fell to 158 by 1914. Border changes are accounted for by amalgamating relevant Unions from the beginning of the period.

other relief offered by Unions that were not consistently reported.[13] – a full description of this can be found in Table A2 in the Appendix. Finally, as average workhouse stay measures the depth of poverty in each Union I leave this measure unadjusted.

Together, these poverty indicators measure the frequency of poverty using the number of persons living in absolute poverty, the extent that a Unions financial resources are stretched to relieve poverty, and the depth of poverty using the length of time individuals are living in the workhouse. That said, these measures cannot fully capture poor individuals who may have been denied relief due to financial constraints. While these indicators are likely strongly correlated with "actual" poverty levels, they do not reflect absolute poverty in the strictest sense. Nonetheless, they represent the most extensive and accurate approximation of poverty available.

Table 1 describes summary statistics at county level in each decade for each poverty indicator. In general, both means adjusted expenditure and workhouse admissions increase each decade, while average length of workhouse stay, and out-relief admissions fall. That said, there are some notable deviations, including a sharp increase in means adjusted expenditure in Connacht from 17 pence in the pound, to 20 pence between the decades 1872–1880 and 1881–1890, bringing Connacht expenditure much closer to that in Munster. Unsurprisingly, given there was a number of harvest failures during the 1880s in the West, this period is associated with high out-relief admissions of 0.18 persons for every £1 spent in both Connacht and Munster compared to just 0.08 persons in Ulster.

Throughout the period, both Ulster and Leinster are more likely to admit individuals to the workhouse than to give them out-relief. Between 1872 and 1914, Unions in Ulster and Leinster were reliving around 1 more person in workhouses than in out-relief for every pound spent, compared to around 0.77 persons in Connacht and Munster. While these differences may be due in part to larger workhouses in Belfast, Cork, and both Dublin Unions,[14] it may also reflect the different priorities of Guardians in the East, many of whom were rate-payers and believed Out-Relief claims were liable to fraud, and not in keeping with the founding "values" of the Poor Law, i.e. that the workhouse should act as a deterrent against destitution (Crossman, 2006a).

[13] Years where emergency grant support has been subtracted includes 1880–81, 1883, 1886, 1898, 1905, 1908, and 1909.

[14] As of 1866, the Belfast workhouse could accommodate 3,319 persons, Cork 3377, Dublin North 2,513, and Dublin South 3,244. The average accommodation of all other workhouses was 848 (Parl papers 1867)

Table 1: Summary Statistics of Poverty Indicators (Decadal Averages)

	Province			
Indicator	**Ulster**	**Munster**	**Leinster**	**Connacht**
Adjusted Expenditure				
1872–1880	9.69 (3.33)	19.82 (6.68)	14.48 (4.23)	16.81 (7.62)
1881–1890	9.53 (3.88)	22.70 (7.71)	15.47 (4.31)	20.11 (10.60)
1891–1900	9.39 (4.01)	21.26 (6.23)	15.05 (3.98)	18.23 (7.65)
1901–1914	11.26 (4.23)	22.78 (6.88)	16.05 (4.27)	19.99 (8.09)
Workhouse Admissions				
1872–1880	0.75 (0.28)	0.49 (0.16)	0.75 (0.42)	0.47 (0.13)
1881–1890	1.02 (0.44)	0.86 (0.48)	1.25 (0.69)	0.71 (0.33)
1891–1900	1.15 (0.61)	0.98 (0.53)	1.13 (0.57)	1.01 (0.44)
1901–1914	1.35 (0.67)	0.97 (0.54)	1.32 (0.70)	1.03 (0.46)
Out-Relief Admissions				
1872–1880	0.06 (0.06)	0.10 (0.08)	0.13 (0.07)	0.11 (0.12)
1881–1890	0.08 (0.07)	0.18 (0.11)	0.16 (0.07)	0.18 (0.14)
1891–1900	0.08 (0.06)	0.16 (0.06)	0.13 (0.04)	0.20 (0.16)
1901–1914	0.06 (0.04)	0.11 (0.04)	0.10 (0.04)	0.12 (0.10)
Average Stay				
1872–1880	72.03 (24.63)	94.18 (27.15)	60.11 (26.68)	95.70 (26.81)
1881–1890	58.82 (21.22)	65.52 (28.65)	40.85 (22.29)	73.11 (30.77)
1891–1900	49.42 (21.81)	53.81 (24.23)	39.63 (20.01)	49.55 (26.96)
1901–1914	30.70 (15.93)	41.89 (18.88)	29.30 (17.72)	35.89 (19.84)

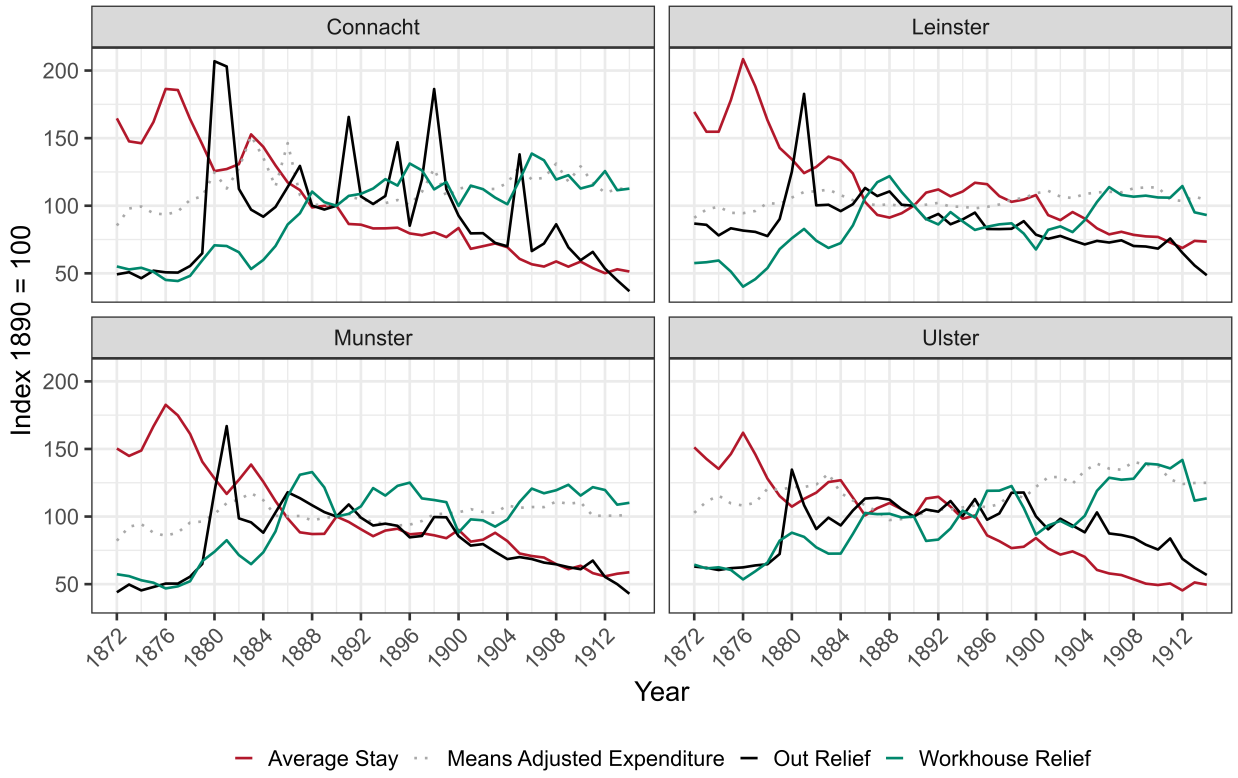
Decadal provincial averages with standard deviations in parenthesis. Adjusted Expenditure is measured in pence (£1 = 240 pence), workhouse admissions and out-relief have been cost adjusted and reflect the number of persons relieved for every £1 spent, while average stay is measured in days.

Even though the numbers entering the workhouse were increasing, the average length of stay in the workhouse was declining, indicating a fall in long-term chronic poverty. Between 1872–1880, average workhouse stays in Munster and Leinster were over three months, compared to around two months in both Ulster and Leinster. There is strong evidence that this gap fell substantially throughout the period, particularly during 1881–1890. Average stays fell by 62 per cent in Connacht, 55 per cent in Munster, 57 per cent in Ulster, and 51 per cent in Leinster so that by 1901–1914, the month gap in average stays between Connacht

and Munster, and Ulster and Leinster had reduced to just 9 days.

Figure 2 describes a time series of these variables at province level where values have been indexed. Figure 2 reveals several interesting insights of Irish poverty in the post-Famine period. Firstly, it confirms that out-relief figures are extremely sensitive to economic crises, particularly in the western provinces of Connaught and Munster where the measure is prone to volatility. While the economic crises of the 1890s and early 1900s are not as severe as the "Little Famine" from 1877–81, it confirms that large numbers of individuals still lived in economic insecurity, where a single bad season was enough to push households into temporary destitution.

Figure 2: Time series of key poverty indicators 1872–1914



Secondly, there is an increased frequency of workhouse relief over time, as average workhouse length of stay falls. This indicates a mechanical relationship between workhouse admissions and average stay since workhouses are constrained by their maximum capacity. In poorer Unions, workhouses are typically populated by smaller numbers of individuals who remain in workhouses for up to three months of the year. In periods of crises, workhouses quickly fill, with out-relief meeting the additional demand on the poor law, while average stay tends to fall since the individuals who are newly poor will leave the workhouse as soon

as they are able. More generally, the negative relationship between workhouse admissions and average stay indicates an evolution from conditions of chronic poverty in the earlier part of the period, to those of temporary poverty, dominated by frequent, short stays of less than a week, in the workhouse.

5 A New Measure of Multi-Dimensional Poverty

5.1 Defining A Measure of Poverty

While out-relief and the average duration of workhouse stay declined, both workhouse admissions and Poor Law expenditure increased, making it difficult to judge from any single indicator whether socio-economic conditions for the poorest actually improved in the post-Famine period. To resolve this ambiguity, this paper draws on the multi-dimensional poverty literature as advocated by Sen (1976), to estimate a consistent measure of absolute poverty that is sensitive to both the frequency and magnitude of poverty. In this case, both workhouse and out-relief headcounts capture changes in the frequency of poverty, while average duration of workhouse stay and Poor Law expenditure captures the magnitude and extent of poverty.

This measure assigns to each Union in each year a poverty score that is the weighted aggregation of the four poverty indicators $j = 1...4$. Although it is possible to include additional poverty indicators across multiple domains of poverty such as health and access to services (Townsend, 1979), increasing the complexity of a long-run historical measure is ill-advised. This approach not only limits interpretability by creating a "black box" problem, but also raises concerns about consistency, as these additional domains are likely to capture unrelated socio-economic trends. For instance, the rise in patients in Irish workhouse infirmaries and asylums after 1890 does not reflect deteriorating health amongst the poor, but rather the expansion in the quantity and quality of Union medical staff.[15]

For each indicator, the relative degree of poverty at time t is given by the z-score $\Phi_{jt} = \frac{j_t - \hat{\mu}_j}{\delta_j}$. Consequently, all indicators are standardised across all Unions and years around a mean of zero and a standard deviation of one. Extremely poor Unions in a given year will have a z-score exceeding 1, while every rich Union will have a score under -1. For each Union, a weighted poverty score can then be computed:

[15] Unions were instructed to employ workhouse nurses instead of relying on inmates to provide medical assistance. Moreover, new nurses and medical entourages now required formal training and an appropriate qualification (British Parliamentary Papers, 1904b).

$$\text{Poverty}_{it} = \sum_{j=1}^{n} w_{jt}\Phi_{jt} \tag{1}$$

where the poverty score of Poor Law Union i at time t is equal to the weighted sum of the standardised poverty indicators. w_{jt} represents the weight of each indicator in the poverty index, where weights are scaled between zero and one ($0 < w < 1$) and the sum of weights for each union in each year is equal to one ($\sum_{j=1}^{4} w_{jt} = 1$). Weights are strictly necessary since not all indicators contribute to the lived-experience of poverty equally. It has become common practice to develop a set of weights that reflect the revealed preferences of the population, or develop a set of relative weights from a priori knowledge (Fusco, 2006; Townsend, 1979). Applying such methods to historical data is highly inappropriate since 1) preferences are unknown; 2) preferences change overtime; and 3) it requires a contemporary researcher to make a value judgement about past poverty experiences.

Asides from these issues of subjectivity, the fact that poverty relief was limited by local economic conditions and administered by officials on a case-by-case basis created a trade-off between different relief practices. Since some unions tended to grant more workhouse relief than out-relief, the most appropriate weighting strategy is one that takes account of the underlying relationships between each poverty indicator over time. I use Principal Component Analysis (PCA) to estimate the best linear combination of poverty indicators that maximises variance across all years and Unions. Using this vector, otherwise known as the first principal component, I extract the absolute values of the loadings and use these as weights.

A PCA based approach is advantageous for a number of reasons. Firstly, as a method of dimensionality reduction, PCA will capitalise on the underlying relationships between poverty indicators, requiring no knowledge of individual preferences or poverty experiences. Secondly, since weights are informed by the covariance between indicators, each indicator will be weighted according to its relevant importance to poverty across time, accounting for the trade-off inherit in relief practices. Using this technique, the first principal component can be described:

$$\begin{aligned} 1^{\text{st}}\ \text{Component} = {} & 0.43\,\text{Means Adjusted Spend} - 0.63\,\text{Workhouse Admissions} \\ & + 0.19\,\text{Out Admissions} + 0.62\,\text{Workhouse Stay} \end{aligned} \tag{2}$$

This first principal component explains nearly half of the total variation of all indicators

across unions and time.[16] The coefficients in Equation 2 represent the loadings of each poverty indicator on the first component: larger values correspond to indicators that explain more of the overall variation in poverty, while the sign indicates the direction of the correlation between the indicator and the component. Workhouse admissions, average duration of workhouse stay and means adjusted expenditure tend to dominate the measure, while out-relief explains much less variation. This is encouraging – as discussed in Section 3 – out-relief was the main source of relief during times of crises and its allocation was highly discretionary and sometimes illegal.

5.2 Sanity Check

A practical concern with this multidimensional poverty measure is that, given the financial constraints faced by Unions, it may capture spending on poverty rather than poverty itself. I cannot account for cases where relief was refused, either because Guardians declined to strike sufficient rates, or because Unions lacked an adequate ratable base to finance the Poor Law. To test whether this measure does in fact measure poverty, I next explore whether multidimensional poverty scores 1871 and 1881 are correlated with several alternative indicators of poverty

The share of fourth-class housing and the illiteracy rate are frequently used in the literature as proxies for poverty. Unfortunately, data on housing quality and literacy were not aggregated to the Union level in the provincial census volumes for the period. Although this information exists at the lower civil parish level, parish boundaries do not nest within Unions, and the available geo-spatial data for parishes is of poor, making it unsuitable for spatial interpolation. More generally, even if housing and literacy data was readily available at Union-level, systematic government interventions housing and schooling in the latter half of the nineteenth-century likely blurs their relationship with poverty.

Given this data limitation, I construct three alternative proxies of poverty using Union-level data from the 1881 census. First, I calculate the crude birth rate per thousand, using the number of births registered in each Union between 1871 and 1881. At the time, this data was collected by census enumerators from the Registrar General of Ireland, and although compulsory registration was introduced in 1864, concerns remain about its incomplete coverage due to non-compliance and late birth registration (Fitzgerald, 2016). I therefore also compute the marriage rate per thousand to complement birth data.

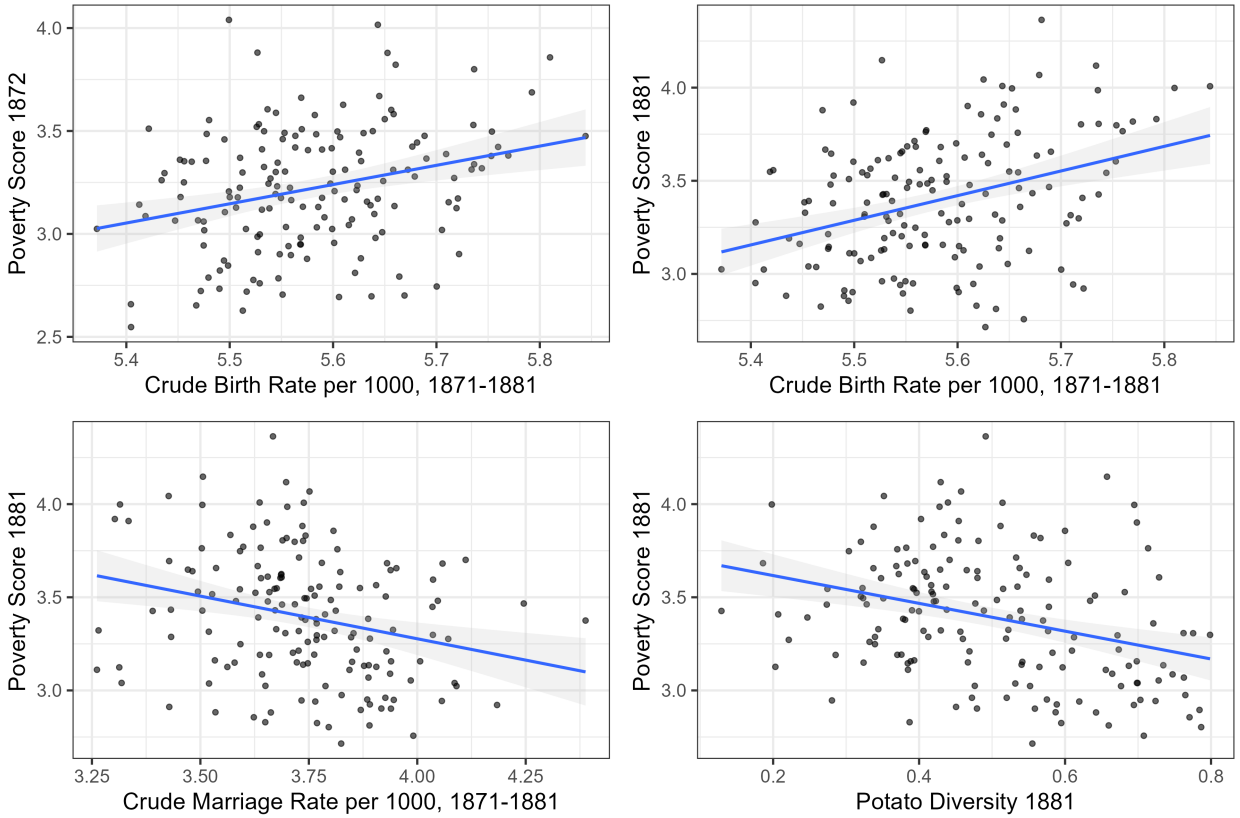
[16]Since there are four indicators I generate four components ranked 1st–4th. I show the relevant importance of each component in the Appendix. The first component explains 49.1 per cent of the total variation, the second explains an additional 29.4 percent, the third 15.5 per cent, and the final component 6 per cent. Table A1 in the Appendix gives an overview of the portion of the variance explained in each of components.

A long-standing economic literature links fertility and marriage patterns to poverty: poorer households tend to marry earlier and have larger families, while wealthier households are more likely to marry later and have fewer children (Galor, 2011; Becker et al., 1990; Becker, 1960) – indeed, evidence for nineteenth-century Ireland shows higher rates of celibacy among wealthier farmers (Ó Gráda, 1994). That said, given poverty scores are sensitive to short-term shocks in the frequency and magnitude of poor relief, some noise in these relationships should be expected since marriages and births tend to capture longer-run trends.

A measure of potato diversity within each Union is constructed as a third poverty indicator, where potato data has been transcribed from the annual reports of the Department of Agriculture and Technical Instruction for Ireland. Even after the Great Famine, the potato remained the staple subsistence crop of those living in poverty (DATI, 1902). Rather than simply calculate the potato share of crop production as a measure of potato dependency, this indicator reflects variation in the types of potatoes grown since some varieties were grown primarily for subsistence, others for the British market (Ó Gráda, 1994). The Champion potato was especially valued in poorer areas: it was hardy, blight-resistant, and offered reliable yields, effectively insuring households against the risk of poverty and hunger (British Parliamentary Papers, 1902). To compute this measure, I use a Simpson's diversity index where values closer to zero indicate low diversity and a higher dependency on the Champion.

In the case of these three poverty indicators, theory would predict that birth rates to be positively correlated with poverty scores, while marriage and potato diversity to be negatively correlated. Figure 3 confirms these predictions, suggesting that although Poverty Scores are partly influenced by Union funding, they nonetheless provide a broadly accurate representation of the spatial distribution of poverty.

Figure 3: Correlation of poverty scores with other poverty indicators



Note: Crude birth and marriage rates are calculated as the number of births/marriages over the decade 1871–1881 over the total population in 1881. Potato diversity describes the extent that Unions raise various species of potato, with lower figures indicating a dependency on the champion potato – the principal subsistence crop of poor farmers. The natural log is taken for all variables except for potato diversity since this has already been normalised. For marriage rates, Gorey and Rathdrum Unions are outliers and have been dropped.

5.3 Irish Poverty 1872–1914

For ease of interpretation, the weighted poverty scores are rescaled to range from 1 to 100, with 100 representing the Union and year with the highest score, before being averaged at province level (Ulster, Munster, Leinster, and Connacht). Since Unions containing large cities are incomparable to the other, predominately rural Unions, I also separate these from Province averages for visualisation purposes. For reference, Figure A.1 in the Appendix maps the location of provinces and their constituent Unions while Figure 4 describes the change in multi-dimensional poverty at province level.

Figure 4: Province Average of Absolute Poverty Scores 1872 –1914

Note: Province average Poverty Scores in red, and averages for Unions containing large cities shown separately in grey. In Leinster, these urban Unions are Dublin North and Dublin South; in Munster, Cork and Limerick; and in Ulster, Belfast. There are no comparable large cities in Connacht. Union-level poverty scores are scaled between 1–100, where 100 indicates the Union with the highest poverty across all years.

Although poverty scores are scaled between 1 and 100, province averages infrequently exceed a score of 35, confirming that high poverty scores are present in only a minority of Unions. Overall, poverty scores declined across all four provinces, with Connacht and Munster showing greater similarity to each other than to the wealthier provinces of Leinster and Ulster. Aside from the multiple agricultural shocks that increase the volatility of the measure in Connacht, both Connacht and Munster show a sustained fall in poverty overtime, whereas the overall decline in Leinster and Ulster is driven by a sharp fall after 1911. In general, although Unions containing large cities have higher poverty scores than their respective provincial averages, changes in urban poverty appear broadly proportional to those observed in other Unions within the same province. The main exception is Belfast, which, apart from a brief period in the early 1870s, consistently recorded lower poverty scores than the Ulster average.

Unions in Connacht and Muster were those with the highest absolute poverty scores at the beginning of the period, with scores around 35 and 26 per cent higher than averages in Ulster and Leinster. The period of poor weather preceding the "Little Famine" of 1879, corresponds to an increase in poverty scores by 10.4 per cent in Munster, and 19.5 per cent

in Connacht between 1874 and 1877. Comparatively, there was no substantial change in average poverty scores in either Leinster or Ulster during this time indicating that these Unions were more robust to negative agricultural shocks.

That said, Belfast did experience a temporary rise in poverty scores during this period, predominantly driven by increases in both workhouse admissions and the average length of workhouse stay. This is likely linked to internal migration, as Belfast's population expanded rapidly at the time (Bielenberg, 2009). Moreover, unlike the English Poor Law, the Irish system did not require applicants for relief to reside within the Union. Relief could be extended to individuals moving across the country in search of economic opportunities, even to those living in homelessness. Although this "roaming relief" has the potential to distort the poverty index, it infrequently reached problematic levels – for example in 1886 when the LGB attributed a sharp rise in over-night workhouse stays to labourers and artisans moving from Union to Union in search of employment (British Parliamentary Papers, 1887).[17]

The volatility of the measure in western areas in the period preceding the 1879 "Mini-Famine" highlights the relative economic insecurity of households in the west compared to the east. In many cases, western households were a single bad harvest away from complete destitution Purdue (2011); DATI (1902), and while in 1880, the harvest was reported to be the best in many years (British Parliamentary Papers, 1881a), poverty scores remained high. This suggests that there is a time lag between improved economic conditions and changes in poverty. Indeed, poverty scores remained high in both Connacht and Munster, and only reached pre-crises levels again in 1889 in Connacht and as late as 1900 in Munster.

Table 2: Summary Statistics Change in Multi-Dimensional Poverty

		Multi-Dimensional Poverty Score		
Province	**Unions**	**1872**	**1914**	**Change (%)**
Ulster	43	23.97 (7.08)	17.51 (9.48)	−21.01 (53.76)
Munster	48	32.14 (8.14)	25.38 (7.86)	−17.30 (28.60)
Leinster	39	24.73 (6.25)	21.61 (7.09)	−8.13 (36.02)
Connacht	28	31.95 (9.61)	21.67 (7.07)	−29.80 (22.25)
Average	158	28.05 (8.59)	21.65 (8.50)	−18.26 (38.32)

Provincial averages including cities, with standard deviations in parenthesis. Union indicates the total count of Poor Law Unions within each province.

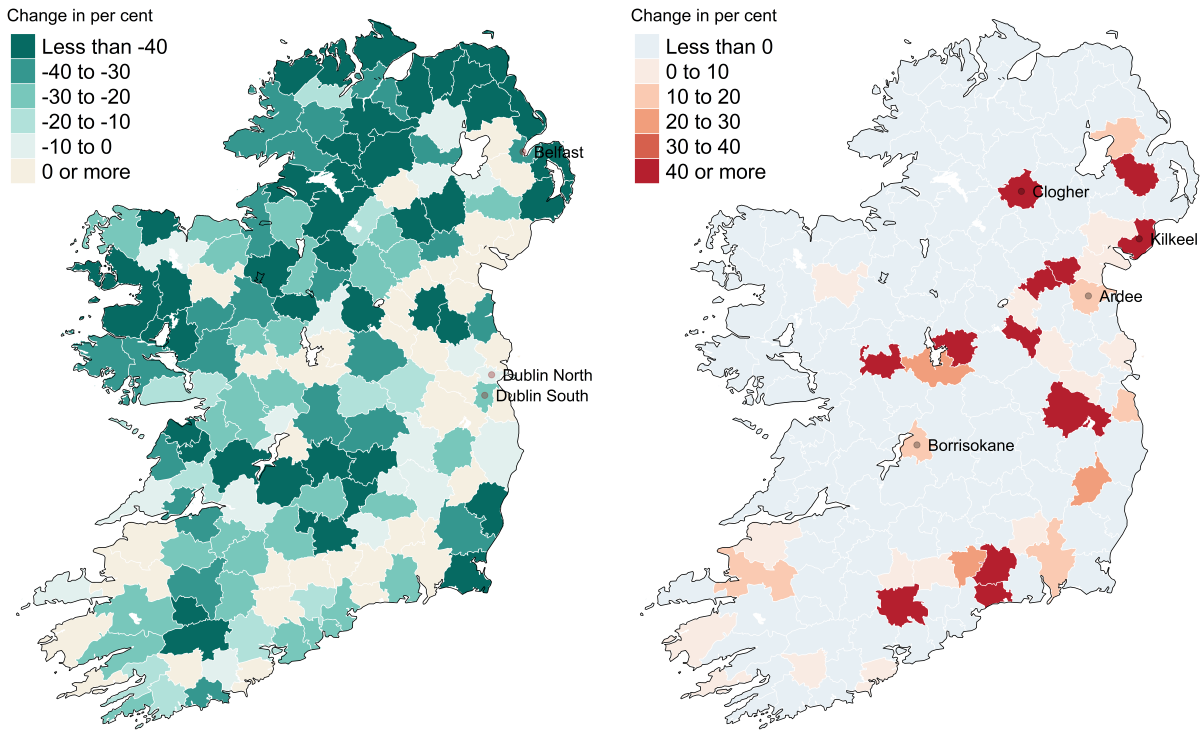
[17]From March 1886–87, 54,368 persons availed of overnight stays, compared with 43,724 in the previous year.

The persistence of the "Mini-Famine" effect was likely reinforced by sharp bursts of economic distress throughout the 1880s, giving little room for households or Unions to recover. Moreover, given the extent of poverty in many Unions during these crises, the Government intervened in an attempt to mitigate the crises. For example, during the "Little Famine", the Government issued nearly £1.5 million in "favourable" loans to large landowners and local authorities to conduct nearly 5,000 public work schemes in the worst stricken areas (British Parliamentary Papers, 1881b, 1880). The Seed Supply (Ireland) Act (1880) allowed farmers to purchase crop seeds from Unions in two equal instalments a year apart at affordable prices, while the charitable relief efforts of the Mansion House Relief Committee spent over £181,000 relieving around half a million people from extreme poverty between 1879–80 (Dublin Mansion House Committee, 1881). Despite this assistance, poverty scores rose and remained high, suggesting that, as during the Great Famine, Government-funded relief tended to exclude those unable to work – such as the elderly, single mothers, and children – who made up a large share of relief figures at the time (British Parliamentary Papers, 1881a).

By 1900, evidence of convergence in living standards is mixed. In 1872, Connacht and Munster recorded an average Poverty Score of about 30 – roughly seven points higher than the combined average for Ulster and Leinster. By 1900, the gap had widened to around nine points, a divergence driven by an acceleration of poverty reduction in Ulster. Yet, between 1903–05, poverty scores increased in the east of Ulster as well as across Leinster, while in Connacht – in the midst of yet another agricultural crises – poverty scores sharply increased. During this crises, Connacht scores do not return to their pre-crises level until 1909, while in Leinster and Ulster they do not return until after 1911. This likely captures the direct effect of the Old Age Pension on poverty as in 1911, the "Pauper Disqualification"criteria was abolished, allowing elderly individuals who relied on Poor Relief to apply for a Pension. By 1914, the poverty gap between Connacht and Munster, and Leinster and Ulster had declined to around 4 points.

Figure 5 maps the change in poverty scores in per cent over the period at Union-level. The left panel focuses on Unions where poverty scores fell, while the right panel focuses on those where poverty increased. Although scores fell on average by around 18 per cent thoughout the period, poverty scores only actually declined in 126 Unions, and increased in 32. Of the Unions where poverty increased, they tend to be located in the East, are more urbanised, or close to urban centres such as Belfast and Dublin. That said the regional variation across all Unions is quite heterogeneous and it is difficult to identify a clear spatial trend.

Figure 5: Map Showing Poverty Score Change at Union level in 1872–1914



Among the Unions where poverty increased, the rise was substantial – averaging 36.91 index points (SD = 45.69) with a median increase of 20.42. In the Appendix Figure A.2, I graph these poverty scores at Union level, where trends can be broadly categorised into one of four groups – Unions where; 1) frequent shocks appear to have kept poverty scores high; 2) poverty scores trend upwards from the late 1890s/early 1900s; 3) following a shock in the 1880s, poverty scores had not yet recovered by 1914; and 4) poverty scores are close to unchanging. The group where poverty increased the most was the second, where poverty scores begin to trend upwards in the late 1890s/early 1900s.

Ulster Unions such Clogher (Co. Tyrone) and Kilkeel (Co. Down), as well as Borrisokane (Co. Tipperary) in Munster and Ardee (Co. Louth) in Leinster, are the primary drivers of this sharp increase in the late 1890s/early 1900s. However, given that these Unions are anomalous and well-distanced, it is not obvious why poverty increased so dramatically in these Unions. Moreover, although there were a series of agricultural shocks that led to economic crises between 1904–1909, none of these Unions were affected nor particularly dependent on the potato.

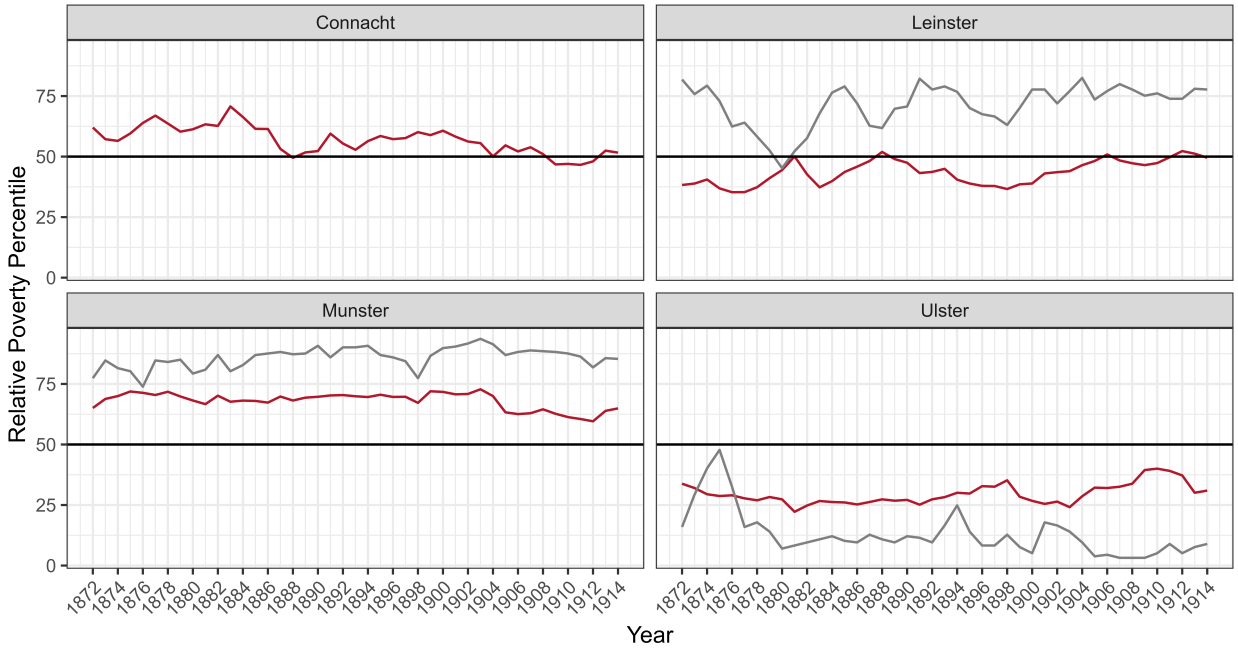
Urbanisation is unlikely to provide an answer since poverty scores fell in the urbanising

Unions of Belfast and both Dublin, while most other Unions were depopulating throughout the period. One potential explanation is changing demographic structure in eastern areas, in particular the growing number of elderly who, due to mass migration, had no relatives to care for them in old age (Gilleard, 2017). Indeed, in 1872 around 28 per cent of all workhouse admissions were those classed as "permanently disabled by old age or infirmary" (British Parliamentary Papers, 1873). By 1902, this had increased to over 40 per cent (British Parliamentary Papers, 1904a), and continued to increase until the Old Age Pension Act (1908) and removal of the disqualification criteria in 1911. This may help to explain as to why poverty scores increased in Unions such as Borrisokane and Ardee during the late 1890s/early 1900s, yet by the end of the period, after the Old Age Pension, these scores had broadly recovered – though still higher than they were in 1872.

5.4 A "Little Convergence"

Exploring the changes in this poverty index at province and union-level make it difficult to determine if or when poverty scores converged across Ireland. To address this, I construct a relative measure of poverty by ranking poverty scores within each year by percentile. While this approach does not capture the magnitude of change over time, it is conducive to detecting which Unions improved relative to others. Figure 6 describes the average change in relative poverty at province-level over the period, where the 50th percentile indicates the average level of poverty in that year. As before, cities have been disentangled from province averages due to their incomparability.

Figure 6: Change in relative poverty at county level 1872–1914.



Note: Average scores for Unions containing large cities shown separately in grey. Province averages excluding cities in red. For each multi-poverty scores are ordered by percentile in each year where 50 indicates the level of poverty in the average Union.

There is some weak evidence of a modest convergence between provinces. Average poverty scores in Connacht converge towards the average level in the mid-1880s, and while there is some deteriorating throughout the 1890s, poverty scores again converge towards average in the 1900s. In comparison, Munster performs poorly with average relative scores only declining below the 70th percentile and converging towards average as late as the 1900s, before levelling out until the end of the period. Given that actual poverty scores were declining in both provinces throughout the period, this indicates that average poverty levels fell faster in Connacht than in Munster. Some of the Munster sluggishness is linked to the increasing poverty scores in the Unions of Fermoy, Carrick on Shannon, and Kilmacthomas. However, even without these Unions, average Munster relative poverty score still lag behind that of Connacht.

In Leinster, poverty scores generally worsened relative to the average, except during the 1890s, with the Leinster average almost the inverse of the change in relative poverty in Connacht. In comparison, the trend is less clear in Ulster. Although relative poverty scores were lower in 1914 than in 1872, this is only due to a sharp decline in relative poverty in Ulster after 1911, while increases from 1884–1898 and 1903–1910 mark some deterioration in its relative level of poverty, as Unions in other provinces improved their relative position.

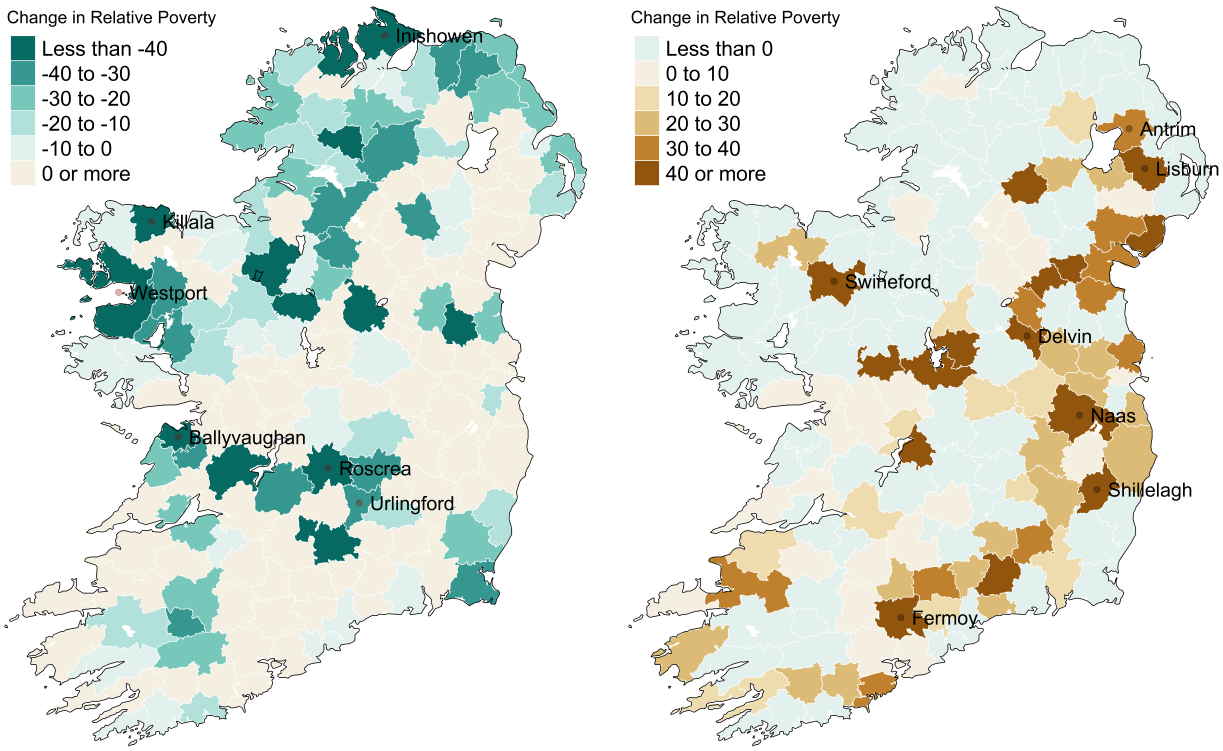
Unsurprisingly, in Unions containing large cities, relative poverty scores were generally higher, with the notable exception of Belfast in Ulster. In line with other Unions in Munster, the Cork and Limerick Unions not only saw little improvement in their relative position over the period but also experienced a deterioration, with relative poverty levels rising from the 77th percentile in 1872 to the 85th percentile by 1914. A similar pattern is evident in Dublin North and Dublin South Unions in Leinster, where relative poverty scores increased for most of the period, apart from brief intervals in 1874–1880, 1885–1888, and 1891–1898. Taken together, this suggests that in general, poverty scores declined more slowly in urban areas than rural ones, even though Irish cities were expanding during this period.

At Union level, evidence for convergence becomes clearer as do sub-provincial dynamics. Figure 7 describes the change in the relative poverty scores of each Union over the period, where the left panel maps the Unions that improved their poverty scores relative to other Unions, and the right panel that maps Unions where poverty scores worsened. There is evidence that western unions converged with their eastern counterparts, especially in west Ulster and Connacht. Although relative poverty scores increased in east Ulster Unions such as Antrim and Lisburn, west Ulster Unions like Inishowen and Milford improved their relative position. In Munster, improvements were driven by Unions in county Clare such as Ballyvaughan and nearby Scariff, with these gains offset by Unions such as Fermoy, Carrick on Shannon, and Kilmacthomas, where relative poverty scores increased.

In Connacht, all but four Unions improved their relative positions especially Unions such as Killala and Westport. A notable western outlier is the Union of Swineford, where the relative poverty score more than doubled, from the 35th percentile (below average) in 1872 to the 75th percentile in 1914. Poverty scores in Swineford rose throughout the 1870s, and its repeated exposure to agricultural shocks meant it qualified for emergency grant funding on all eight occasions during the period. In non-crisis years, scores declined, yet by the end of the period they had not returned to their 1872 level, indicating that economic insecurity continued to persist. Given this slow recovery, and since poverty scores improved in most other Unions, Swineford's relative poverty score rose sharply.

Finally, in Leinster, relative poverty worsened in 26 of the province's 42 Unions, resulting in an overall deterioration in the average poverty score. The most pronounced declines were observed in Unions such as Naas, Delvin, and Shillelagh. In Naas, poverty scores rose during the 1880s and early 1890s before declining and stabilising at levels higher than at the start of the period. In contrast, poverty rates in Shillelagh and Delvin increased steadily throughout the period, while Devlin experienced particularly high volatility.

Figure 7: Change in relative poverty scores at Province level 1872–1914



Note: Multi-poverty scores are ordered by percentile in each year where 50 indicates the level of poverty in the average Union. Left panel in green indicates Unions that where relative poverty scores improved, right indicates Unions where relative poverty scores deteriorated.

To conclude this descriptive section, multidimensional poverty scores suggest that living standards for those living in poverty did improve over the period, but year-to-year changes were volatile, particularly in the western regions where poverty was initially most severe. During periods of agricultural crises, many of these areas continued to rely on emergency grant support to meet demand on the poor law, highlighting the necessity of proactive public policy to safeguard the most vulnerable. Yet, repeated crises slowed the pace of poverty reduction. This was most evident in the aftermath of the "Mini-Famine" of 1879–1881, when it took nearly two decades for poverty scores in some of the poorest Unions to return to their pre-crisis baseline.

There is some weak evidence of convergence in living standards between east and west. However, relative poverty scores remained high in urban areas, with the notable exception of industrialised Belfast, while poverty declined more rapidly in Connacht than in Munster. Taken together, these findings suggest that although poverty levels fell across most Unions by 1914, a small number remained marked by economic insecurity, where even relatively

minor agricultural shocks were sufficient to push households below the poverty line and into the Poor Law.

6 Explaining Changes in Poverty

6.1 Estimation Framework

To explore the possible relationship between population change and absolute poverty, I estimate the following linear regression model:

$$Poverty_{it} = \beta \log(PopPressure_{it}) + Z_{itk} + \delta_i + \gamma_t + \varepsilon_{it} \tag{3}$$

Where $Poverty_{it}$ is the measure of multi-dimensional poverty in Union i in year t, $\log(PopPressure_{it})$ is the natural logarithm of a measure of depopulation in each Union i. I use the measure of population pressure as suggested by Fernihough and Ó Gráda (2022) – population per quality adjusted acre.[18] This indicator captures population density relative to the land's carrying capacity: higher-quality land can sustain larger populations, while lower-quality land cannot. Thus, population pressure is greatest in Unions where too many people are concentrated on poor-quality land.

This measure assumes that land valuations in GBP (£) are closely correlated with land quality. While this relationship held in the pre-Famine period, technological change and the development of infrastructure raised valuations, blurring the link between land values and land quality. Between 1881 and 1911, average Union land valuations increased by 14 per cent, from around £87,100 to £99,600, largely driven by Unions containing major urban centres such as Belfast, Cork, and Dublin North and South. Once these incomparable Unions are excluded, the average increase falls to just 5 per cent, strengthening the association between land values and land quality. To simplify my interpretation, I transform all variables into z scores, meaning that all coefficients represent the influence of a one-standard deviation change on poverty, allowing a clear comparison of the relative influence of each covariate across and between models.

Z_{itk} is a vector of demographic and economic composition control variables that may explain decadal poverty trends. Demographic controls include the share of the population aged under 20, as well as sex ratios to account for poverty trends driven by emigration and migration. During the late nineteenth century, Ireland's population aged considerably

[18] Population pressure is population divided by Poor Law Valuation.

as younger people emigrated, a trend reinforced by the phenomenon of 'missing' children – those born to Irish parents abroad. Over this period, 43 per cent of the population were under 20, though the share declined from 47 per cent in 1881 to 39 per cent in 1911. Younger age structures persisted in the typically poorer western periphery, meaning that this measure will be correlated with migrant remittances, while capturing the counteracting effect of poverty traps, since out-migration was lower from poorer areas than wealthier ones (Ó Gráda and O'Rourke, 1997).

Sex ratios are used to account for differences in poverty arising from gender-selective migration. Here, the ratio is defined as the number of adult males aged over 20 per 100 adult females. Across the full period, there were just over 99 males per 100 females on average, with a standard deviation of 11.21. This ranged from a marked under-representation of males in 1881 (95 per 100 females) to an over-representation by 1911 (104 per 100 females). The shift reflects a broader compositional change between urban and rural areas as, throughout the nineteenth century, urban centres tended to be skewed towards females. Since men were more likely to rely on poor relief, a rebalancing of sex ratios toward men may have increased poverty.[19] The share of the population aged over 50 captures age related economic insecurity, since out-migration possibly eroded the natural familial support structures traditionally relied on by the elderly (Gilleard, 2017). The lower age of 50 is used to ensure comparability between censuses, especially given the Irish propensity for age heaping in the nineteenth century, and age misreporting in the early twentieth (Colvin et al., 2024; Budd and Guinnane, 1991).

The share of the population residing in scheduled towns or towns over 2,000 inhabitants is used to control for the non-rural population share. While generally small, these population centres systematically differed from their surrounding rural areas, serving primarily as market and service hubs and, in come cases, as manufacturing centres. Beyond capturing the influences of economic agglomeration on poverty, the non-rural population share also accounts for the impact of changing economic structure on underlying land values.

Agricultural composition could confound the estimates, as farms differed both across and within Unions over time. To account for the effects of agricultural modernisation, I control for the share of Union land devoted to tillage crops (wheat, oats, barley, potatoes, and flax). On average, 13 per cent of Union land was under tillage during the period, falling from 15 per cent in 1881 to 11 per cent in 1911 as farmers shifted toward higher-value pasture farming. While this transition may have reduced poverty, the decline of labour-intensive tillage may have also curtailed employment opportunities for the poorest, offsetting some of the gains

[19]For example, of long-term workhouse residents who were aged or infirm, only 42 per cent were female between 1903–1915.

from modernisation. I therefore additionally control for the share of adult males employed in agriculture. Adult males are used to avoid problems from the undercounting of female farmers, particularly those with male household heads,[20] and includes all males working in fields, pastures, woodlands, or in gardens.

Finally, I control for the share of small agricultural holdings under five acres as a proxy for economic insecurity. The share of these small farms increased throughout the period from 19 percent of all holdings in 1881 to 22 percent of all holdings in 1922, with these smaller holdings predominately located in the east and south east. To conclude the specification of this model, since my Poor Law Data is a panel, I enforce a conservative specification by controlling for both individual and time fixed effects δ_i and γ_t. These effects will capture unobserved confounders that are unchanged throughout time within and between Unions, improving the efficiency of my estimates.

Although this model is specified conservatively and accounts for a range of potential confounders, it is important to emphasise that the analysis is exploratory and necessarily speculative. This is due to the issue of simultaneity bias: since many of the variables likely influence each other simultaneously. This is particularly relevant for the measure of poverty, since Equation 3 models it as a function of depopulation, yet poverty itself likely affects depopulation at the same time. This simultaneity violates the assumption of exogeneity and can lead to biased estimates. Consequently, these results should be interpreted as exploratory and non-causal. A table of summary statistics for all variables used in this analysis is provided in Appendix Table A3.

6.2 Results

The results of Equation 3 are reported in Table 3. Column (1) is a simple bivariate ordinary least-squares (OLS) regression of the multi-dimensional poverty on population pressure, as measured by population per quality-adjusted acre. The coefficient is both positive and statistically significant, where a one-standard deviation increase in population pressure increases poverty by 0.437. Once additional covariates that control for wider Union socio-economic characteristics are introduced, the size of the association increases only modestly.

That said, once demographic controls are added in column (3) the size of population pressure coefficient halves, indicating that around a fifth of the importance of population pressure from the first column can be contributed to confounding factors. Of these factors,

[20] For example, a farmer's son, nephew, cousin, brother etc. were counted in agricultural occupations. Census' were usually completed by male household heads, meaning female relations tended to either be incorrectly enumerated or even ignored, even through females also undertook a substantial amount of farm-work.

the share of the population under twenty, share of small holdings, and tillage share appear to matter the most. The share of the population under 20 exerts the most explanatory power in this specification, indicating a possible association between younger Unions and higher poverty. Similarly, indicators of rural living conditions also appear to matter, with Unions that have larger farms and are more dependent on tillage associated with lower poverty scores.

Column (4) introduces year fixed effects, accounting for contemporaneous shocks affecting all Unions. The coefficient on population pressure becomes slightly larger but now is only statistically significant at the 10 per cent level ()$p < 0.1$). That said, the inclusion of Union fixed effects in column (5) changes these results drastically with most variables losing their explanatory power. Although the Population Pressure coefficient more than doubles, it falls out of statistical significance along with the share of small holdings and population under 20. This indicates that the results of column (4) were driven by the inclusion of unobserved, time-invariant cross sectional differences between Unions such as soil quality, local land customs, or agricultural practices. Union fixed effects removes this between variation, leaving only the within variation in a Union overtime.

After removing the confounding effect of persistent differences across Unions, the coefficient size and standard error of population pressure likely increase because the unobserved component of depopulation linked to land quality is absorbed, as well as systematic differences in land valuations linked to local administrative constraints, leaving only the association between depopulation and poverty. The only other variables that retain any explanatory power in column (5) is the tillage share, where a one-standard deviation in the share of land under tillage reduces poverty by 0.355 points (95% $CI[-0.66, -0.05]$). This result is somewhat unexpected, as greater reliance on lower-value tillage would ordinarily be associated with higher poverty. Here, however, the tillage share likely reflects increased income-earning opportunities for those in absolute poverty within Unions more dependent on this labour-intensive sector. Larger harvests may have increased employment prospects for poorer households and strengthened their resilience to falling below the poverty line.

Table 3: Regressions of multi-dimensional poverty on population pressure and other covariates during census years 1881–1911.

	Multi-Dimensional Poverty				
	(1)	(2)	(3)	(4)	(5)
Population Pressure	0.437***	0.492***	0.250**	0.275*	0.616
	(0.128)	(0.126)	(0.119)	(0.141)	(0.371)
Small Holding Share		0.188**	0.241***	0.237***	0.071
		(0.092)	(0.082)	(0.079)	(0.121)
Non-Rural Population Share		-0.166	-0.130	-0.095	-0.005
		(0.099)	(0.113)	(0.108)	(0.192)
Tillage Share		-0.207***	-0.202***	-0.236***	-0.355**
		(0.055)	(0.068)	(0.070)	(0.157)
Agricultural Employment		-0.197	-0.147	-0.120	-0.238
		(0.147)	(0.147)	(0.143)	(0.212)
Sex Ratio			0.007	0.029	-0.044
			(0.071)	(0.066)	(0.056)
Population Over 50			-0.009	-0.028	-0.025
			(0.048)	(0.048)	(0.091)
Population Under 20			0.423***	0.314**	0.234
			(0.084)	(0.136)	(0.154)
R^2	0.194	0.272	0.382	0.401	0.721
Observations	616	616	616	616	616
Year fixed effects			✓	✓	✓
Union fixed effects				✓	✓

Dependent variables and all covariates are expressed as z scores (one-unit change represents a one-standard-deviation change). The variables representing population pressure, share of small holdings, agricultural employment, urban population share, and tillage share were log-transformed prior to z score transformation to reduce skewness. Belfast, Dublin North, and Dublin South are excluded. Standard errors clustered at County level to allow for spatial autocorrelation. Significance levels: ***p<0.01, **p<0.05, *p<0.1.

Do these results rule out any association for depopulation? Likely not since these results are averages and do not account for the heterogeneous association between population pressure and poverty overtime. To explore this, I leverage the cross-sectional variation of my panel, and allow the effect of population pressure to vary by decade by interacting it with a year dummy. Consequently, the original population pressure variable now measures its

association with poverty in the 1881 as the baseline year, while the interactions measure the association differed significantly to baseline. Although this specification is not identical to those reported in Table 3, notably the coefficients and significance of covariates are similar. To enrich this analysis, I then explore how population pressure affects Unions depending on their level of absolute poverty at the baseline year by splitting the Union sample into tertiles. Given the relatively small number of Unions, tertiles are used to preserve sample size and improve the reliability of results, where the third of Unions where poverty was highest in 1881 are assigned the first tertile. The results of these regressions are reported in Table 4.

Population pressure does not show a consistent relationship with poverty, either over time or across the Union poverty distribution. Column (1) presents the full-sample results and shows that, at baseline in 1881, population pressure was positively correlated with poverty but not statistically significant. By 1891, however, the coefficient of 0.121 implies that a one-standard deviation increase in population pressure significantly raised poverty by 0.244. This association disappears in 1901, attenuates further toward zero, and may even turn negative by 1911. In contrast, the result for tillage is retained and is of similar magnitude, while the share of the population under 20 gains statistical significance.

Table 4: Regression results by poverty quantile during census years 1881–1911

	Multi-Dimensional Poverty			
	(1)	(2)	(3)	(4)
Population Pressure	0.123	-0.016	0.219	-0.507
	(0.465)	(0.544)	(0.390)	(0.925)
Population Pressure × Year 1891	0.121**	0.274**	0.150*	-0.105
	(0.050)	(0.112)	(0.082)	(0.158)
Population Pressure × Year 1901	-0.024	-0.057	0.173***	0.078
	(0.120)	(0.122)	(0.056)	(0.218)
Population Pressure × Year 1911	-0.176	-0.127	0.105	-0.208
	(0.155)	(0.187)	(0.075)	(0.294)
Small Holdings	0.046	-0.100	0.390***	0.170
	(0.130)	(0.150)	(0.129)	(0.175)
Agricultural Employment	-0.243	-0.178	0.275	-0.075
	(0.205)	(0.320)	(0.227)	(0.236)
Sex Ratio	-0.068	0.129	-0.074	0.311**
	(0.050)	(0.219)	(0.047)	(0.141)
Population Over 50	-0.012	-0.097	-0.009	-0.016
	(0.093)	(0.181)	(0.050)	(0.187)
Population Under 20	0.265*	0.494**	0.197	0.183
	(0.154)	(0.215)	(0.122)	(0.210)
Non-Rural Population Share	-0.035	-0.211	0.131	-0.049
	(0.192)	(0.308)	(0.232)	(0.281)
Tillage Share	-0.312**	0.379	0.190	-0.091
	(0.149)	(0.414)	(0.212)	(0.148)
Poverty Tertile	All	1	2	3
R^2	0.728	0.789	0.680	0.462
Observations	616	204	204	208
Union fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓

Tertiles are assigned using poverty scores in 1872 where quantile 1 is the poorest. Standard errors clustered at county level to account for spatial autocorrelation. Significance levels: ***p<0.01, **p<0.05, *p<0.1.

Columns (2)–(4) show that the relationship between population pressure and poverty in 1891 was concentrated in the poorest Unions. For this tertile, the coefficient of 0.274 implies that a one-standard deviation increase in population pressure raised poverty by 0.258 standard deviations (95% $CI[0.05, 0.49]$). however, the association becomes insignificant from 1901 onwards and may even reverse. These findings suggest that in the poorest Unions, where land was overpopulated beyond its carrying capacity, depopulation could provide some short-term poverty relief. Yet this was far from a universal law of motion: across most of the period, depopulation had little systematic association with improved living conditions for those living in poverty.

Changes in population pressure can be interpreted as the effect of depopulation at the extensive margin, since the measure captures population decline while holding land quality constant. For the poorest tertile of Unions, however, the selective nature of migration mattered at the intensive margin: a one-standard deviation increase in the share of the population under twenty increased poverty by 0.494 (95% $CI[0.07, 0.92]$). Out-migration not only acted as a safety valve against economic crises, but – given the low rates of return migration – also generating a cohort of 'missing children,' easing competition for scarce resources, while supplying Unions with a steady stream of remittances and bolstering household security (Hancock, 1863). This suggests that demographic restructuring, rather than population pressure alone, played a central role in shaping poverty in the poorest Unions.[21]

Column (3) shows that for the middle tertile, population pressure may have had a stronger association with poverty than for the poorest, with a significant association in both 1891 and 1901. A coefficient of 0.150 in 1881 (95% $CI[-0.01, 0.18]$) and 0.173 in 1901 (95% $CI[0.06, 0.28]$) implies that a one-standard deviation increase in population pressure raised poverty by 0.369 and 0.390 standard deviations, respectively. The 1891 estimates are less precise, however, meaning I cannot rule out that the association is close to zero. The share of small holdings under five acres has similar explanatory power to population pressure, where increases in the number of small holdings substantially raise poverty scores. The fact that this variable is insignificant among the poorest Unions, suggests that increasing holding size offered no meaningful advantage to households. By contrast, in these moderately better-off Unions, a scale effect emerges – holding land quality constant, the consolidation of holdings significantly reduced poverty. This result is similar to Ó Gráda (1993) who finds that before the Famine, there was no relationship between farm size and agricultural productivity, since labour output elasticities in production functions are small and Irish

[21]Population pressure results are identical if the control for the share of population under 20 is removed, allaying concerns of overfitting.

agriculture tended to be over saturated with labour. This finding indicates that provided land quality was sufficient, larger farms enhanced household resilience and improved economic security, probably due to increased capital investment.

The final specification of Table 4 shows that in the least poor Unions, population pressure does not explain variations in poverty. For these Unions, changes in sex ratios are the only significant factor that explains changes in poverty, where a one-standard deviation increase in sex ratios increased poverty by 0.311. Skewed sex ratios emerge from the selective nature of migration, particularly during this period as women become over-represented in urban centres and under-represented in rural areas. Since men were more likely to apply for poor relief than women, this variable likely captures the natural poverty gap between males and females.

While further work could refine this measure of absolute poverty and to extend the econometric analysis further back than 1881, the results, though non-causal, suggest that depopulation played only a limited and inconsistent role in reducing poverty in the post-Famine period. Population pressure appears to have mattered most in earlier decades and among poorer Unions, but its influence weakened for richer Unions and in later years. To corroborate these findings, in the Appendix Table A4 I replace population pressure with a direct measure of out-migration, i.e. the share of the population that migrated over the previous decade and report nearly identical results.

Given that Unions are not nested within counties, county clustering cannot fully capture cross-county dependence between bordering unions. To address this I implement Conely standard errors within a 30km cut-off from each Union's centroid. The results by year remain intact, however the average result for all unions becomes statistically significant. Taken together, these results suggests only a limited role for population pressure – and of depopulation more broadly – with this association diminishing over time, particularly as Unions became less poor. However, without resolving the problem of simultaneity bias, these results remain speculative.

7 Conclusion

This paper has examined whether Irish absolute poverty fell during the post-Famine era. While evident that the Irish economy grew during this period, beyond studies of indirect measures of average living standards, the sources and extent of improvement remain open to debate. In a literature dominated by mass migration, it is unclear whether post-Famine growth was inclusive and created new economic opportunities for the poorest, reducing poverty and improving living conditions.

I address this question using newly digitised Poor Relief data to construct a unique, comparable, multidimensional measure of poverty over forty years of the post-Famine period. This index shows that poverty fell and living conditions improved, but year-to-year changes were volatile, particularly in the western regions where poverty was initially most severe. During periods of agricultural crises, many of these areas continued to rely on emergency grant support to meet demand on the poor law, highlighting the necessity of proactive public policy to safeguard the most vulnerable. That said, repeated crises arguably slowed the pace of poverty reduction with only weak evidence of convergence in poverty scores between east and west.

To explore the drivers of the general decline in poverty, I harmonise the poverty index with detailed demographic, occupational, and agricultural data. The results suggest that depopulation played an inconsistent role and did not produce uniform improvements across Unions. Its association appears to diminish as Unions became less poor, while demographic shifts and agricultural composition emerge as potentially more influential factors. This suggest that rather than merely reducing the number of people on poor-quality land, the second-order effects of out-migration that skewed demographic composition likely eased competition for scarce resources among the remaining population and indirectly improved living conditions.

Likewise, increases in labour-intensive tillage appear to have improved economic security for the poorest. Beyond providing employment, larger harvests seem to have better equipped households to avoid hunger and, consequently, reduced the reliance on the Poor Law. Together, these findings highlight that poverty reduction was shaped by a complex and evolving interplay of demographic and agricultural forces over time, rather than by depopulation alone. Owing to simultaneity bias and the multiple directions of causality between population, poverty, and agricultural structure, this analysis cannot claim causal identification. Nonetheless, it provides sufficient grounds to question the depopulation hypothesis.

Future work could build on these findings by extending Union-level coverage back to 1851, at the end of the Great Famine, and incorporating additional covariates such as religious composition, social capital, and the spread of pasture farming, while further refining the poverty measure. In addition, leveraging the full cross-sectional power of the poverty index would enable a more causal exploration of how poverty responded to exogenous agricultural shocks, including crop failures and price depressions. To resolve the issue of simultaneity bias, future work could also explore the joint dynamics of poverty and population pressure using a panel Vector Autoregressive model. This approach accounts for the interdependencies between variables, making it possible to capture the true causal effect of depopulation on

poverty.

In sum, this paper presents new evidence that living conditions improved for the poorest during the period of post-Famine economic growth. Nonetheless, some areas remained marked by economic insecurity, where even minor crop failures could push many households below the poverty line and into the Poor Law. Although the analysis is non-causal, the findings indicate that depopulation was only inconsistently associated with poverty reduction, while factors such as demographic change and agricultural modernisation may have played a more powerful role. In a period of history dominated by the "Age of Mass Migration" literature, the evidence presented in this paper suggests that greater attention should be given to alternative mechanisms in explaining Ireland's post-Famine improvement in living conditions.

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A Appendix

Table A1: Principal Component Analysis – Components Loadings

	Comp. 1	**Comp. 2**	**Comp. 3**	**Comp. 4**
Importance of Components				
Standard deviation	1.4018	1.0860	0.7845	0.4895
Proportion of Variance	0.4913	0.2949	0.1539	0.0599
Cumulative Proportion	0.4913	0.7862	0.9401	1.0000
Loadings				
Means Adjusted Spend	0.4296	0.4903	0.7578	0.0265
Workhouse Admissions	-0.6274	0.2777	0.1512	0.7116
Out-Relief Admissions	0.1878	0.7728	-0.6062	-0.0072
Average Workhouse Stay	0.6217	-0.2921	-0.1881	0.7020

First Component used only for analysis which explains nearly half the total variation.

Table A2: Emergency Grants to Irish Unions, 1880–1909

Year	Grants	# Unions	Affected Unions
1880	£31,996	19	Ballinarobe, Ballyvaughan, Bawnboy, Belmullet*, Cahersiveen, Claremorris, Clifden*, Dingle, Dromore West*, Dunfanaghy, Glenties, Kanturk, Killala, Westport (Newport), Strokestown*, Swineford*, Tralee, Ballina, Castlebar
1881	£17,664	5	Belmullet, Clifden, Glenties, Westport (Newport), Swineford*
1883	£34,717	20	Ballina, Ballinasloe, Ballyshannon, Ballyvaughan, Boyle, Cahersiveen, Carrick On Shannon, Castlereagh, Claremorris, Donegal, Dromore West, Dunfanaghy, Ennis, Galway, Glennamaddy, Glenties, Glin, Gort, Inishowen, Kenmare
1886	£20,000	6	Belmullet, Clifden, Galway, Oughterard, Swineford, Westport
1898	£23,886	11	Bawnboy, Dunfanaghy, Caherciveen, Clifden, Galway, Oughterard, Ballinrobe, Belmullet, Killala, Swineford, Westport
1905	£9,784	5	Clifden, Oughterard, Belmullet, Swineford, Bawnboy
1908	£9,077	4	Belmullet, Clifden, Oughterard, Swineford
1909	£2,623	4	Belmullet, Clifden, Oughterard, Swineford

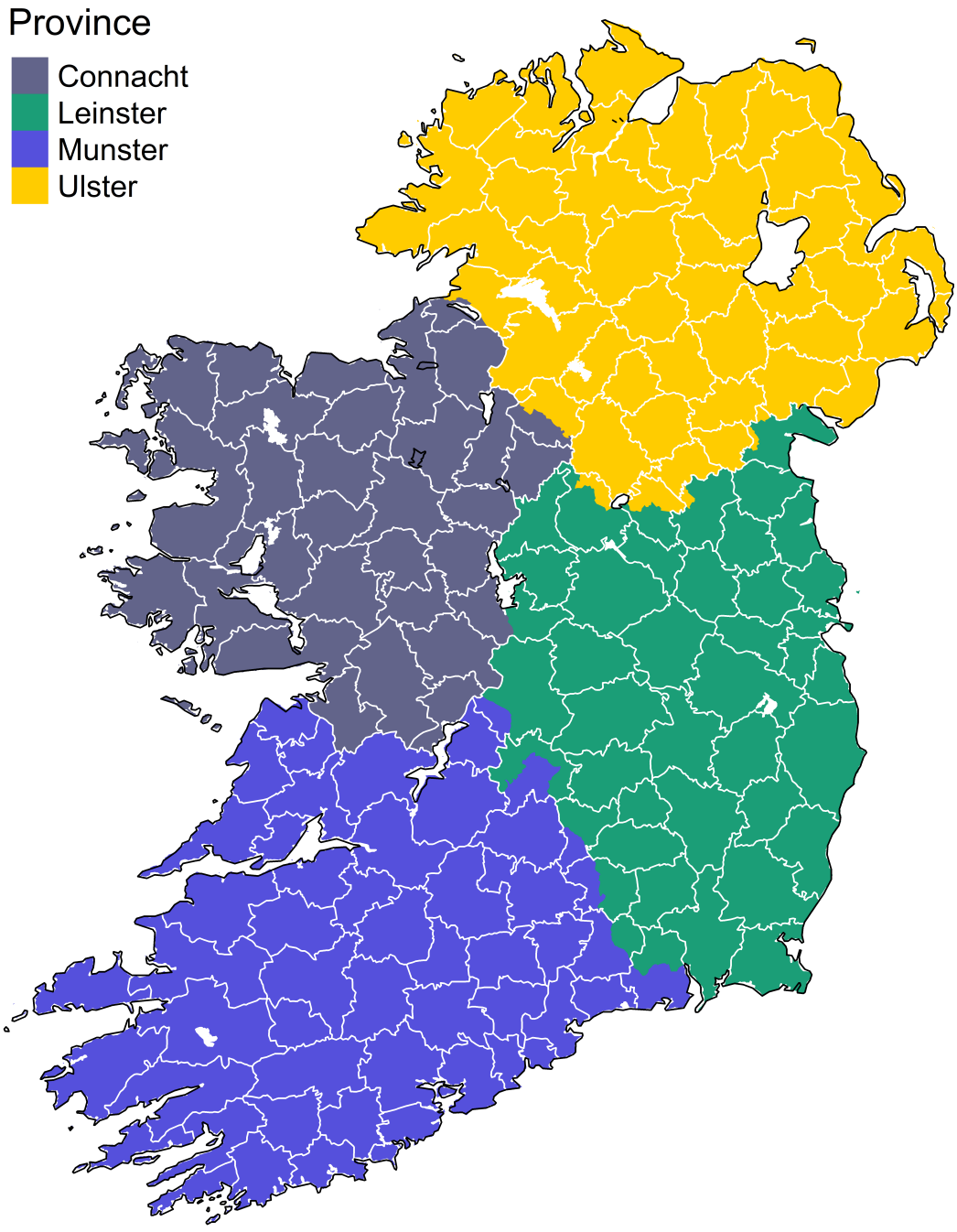
* In 1880, grants were not declared in Union accounts in Belmullet, Clifden, Dromore West, Strokestown, and Swineford.

* In 1881, grants were not declared in Swineford Union accounts.

Newport Unions was dissolved and absorbed by the Westport Union in 1885. Newport, and all other Unions that were dissolved during the period, has been merged appropriately, hence emergency grant support assigned to Westport in 1880 and 1881.

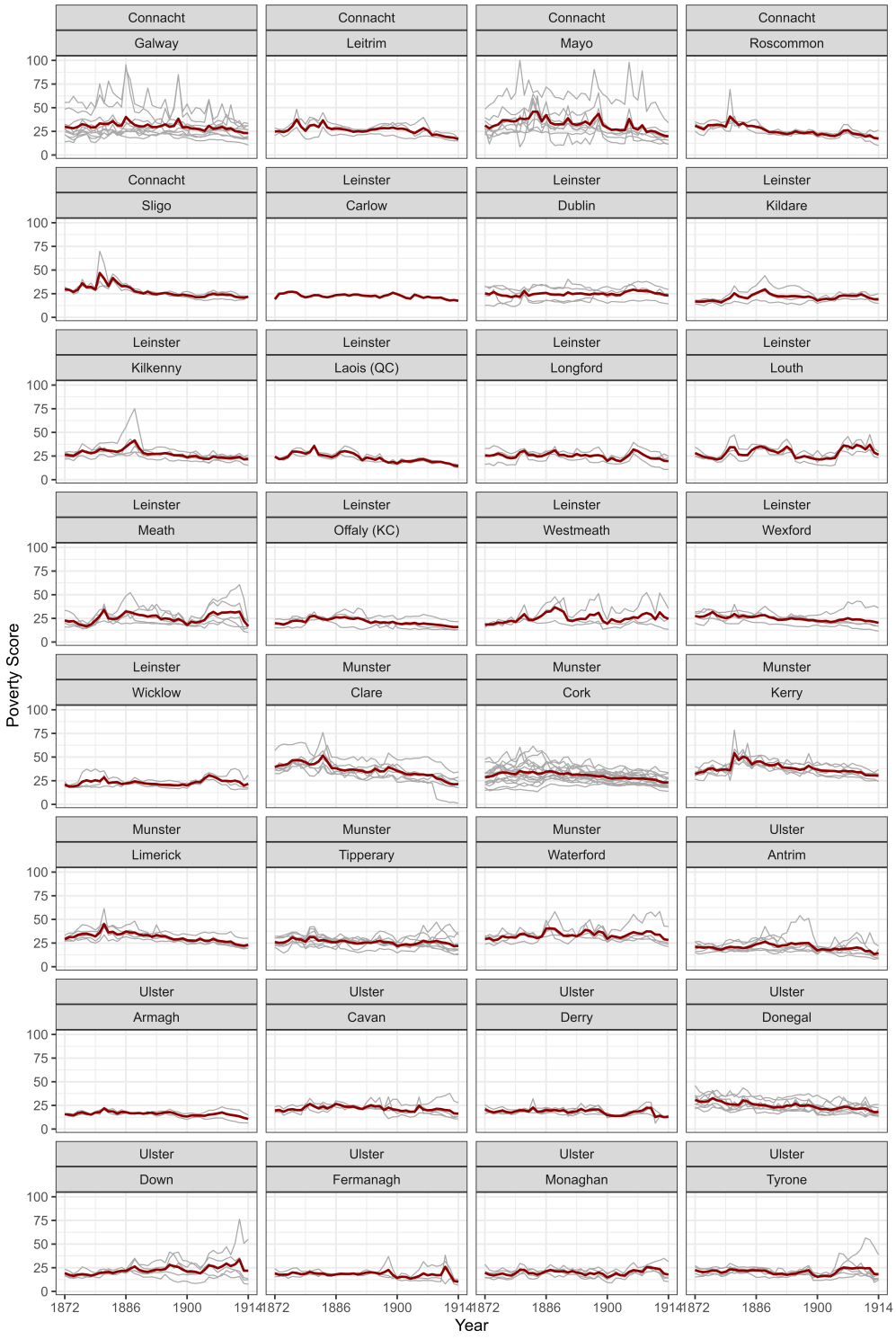
Sources: British Parliamentary Papers (1881a, 1882, 1884, 1887, 1898, 1911, 1910)

Figure A.1: Map showing Irish provinces and constituent Poor Law Unions.



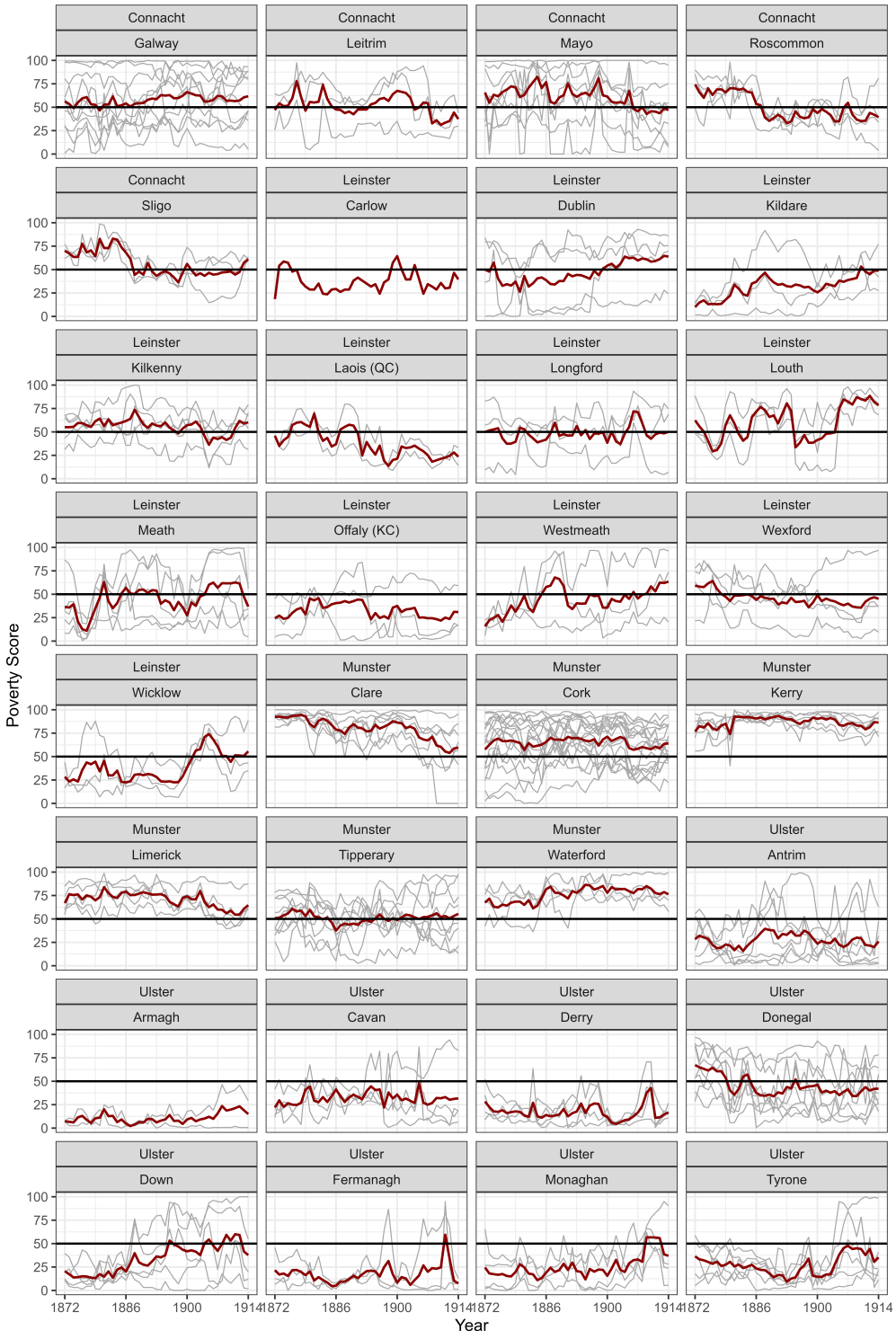
Note: Province boundaries were derived from historical administrative counties ($n = 32$). Unions were created after these counties and were usually determined by distance from a principal market town. Unions therefore did not nest neatly inside counties or provinces. For the analysis, Unions that overlap in multiple provinces are assigned the province where the majority of the Union resides.

Figure A.2: Change in absolute poverty at Union and County level 1872–1914.



Note: County averages shown in red, while Union values shown in grey.

Figure A.3: Change in relative poverty at county level 1872–1914.



Note: Multi-poverty scores are ordered by percentile in each year where 50 indicates the level of poverty in the average Union. County averages shown in red while Union values in grey.

Table A3: Covariate Summary Statistics

Statistic	Year				
	Overall	**1881**	**1891**	**1901**	**1911**
	N = 632	N = 158	N = 158	N = 158	N = 158
Population Pressure	0.32	0.36	0.33	0.30	0.28
	(0.15)	(0.16)	(0.15)	(0.14)	(0.13)
Population Under 20	0.43	0.47	0.45	0.41	0.39
	(0.05)	(0.04)	(0.04)	(0.03)	(0.03)
Population Over 50	0.29	0.28	0.30	0.28	0.31
	(0.13)	(0.13)	(0.14)	(0.12)	(0.14)
Agricultural Employment	0.49	0.49	0.49	0.49	0.47
	(0.11)	(0.10)	(0.11)	(0.11)	(0.11)
Non-Rural Population Share	0.12	0.11	0.12	0.13	0.14
	(0.14)	(0.13)	(0.13)	(0.14)	(0.15)
Sex Ratio	99.62	95.28	98.10	101.01	104.11
	(11.21)	(10.90)	(9.80)	(11.84)	(10.32)
Tillage Share	0.13	0.15	0.13	0.11	0.11
	(0.07)	(0.08)	(0.07)	(0.06)	(0.06)
Champion Dependency	0.36	0.40	0.26	0.38	0.41
	(0.12)	(0.10)	(0.10)	(0.10)	(0.12)

Summary statistics with Union means and standard deviations in parenthesises.

Table A4: Robustness: Direct measure of migration and non-linearities

	Multi-Dimensional Poverty			
	(1)	(2)	(3)	(4)
Population Pressure	0.123	0.131		
	(0.465)	(0.463)		
Population Pressure × Year 1891	0.121**	0.122**		
	(0.050)	(0.050)		
Population Pressure × Year 1901	-0.024	-0.024		
	(0.120)	(0.120)		
Population Pressure × Year 1911	-0.176	-0.174		
	(0.155)	(0.156)		
Out-Migration			-0.120	-0.119
			(0.074)	(0.074)
Out-Migration × Year 1891			0.226*	0.226*
			(0.133)	(0.133)
Out-Migration × Year 1901			0.091	0.089
			(0.086)	(0.085)
Out-Migration × Year 1911			-0.134	-0.135
			(0.132)	(0.130)
Non-Rural Share Squared		✓		✓
R^2	0.728	0.728	0.727	0.727
Observations	616	616	616	616
Union fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓

Out-Migration is calculated from the difference between the natural rate of increase (births minus deaths) and the change in population from each decade. This figure is then divided by the total population in the previous decade. Non-rural population share is the share of the Union population living in scheduled towns or towns with over 2,000 inhabitants. Standard errors clustered at county level. Significance levels: ***p<0.01, **p<0.05, *p<0.1.

Table A5: Robustness – Conley Standard Errors

	Multi-Dimensional Poverty	
	(1)	(2)
Population Pressure	0.626**	0.131
	(0.260)	(0.336)
Population Pressure × Year 1891		0.122*
		(0.063)
Population Pressure × Year 1901		-0.024
		(0.074)
Population Pressure × Year 1911		-0.174
		(0.111)
Small Holdings Share	0.072	0.047
	(0.088)	(0.091)
Agricultural Employment	-0.242*	-0.245*
	(0.142)	(0.141)
Sex Ratios	-0.046	-0.069
	(0.050)	(0.048)
Population Over 50	-0.024	-0.012
	(0.065)	(0.065)
Population Under 20	0.234**	0.265**
	(0.107)	(0.109)
Non-Rural Share	0.021	-0.021
	(0.216)	(0.217)
Non-Rural Share Squared	-0.030	-0.016
	(0.098)	(0.097)
Tillage Share	-0.355***	-0.312***
	(0.124)	(0.116)
Observations	616	616
Union fixed effects	✓	✓
Year fixed effects	✓	✓

Conley standard errors calculated at a 30km cut-off using the longitude/latitude of each union's centroid. Significance levels: ***p<0.01, **p<0.05, *p<0.1.