

Henderson, Stuart

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RELIGION AND DEVELOPMENT IN POST-FAMINE IRELAND

Stuart Henderson (Queen's University Belfast)

Working Paper 2016-01

QUEEN'S UNIVERSITY CENTRE FOR ECONOMIC HISTORY  
Queen's University Belfast  
185 Stranmillis Road  
Belfast BT9 5EE  
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# Religion and Development in Post-Famine Ireland\*

Stuart Henderson<sup>†</sup>  
Queen's University Belfast

April 2016

## Abstract

This paper employs a variety of economic and financial indicators to examine the relationship between Roman Catholicism and Irish development in the Post-Famine period. County-level decennial data are used for all census years from 1871 to 1911, and Catholicism is instrumented using the distance from Stranraer in Scotland – exploiting the religious transformation of Ireland via plantation. The results reveal that Catholicism is an important factor in illiteracy, professional class, and saving propensity variation. However, the Catholic association is consistently diminishing in statistical and economic importance over time – indicative of religious convergence in development outcomes, and consistent with the idea of a “Catholic Embourgeoisement” in the Post-Famine period. The lack of a significant association between Catholicism and either company formations or bank branch prevalence suggests that Catholicism was not inhibitive to entrepreneurship or financial development.

Keywords: Religion and Economic Development, Catholic-Protestant Cultural Dichotomy, Post-Famine Irish Economic History

JEL Codes: N33, O15, Z12

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<sup>†</sup> PhD Candidate, Queen's University Centre for Economic History, Queen's University Belfast, Riddel Hall, 185 Stranmillis Road, Belfast BT9 5EE, Northern Ireland. Telephone: +44 (0)28 9097 4766. Email: shenderson14@qub.ac.uk.

‘Roman Catholicism strikes an outsider as being in some of its tendencies non-economic, if not actually anti-economic.’

Horace Plunkett, *Ireland in the New Century* (1905, p. 101).

## I. INTRODUCTION

Max Weber, with the publication of his seminal work *The Protestant Ethic and the Spirit of Capitalism* (1904/5), is often accredited with catalysing a literature examining the association between religion and economic growth.<sup>1</sup> Yet, about the same time as Weber’s thesis emerged, former Unionist politician and Irish cooperative pioneer Horace Plunkett<sup>2</sup> initiated a related debate on the relevance of religion in Irish development. Like Weber, Plunkett (1905, pp. 101–102) viewed Catholicism as inferior to Protestantism in development terms, citing its deficient economic traits and lesser industrial tendencies. However, unlike the Weberian thesis, which motivated a century of scholarship, debate on the Irish case seems to have waned in the ensuing decades due to sensitivities surrounding the religion question.<sup>3</sup> In this paper that debate is renewed, and findings of religious convergence and parity are presented across a variety of economic and financial indicators for the 1871 to 1911 period. Such evidence contrasts with Plunkett’s assertions regarding the inimical nature of Catholicism in economic advancement, and instead fits more closely with the notion of a “Catholic

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<sup>1</sup> Similarly, Tawney (1926) links Protestantism with capitalism, but instead suggests that the latter was not exclusively a result of the Reformation, and rather sees them as parallel movements (Murray 2013, p. 148).

<sup>2</sup> Plunkett was born in 1854 into the Anglo-Irish nobility, and became the first Vice-President of the Department of Agriculture and Technical Instruction in 1899 (Jackson 2002, pp. 470–471).

<sup>3</sup> Plunkett (1905) suggested a Catholic impediment to economic growth in Ireland, prompting a comprehensive challenge to this argument by O’Riordan (1906). Yet, that seems to have been the end of the discussion with Fields (2003, p. 4) (citing Akenson 1988) noting the ‘remarkable fact was, that the Weber-Tawney debate on the central role of religion as the fulcrum in indigenous Irish culture and economic life had started and finished in 1905 due to the sensitivity of the topic area’.

Embourgeoisement” in the Post-Famine era – a process characterised by the accumulation of middle-class values and traits.<sup>4</sup>

Central to this revised interpretation, and as emphasised in the work of Akenson (1988), is the distinction between correlation and causation in the Irish case. For while Ireland, with its Catholic-Protestant cultural dichotomy, provides an ideal empirical setting for examining religion as a determinant of growth, the clustering of religious groups in particular regions can lead to a “guilt by association” trap. As such, there is a risk that religion is erroneously linked with development outcomes without adequately accounting for underlying geography-related differences.<sup>5</sup> In addition, the Catholicism-development relationship needs to be seen in light of historical inequality. This is because Catholics were generally overrepresented in the lower strata of society, and were constrained in their ability to advance economically with discrimination from influences such as the Penal Laws (O’Riordan 1906).<sup>6</sup> Hence, Catholic disadvantage, as evidenced in the micro-level analyses of Ó Gráda (2008) and Ó Gráda and McCabe (2010), does not necessarily equate to economic backwardness, and instead may be related to historical factors which Plunkett (1905, pp. 104–105) himself acknowledges, including educational deprivation, property restrictions, and social and political exclusion.

Consistent with such thinking, when the development trajectory of Catholicism in the Post-Famine era is more carefully appraised, its transition through time appears favourable. For example, Akenson (1988) undermines the idea that there was a causal cultural mechanism leading to deviances in Catholic and Protestant behaviour in his study focusing on the Irish and the Irish diaspora, and instead suggests that differences

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<sup>4</sup> Other work has emphasised the role of emigration, capital accumulation, and total factor productivity growth in raising living standards beyond the Famine (O’Rourke 1995; Geary and Stark 2002, 2015).

<sup>5</sup> This is conceptually similar to the ecological fallacy, the problem where the inference of aggregate data is not consistent with that which is observed at the individual level.

<sup>6</sup> For further perspective see Power and Whelan (1990), and Connolly (1992).

between Catholics and Protestants were small. Similarly, O'Rourke (2007) downplays the role of religious variation in his analysis of Irish creameries and their propensity to form cooperatives, finding it was conflict, and a related lack of cultural homogeneity, that were inhibitive to cooperation in the Catholic-concentrated South as opposed to Catholicism per se. Moreover, Kennedy (1978b) suggests that the specific role of the Catholic Church in nineteenth-century development was a positive one, contrasting with Plunkett's grievances about the Church's role in Catholic backwardness. Indeed, the Post-Famine Catholic experience might have been more correctly described as an embourgeoisement, with Miller (1988, p. 124; 2008, pp. 89–90) pointing to the Church, Irish nationalism, and strong farming families as being important factors in this respect; the Church through its influence in education and religion, nationalism through political consciousness, and strong farming families by promoting practices such as impartible inheritance and the dowry.

To consider the plausibility of this alternative thesis, an econometric methodology is adopted to analyse the county-level association between Catholicism and a variety of economic and financial development indicators at each decennial point from 1871 to 1911.<sup>7</sup> This method is motivated by a contemporary literature which advocates a variety of alternative causal pathways linking Catholic-Protestant differences with development, such as human capital (Becker and Woessmann 2009),<sup>8</sup> trust (La Porta et al. 1997; Inglehart 1999),<sup>9</sup> social values (Guiso et al. 2003; Arruñada 2010), and finance (Stulz and Williamson 2003; Hilary and Hui 2009; Kumar et al. 2011; Renneboog and

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<sup>7</sup> This period provides a suitable empirical window as it begins several decades after the Famine and is enveloped by the disestablishment of the Church of Ireland (separation from the State) and the First World War.

<sup>8</sup> Nunn (2011), Woodberry (2011), and Bai and Kung (2015) provide further insight on the role of Protestant missionaries in human capital gains.

<sup>9</sup> The hierarchical nature of Catholicism may be inhibitive in this respect (Putnam 1993).

Spaenjers 2012).<sup>10</sup> The approach provides at least three advantages. Firstly, by looking at the relationship between Catholicism and development at each decennial point, a view of any changes in the relationship through time is obtained, allowing the transition to be observed in light of historical disadvantage and discrimination. Secondly, by using a variety of development indicators – illiteracy, professional class representation, saving propensity, company formations, and bank branch prevalence – the specific development channels through which any religious “effect” flows can be more precisely delineated. And thirdly, by employing an instrumental variable strategy to proxy for Catholicism, causality concerns are ameliorated. The use of the instrument is particularly important, as by exploiting the diffusion of Protestant migrants to Ireland during the Plantation years it provides a substitute for Catholic concentration which only affects development outcomes via this locational-diffusion channel, and thus provides confirmation of the regression patterns identified.

The main finding of the paper is that there is a diminishing negative or non-significant statistical association between Catholicism and development across the period. In particular, Catholicism is a significant factor in illiteracy, professional class, and saving propensity variation, but becomes less important over time. This favourable transition complements historical evidence on the emergence of a new Catholic middle class via a process of embourgeoisement in the Post-Famine era, and also points to a temporal amelioration of Catholic disadvantage. In addition, the lack of a statistically significant relationship between Catholicism and either company formations or bank branch prevalence suggests that Catholicism was not inhibitive to entrepreneurial or business pursuits.

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<sup>10</sup> Notably, Cantoni (2015) does not find any Protestant effect on economic growth in his analysis of cities in the Holy Roman Empire. Earlier work by Delacroix and Nielsen (2001) similarly undermines Weber’s “Protestant-ethic” thesis.

In the following section the historical evidence is discussed – focusing on the salient conditions which precipitated a possible Catholic socioeconomic transition. Following that, the paper then proceeds as follows: Section III motivates the empirical approach by discussing testable hypotheses, Section IV summarises the empirical strategy and data, Section V presents the results and discusses their implications, and Section VI concludes.

## II. A CATHOLIC EMBOURGEOISEMENT?

The Great Irish Famine inaugurated a unique set of societal conditions which had important ramifications for the Catholicism-development relationship, and in catalysing a possible Catholic Embourgeoisement. Foremost was its disproportionately adverse impact on the Catholic population, both in mortality and emigration terms (Connolly 1987).<sup>11</sup> While this is unsurprising given Catholic predominance in the lower classes, it is nevertheless suggestive of a radical adjustment of the prevailing class structure, and evidenced by the elimination of large numbers of cottiers, labourers, and paupers in the Post-Famine era (Daly 1981, pp. 31–32; Ó Gráda 1995, p. 251; Larkin 1972, p. 639). As such, this likely not only had an immediate effect in diminishing Protestant advantage, but also likely had long-run implications as the average Catholic was now economically better-off, and had social values and relationships more favourable to economic advancement.<sup>12</sup>

This heightened survivorship of a “respectable” class of Catholics<sup>13</sup> vis-à-vis Catholics in the lower social order also resulted in a relatively stronger devotional core

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<sup>11</sup> Connolly (1987, p. 3) suggests that between 1834 and 1861 the number of Catholics fell by 30 per cent, while the number of Anglicans and Presbyterians each fell by 19 per cent.

<sup>12</sup> Nonetheless, while this may have implications for the Catholicism-development relationship, geographical influences may complement any perceived religious effect due to denominational heterogeneity across counties. For example, western counties were greatly affected by the Famine, but likewise this is where Catholics were highly concentrated.

<sup>13</sup> Larkin (1972, p. 639) suggests that they ‘generally survived the famine intact, while the “bulk” of the cottiers, labourers, and paupers were swept away by starvation, disease, and emigration’.



for the Roman Catholic Church (Larkin 1972, p. 639), and coincided with a period of religious revival. This ‘devotional revolution’ (Larkin 1972) was headed by reforming Cardinal Paul Cullen, and led to a great number of the Irish population becoming practicing Catholics (Larkin 1972, p. 625). By the turn of the century, universal mass attendance was commonplace, and indigenous rituals had been displaced by continental-style devotions, as religious practice became an expected attribute of Catholic identity (Fahey 1994, p. 253).

Yet, while “devotional demand” may have contributed to a more spiritually-minded people, the Church too was active in extending its influence through “devotional supply”. Perhaps most pronounced were the swelling ranks of talented clerical personnel, who provided much needed pastoral services (Drumm 1999, p. 22),<sup>14</sup> and enabled the Church to extend its mandate more broadly in society. Between 1800 and 1900 the number of priests rose from 1,850 to 3,500, while between 1851 and 1911 the number of nuns rose from 1,500 to almost 9,000 (Fahey 1994, pp. 249–250) – even as the population fell.<sup>15</sup> This was also coupled with swelling Catholic real-estate all over the island in the form of churches, chapels, schools, hospitals, and the like (Larkin 1967, p. 864). Together with the provision of new continental emotional devotions (Fahey 1994),<sup>16</sup> these factors highlight a Church enhancing its societal image, and in doing so generating economic credence to its supply of religious services.

On the ground, the close ties between priest and people cemented the link between the laity and the Church. These bonds resulted not only from the close association of

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<sup>14</sup> This was not only in Ireland – ‘education and health care provision became key pastoral goals in Irish Catholic communities throughout the world’ (Drumm 1999, p. 22). ‘Whether in Belmullet or Brooklyn, Cricklewood or Cape Town, Limerick or Lagos, Irish priests, brothers and sisters pursued the same pastoral strategies from the 1850s until the 1960s’ (Drumm 1999, p. 22).

<sup>15</sup> Notably the population fell from 8,175,124 persons in 1841, to 6,552,385 persons in 1851, and continued falling until several decades into the twentieth century (Vaughan and Fitzpatrick 1978, p. 3). The population stood at 4,228,553 persons in 1926 (Vaughan and Fitzpatrick 1978, p. 3).

<sup>16</sup> Fahey (1994, p. 253) writes ‘Italian and French-style devotions—benedictions, novenas, the rosary, first Friday Masses, forty hours adoration, and so on’.

Catholicism with Irish nationalism, but also from the likely rural social origins of the priest, and their similar view of Irish history (Kennedy 1978a, p. 56). Furthermore, these ties were reinforced by clerical exclusion from elite parts of society, and their feeling of being constrained by alien, anti-Catholic institutions (Kennedy 1978a, pp. 56–57) – echoing the discrimination and loss of identity felt by their parishioners. As such, both priest and people shared a mutual distaste of the “Establishment”, and instead craved for a broader culture to complement their religion.

Yet, according to Inglis (1998), it was links forged between priests and mothers in particular which entrenched the Church as a dominant force in social and economic matters. Indoctrinated in the classroom about the position of women in the home, the Catholic mother became a moral disciplinarian. In this role, she was able to divert self-interest to family-and-community interest, and thereby channel her energies to promote rational social choice, and ultimately to restructure rural society.<sup>17</sup> In this sense, the Catholic mother has a central place in the modernisation of Post-Famine society, but also in the permanency of conservative ideals.

The role of Catholic mothers in socioeconomic improvement, was complemented by a growth of female religious orders<sup>18</sup> – which is perhaps the most striking feature in Catholic religious service provision. A broadly middle class-driven movement, its rise was influenced by social conditions which encouraged celibacy, such as increasing impartible inheritance, reduced marriage incidence, and radical demographic change (Magray 1998, pp. 127–128). These orders became instrumental to the growth of schools and hospitals, and in creating a benevolent pathway for the Church to follow (Magray

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<sup>17</sup> Inglis (1998, p. 179) suggests that the Catholic mother ‘through a variety of subtle strategies and practices, persuaded her children to emigrate, postpone marriage, or not to marry at all’, and was ‘the impetus behind the creation of homes, the consolidation of Irish farms, and the general social maintenance of a class of tenant farmers which was at the centre of the initial modernisation of Irish society’.

<sup>18</sup> Clear (1987) and Magray (1998) provide comprehensive insights into the growth of female Catholic orders.

1998, pp. 128–129). What is more, by promoting the place of the Catholic mother in the home, they were able to effectively translate Catholic social teaching into domestic reality.

However, in the longer term it was perhaps the Church's ideological monopoly of the Catholic psyche via education and politics that most directly shaped the trajectory of Irish society. Education was divided along denominational lines (Atkinson 1969, p. 99), and was seen as a means of exerting control over adherents and in 'maintaining the existing order' (MacMahon 1981).<sup>19</sup> With the involvement of teaching orders, the educational opportunities for Catholics were greatly increased, and this was evidenced in outcomes. For example, there were over twice as many Catholics in post-primary or further education in 1911 as compared to 1861, while for other denominations the figures remained static (Garvin 1987, pp. 44–45). Yet, despite the obvious improvements in Catholic educational provision, religious discrimination precluded this part of the population from various occupational pursuits (Garvin 1987).<sup>20</sup> Furthermore, there are suggestions that Catholic education was inhibitive to growth, especially in a business sense. For example, Plunkett (1905, pp. 108–109) suggests that teachers from religious orders, separated from the world and its stresses, may have been disadvantageous to the formation of a character in youths suitable for contemporary industrial life. Moreover, Garvin (1987, p. 67) suggests that memorising was encouraged over rational argument, again pointing to potential shortcomings in the acquisition of entrepreneurial and decision-making skills among this sector of the population.

In other developments, the tenant farmer emerged as the dominant political and social force in the Post-Famine period (Daly 1981, p. 33). Traders also gained considerable influence in the political sphere by aligning themselves with farmers (and with priests) (Hoppen 1999, p. 109; Kennedy 1983). Indeed, a rural mentality was a

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<sup>19</sup> The clergy 'occupied a central place within the existing order' (MacMahon 1981, p. 281).

<sup>20</sup> Garvin (1987, p. 46) cites *Leader*, 23 September 1905.

unifying force throughout Irish society for a range of interest groups (Hoppen 1999),<sup>21</sup> and was reflected in the ideology of nationalist separatists who emerged from the new Catholic middle class (Garvin 1987, p. 42). Their vision of Irish development was a romantic blend of the traditional and the modern (Garvin 1987, pp. 74–75), and was echoed in the Ireland which emerged, with Daly (1992, p. 11) commenting:

The fledgling Irish state therefore inherited a confused baggage of ideals: a desire to protect rural society and its values and to stabilize the rural population; a vision of industrial development minus the evils of capitalism, materialism, and urbanisation; a desire to redress previous disadvantages suffered by Irish businesses; an expectation of material progress without state welfare provisions; the restoration of the Irish language and culture; and, though not explicit until the 1920s, the enshrining of Catholic social teaching.

It is these broader social changes, beyond demographic change, which may have provided the impetus towards an embourgeoisement – fitting well with Goldthorpe et al. (1968, p. 81), who suggest ‘it is the extent of workers’ family or occupational ‘bridges’ with the middle class, rather than such factors as level of earnings or standards of consumption, which provides the key to possible changes within the working class in the direction of *embourgeoisement*’. For by instigating moral and educational improvement, the Church, together with the modernising aspirations of Irish nationalism, likely provided an important bridge to Catholic betterment – a transition facilitated by strong (especially agrarian) linkages between priest, people, and politics. In the following section the Catholicism-development question is more fully discussed, with hypotheses proposed to quantitatively test the validity of a possible embourgeoisement thesis.

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<sup>21</sup> ‘A strong ruralism was shared by landlords, priests, romantic nationalists, and men of letters’ (Hoppen 1999, p. 110).

### III. THE DEVELOPMENT QUESTION

At a superficial level, it would be easy to offer Irish Catholicism as a case in support of Weber's "Protestant-ethic" thesis, citing the industrial might of Ulster, the superior educational attainment of Protestants, and greater Protestant representation in more commercial and industrial pathways. Yet, to do so ignores underlying factors such as discrimination and geography, and thus fails in proving Catholicism was a specific *cause* of behaviour inimical to development. As Akenson (1988, p. 23) advocates, such attribution to Catholic culture 'is a confusion of association and causation'. This tenuous link has also been undermined by previous authors who suggest that in the Irish case the Weber thesis remains unproven (at best) (Daly 1981, p. 85; Lee 1992, pp. 16–17; Ó Gráda 1995, pp. 328–330). Even Plunkett (1905, pp. 104–105), while laying part of the blame with the Church, acknowledges a variety of historical factors such as educational deprivation, property restrictions, and social and political exclusion as attributing to Catholic economic backwardness – elements underscored by O'Riordan (1906) in his comprehensive reply.<sup>22</sup>

To address these causality concerns, an econometric methodology is employed to investigate the association between Catholicism and various development indicators over time. As such, it is possible to deduce the temporal direction of the association, as well as the economic and statistical relevance of Catholicism at each observation point. This is particularly important as it allows identification not only of directionality, but also of the relative change in the importance of Catholicism as an explanatory factor with the advancement of time. Before conveying more fully the data and empirical approach adopted, some hypotheses are first outlined.

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<sup>22</sup> That is O'Riordan's reply to Plunkett's *Ireland in the New Century*.

Firstly, it is expected that Catholicism is positively associated with social development outcomes.<sup>23</sup> To clarify, that is not to say Catholics were necessarily ahead in this regard, but rather where there was religious disadvantage it was redressed over time. This is because with the rise of religious personnel, the Church was able to play an active role in education, and promote the values it aspired. As such, Catholic pupils benefitted not only from a quality education, but were also instilled with the social expectations of the faith. Indeed, Inglis (1991, p. 66) suggests that the Church played a central role in the civilising and embourgeoisement of Catholic society through its influence in education. As such, it is plausible that the Catholic Church was a favourable force for human development among its adherents, instigating moral and social improvement. In relation to occupation more specifically, this amelioration of Catholic disadvantage via education likely provided greater opportunity to pursue a professional pathway – a transition compounded by Church and political ambivalence towards industrial occupations. In addition, with rising numbers of Catholics absorbed into clerical pathways by the Church, this too would have swelled Catholic representation in the professional occupational class.

Secondly, it is expected that Catholicism is negatively associated with saving propensity. This line of thinking is motivated by existing literature emphasising Catholic-Protestant differences, such as Delacroix and Nielsen (2001), who find a positive Protestant association with savings, and more recent work by Renneboog and Spaenjers (2012), who propose that Protestants have a stronger self-awareness of financial responsibility. Also, in the Irish case, McGowan (1990, p. 29) suggests that savings banks focused their activities on non-Catholics – underscoring a Protestant association

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<sup>23</sup> That is lower illiteracy levels, and increased professional class representation.

with savings institutions,<sup>24</sup> while Colvin and McLaughlin (2014) highlight Irish Catholic ambivalence to Raiffeisen (savings and loans) cooperative banks.<sup>25</sup>

It is also expected that Catholicism is not inhibitive to entrepreneurship as measured by company formations, and to some extent bank branch prevalence. As Kennedy (1978b, p. 57) suggests, it seems unlikely that profit-motivated persons would neglect investment opportunities despite clerical uneasiness about industrialisation or urbanisation.<sup>26</sup> Furthermore, even if the Church absorbed some ‘entrepreneurial talent’ as Larkin (1967, p. 875) proposes, this may have been favourable for future entrepreneurial formation via clerical influence in education. And in the case of a clerical occupation, Kennedy (1978b, p. 53) suggests that since it represented an alternative career pathway to law or medicine, the loss of entrepreneurship to economic ends may not have been significant. However, it should be acknowledged that Protestants, and especially Episcopalians, dominated the business elite (Campbell 2009, pp. 207–209), and so this may have influenced entry for smaller entrepreneurs. Yet even so, there were very successful Catholic entrepreneurs too, and Catholics were considerably represented in medium-sized business pursuits (Campbell 2009, pp. 237–239), suggesting Catholicism was not specifically an impediment to an entrepreneurial spirit.

Finally, it is expected that Catholicism is not associated with financial development as measured by bank branch prevalence. This is because some joint-stock banks were established with the support of specific religious groups, and closely identified as such for many decades thereafter (Ollerenshaw 1987, pp. 157–163; McGowan 1990, pp. 26–28). Given this, Catholics in some parts of the island had

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<sup>24</sup> That is not to say the same concerning the post office savings banks, but even then a link between Protestantism and saving behaviour had possibly been established because of the savings bank association.

<sup>25</sup> These emerged in Ireland at the close of the nineteenth century.

<sup>26</sup> However, Kennedy (1978b, p. 57) suggests that perhaps more fundamentally it is difficult to discern how significantly Catholic doctrine and related norms affected entrepreneurship supply.

financial institutions with which they could relate, and hence were likely more inclined to engage with their services. More generally, while there was obvious Church unease towards industry and urbanisation, a rising Catholic middle class was likely a supporter of financial development. Indeed, the aspirations of nationalist separatists who emerged from this new stratum of the Catholic middle class were consistent with the modernisation process. As Garvin (1987, pp. 74–75) puts it, ‘the future Ireland of which they dreamed was industrialised, modern, and at the same time culturally authentic in the sense of being a lineal descendant of Gaelic culture’.

#### IV. EMPIRICAL STRATEGY AND DATA

##### *IV.A. Empirical Strategy*

In seeking to understand the link between Catholicism and Irish development in the Post-Famine period, this paper attempts to address not only whether Catholicism matters for development outcomes, but also how and why this may be the case. While the former is a crucial first step, it is only through delineation of the causal mechanism that the particular facets of Catholicism which are significant in a development sense can be established. Recognising this, a quantitative methodology is employed which utilises a variety of economic and financial indicators to address potential nuances in the Catholicism-development relationship at each decennial census point from 1871 to 1911.

The cross-sectional (year-by-year) approach has the advantage of allowing comparison of the relationship between variables at each decennial point, rather than relying on year dummy variables which may fail to convey key temporal changes or obfuscate any underlying relationships. Moreover, since most of the development measures exhibit a clear temporal trend, the effect of the explanatory variables will be relative to the prevailing level in that census year. This is especially important to enable



identification of the overall contribution of Catholicism at a single point in time, as well as over the aggregate period. Decomposition of the R-squared value will also provide clarity on the relative importance of Catholicism. Robust standard errors based on White (1980) are used throughout.

One potential caveat of using county-level data in the foregoing methodology is the ecological fallacy problem.<sup>27</sup> This means that correlations found using aggregate-level data may be inconsistent with that observed at the individual level because it is not known which individuals are the most developed in a given county. In the Irish case this is especially relevant, given that Catholics tend to be concentrated in the South, and Protestants in the North, and so what may seem to constitute a religious determinant of development at the county level, may be more closely related to geographic or other differences. Hence, to alleviate this problem, a 2SLS model is utilised in conjunction with an OLS model to confirm the validity of the patterns identified.

Catholicism is instrumented using the natural logarithm of the linear distance in kilometres between the largest town in a county and Stranraer in Scotland. The use of the Scottish town of Stranraer reflects its geographic proximity to the north of Ireland, and also to Portpatrick, which lies just 21 miles from Donaghadee – ‘a common route as far back as the early days of the plantation’ (Vann 2008, p. 44). The rationale for this choice of instrument is that it provides an indication of Protestant diffusion via emigration to Ireland, and reflects Catholic concentration only through this locational mechanism. In particular, the instrument exploits the impact of the Plantation of Ulster ‘in transforming the religious complexion of the island’ (Gregory et al. 2013, p. 21), with an expanding Protestant frontier moving further west and south irrespective of official borders (Fitzgerald 2012, p. 288).

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<sup>27</sup> See Robinson (1950), and Gregory and Ell (2007, pp. 165–166).

In exploiting the plantation effect, the expectation is that distance from Stranraer will be positively associated with Catholic concentration at the county level due to the transformation of the religious landscape through the process of plantation, and only influence development outcomes through this locational-diffusion channel. The instrument tests in the subsequent regressions suggest that distance from Stranraer is a strong instrument for Catholicism. In particular, the instrument is strongly correlated with Catholicism, and has statistically significant explanatory power, as evidenced by the partial R-squared, and F-statistics. Additionally, in the exogeneity test, the results are generally statistically non-significant, suggesting that Catholicism should be treated as exogenous.

#### *IV.B. Data Description*

Given the temporal focus of this paper, a dataset is constructed with variable observations for each county<sup>28</sup> and census year between 1871 and 1911. The data are predominantly drawn from the reports associated with the decennial Irish census which are available from the House of Commons Parliamentary Papers. This is supplemented with data from other sources such as the UK Data Service's *Irish Historical Statistics* database, Vaughan and Fitzpatrick's (1978) *Irish and Historical Statistics*, *Thom's Directory*, and other House of Commons Parliamentary Papers. See Table I which precisely details the data used, including source information.

The dataset includes the key explanatory variable Catholicism,<sup>29</sup> together with alternative measures of development which will mainly act as dependent variables, and further explanatory controls. The measures of development employed can be broken broadly into economic and financial strands, and include illiteracy, professional

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<sup>28</sup> There are slight variations in the boundaries of the counties over time. Belfast is included in county Antrim.

<sup>29</sup> The number of Catholics as a percentage of the population.

occupational class representation, savings accounts, company formations, and bank branch prevalence. The control variables include Irish-only speakers, 1st or 2nd class housing,<sup>30</sup> persons over 60, urbanisation, as well as dummy variables for Dublin and Antrim where appropriate. While most variable observations are available across all years, some of the development measures can only be obtained for selected years due to data availability, such as for savings accounts and company formations.

The rationale for the use of the development variables employed is as follows: illiteracy to measure human development via education; professional class representation to measure occupational status; saving propensity to measure thrift and financial sophistication; company formations to measure entrepreneurship; and bank branch prevalence to measure financial development. In addition, the rationale for the use of the control variables employed is as follows: illiteracy to control for basic educational standards; Irish-only speakers to control for language impediment, and the cultural niche they represent; 1st or 2nd class housing to control for living standards; persons over 60 to control for an older demographic, perhaps more averse to modernisation; and urbanisation to control for the effect of differences in urban and rural characteristics. Other control variables are also used where appropriate, with an explanation for such deviation noted.

#### *IV.C. Descriptive Statistics*

The descriptive statistics presented in Table II underline the dominance of Catholicism in Ireland, with a mean of 81.0 per cent Catholics per county. This is somewhat variable across counties, given a standard deviation of 20.0 per cent, and a range of 75.2 per cent. Yet, since the aggregate statistics are very similar to those by year, it suggests that Catholic concentration at the county level is relatively stable over time.

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<sup>30</sup> The number of families living in 1st or 2nd class housing as a percentage of total families. See full definition in Table I.

The dependent variables, which measure development, exhibit notable trends. Firstly, illiteracy decreases consistently over time, from a mean high of 29.9 per cent in 1871, to a mean low of 10.3 per cent in 1911, with a mean of 18.5 per cent across the period. This is also complemented by a consistent decline in the standard deviation and range. By contrast, the percentage of persons in the professional occupational class is relatively stable over time, albeit with important cross-county variation as indicated by the standard deviation and range. However, in this case, cross-decadal comparison is more difficult as occupational class definitions change across the period. The mean number of savings accounts increases substantially over three decades rising from 23.8 per 1,000 persons, to 132.5 per 1,000 persons, between 1881 and 1912.<sup>31</sup> Similarly, the mean number of joint-stock bank branches also rises between 1871 and 1911, from 5.9 per 100,000 persons, to 12.7 per 100,000 persons. However, like previous measures, the standard deviation and range values suggest important cross-county variation for both these variables. Finally, the mean number of joint-stock companies formed per 100,000 persons also increases over time, but with cross-county differences, including counties with no companies formed. Among the other control variables, notably there is a temporal increase in the percentage of families residing in 1st or 2nd class housing, mirroring increasing living standards, while the decline in the percentage of Irish-only speakers conveys the advancement of English culture. In addition, the percentage of persons living in urban areas increases over time, albeit with some change in the definition of urban areas.

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<sup>31</sup> For savings accounts 1912 figures are used, because those for 1911 are not available.

## V. RESULTS

### *V.A. Illiteracy*

Table III shows that on average a higher percentage of Catholics in a county is associated with a higher percentage of illiterates. Yet, the association of Catholicism with illiteracy diminishes through time as evidenced by the falling magnitude and statistical significance<sup>32</sup> of the respective Catholicism coefficients. More specifically, in the 1871 OLS specification, the statistically significant Catholicism coefficient of 0.134 suggests that on average a 1 per cent increase in the number of Catholics in a county is associated with a 0.134 per cent increase in the number of illiterates. However, by 1911, while the coefficient remains positive, it is not statistically significant, and is economically less important, as conveyed by the large reduction in magnitude.

The control variables are also important, both statistically and economically, in explaining the percentage of illiterates across counties, with Irish-only speakers, persons over 60, and urbanisation all having a positive effect, and upper-class housing a negative effect. Notably, the percentage of Irish-only speakers has a persistently large positive effect on the percentage of illiterates, while persons over 60 generally becomes more important with the advancement of time.

The relative importance of the explanatory variables in explaining illiteracy variation is conveyed in the decomposed R-squared values. As expected, the percentage of Irish-only speakers is a particularly important factor in illiteracy variation, complementing the large magnitude of the Irish-only speakers coefficient in the regression results. Housing class is also pertinent in a relative sense, and increasingly so through time, with its relative contribution rising from 26.1 per cent in 1871, to 35.3 per cent by 1901. However, perhaps most striking is the declining relative importance of

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<sup>32</sup> When referring to statistical significance, this is at standard levels. Anything deemed statistically significant is so at least at the 10 per cent level.

Catholicism through time, which contrasts with the rising relative importance of an older demographic. In particular, Catholicism contributes 17.7 per cent to the R-squared value in 1871, but just 1.6 per cent by 1911, while persons over 60 contributes 3.2 per cent in 1871, rising to 12.7 per cent by 1911. As such, religious differences matter less in illiteracy variation in later decades, suggesting that Catholics have closed the gap with the rest of the population. Furthermore, the results suggest a temporal amelioration of disadvantage, especially since an older demographic becomes relatively more important over time.

Overall, the results affirm that Catholicism is an important factor in Post-Famine illiteracy variation, but decreasingly so through time. This temporal trend resonates with the idea of Catholic social advancement in the Post-Famine era, and may be explained by the increasing role of Catholic religious orders in educational provision, and the quality of schooling they offered. In statistical terms, the 1891 to 1901 decadal period is where the religious influence of Catholicism wanes, and the percentage of persons over 60 becomes more important. The increasing statistical relevance of age also complements the implementation of the National System of Education in 1831, since most of those under 60 in 1891 would have been students of this new system. Nonetheless, other explanations for the patterns observed cannot be ruled out, such as political influence in educational provision.

#### *V.B. Professional Occupational Class*

Table IV shows that on average a higher percentage of Catholics in a county is associated with a higher percentage of persons in the professional occupational class. Yet, both the statistical and economic importance of Catholicism diminishes over time as evidenced by the falling magnitude of the coefficients, and the lack of statistical significance in the final two decades. In economic terms, the Catholicism OLS coefficient

of 0.122 in 1871 implies that on average a 1 per cent increase in the number of Catholics in a county is associated with a 0.122 per cent increase in the number of persons in the professional class.

In general, the additional explanatory variables exhibit a lack of statistical significance. Moreover, the directionality of most of the coefficients varies through time, such as for Irish-only speakers, 1st or 2nd class housing, and urbanisation. Only illiteracy and persons over 60 have persistent directionality, as evidenced by their consistent negative association. Notably, the persons over 60 coefficient has a consistently large magnitude, perhaps due to the rise of a new younger middle class, and shows some sign of statistical significance in the latter decades. The low R-squared values suggest that there is a lack of variation explained by the explanatory variables, which in some ways is unsurprising, given the breadth of the professional class, and ongoing social change in this half-century.

The decomposed R-squared values, similar to those for illiteracy, reveal the declining relative importance of Catholicism over time. More specifically, its relative contribution to the R-squared value falls from 25.5 per cent in 1871, to 4.2 per cent by 1911. By contrast, persons over 60 becomes increasingly important, with its contribution rising from 29.2 per cent in 1871, to 60.8 per cent by 1911 – consistent with a temporal rise in development.

Overall, the initial positive Catholic association with the professional class is plausible given the role of the education system in mitigating against the effects of earlier discrimination, as well as a professional pathway carrying societal esteem. Moreover, given the industrial concentration in Ulster, and the religious barriers to Catholics therein, it is unsurprising that a professional pathway offered a means of social ascendancy. Notably, there was also a burgeoning Catholic clerical occupational

group which grew in the latter half of the nineteenth century, and so this may be reflected in the results obtained.

### *V.C. Savings Accounts*

Given that focus is now directed to financial development, it seems pertinent to move beyond the basic explanatory variables and make some control for occupational differences. In particular, the professional and commercial classes, as predominantly service sectors, are potentially an important factor in financial development differences. Since the commercial class is very highly correlated with urbanisation, only a control for the professional class is included.

Table V shows that on average a higher percentage of Catholics in a county is associated with a lower number of savings accounts per person. However, the statistical importance of the Catholicism coefficient is dependent on the inclusion of a control variable for the professional class, and to some extent its economic relevance also. The Catholicism coefficient of -0.277 in the 1881A OLS specification implies that on average a 1 per cent increase in the number of Catholics in a county is associated with 0.277 fewer savings accounts per 1,000 persons. Given that the mean number of accounts per 1,000 persons in 1881 was 23.8, this represents in excess of 1 per cent.

Notably, the professional class control variable is especially important, both economically and statistically, as evidenced by a large positive and highly significant coefficient in both years. Moreover, the magnitude of the coefficient rises substantially from 1881 to 1911, mirroring the rise in the number of savings accounts. Urbanisation, as expected, is also statistically important in the majority of specifications, and with a positive coefficient throughout. By contrast, Irish-only speakers has a negative impact on the number of savings accounts, which is statistically significant when controlling for the professional class, possibly due to barriers in communication, and cultural exclusion.



Notably, the direction of the persons over 60 coefficient reverses from a negative to a positive association when the professional class is controlled for, with the reversal especially pronounced in 1911. This is perhaps due to the heightened saving propensity associated with an older demographic, which is evident when control is made for the increased financial sophistication associated with the professional class.

Again, the decomposed R-squared values suggest that Catholicism is a less important explanatory factor in relative terms over time, contributing under 4 per cent in both specifications in 1911, compared to 14.3 per cent and 17.8 per cent in the 1881 specifications. Furthermore, the professional class control variable is especially important and increasingly so through time, rising from 16.3 per cent to 39.4 per cent. As expected, urbanisation is also particularly important in relative terms.

Overall the results, similar to those for illiteracy and the professional class, suggest that Catholicism is less important for saving propensity with the advancement of time. While the negative coefficient remains statistically significant in 1911, its magnitude is similar to that for 1881 – a time when there were considerably less accounts per person. The large magnitude of the professional class coefficients suggests that this portion of the population embraced financial development and exhibited thrift.

#### *V.D. Joint-Stock Company Formations*

Table VI shows that on average a higher percentage of Catholics in a county is associated with a lower number of companies formed per person. However, the negative relationship is consistently statistically non-significant across the specifications used.<sup>33</sup> The OLS coefficient of -0.018 in the 1871 OLS specification implies that on average a 1 per cent increase in the number of Catholics in a county reduces the number of

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<sup>33</sup> Catholicism remains statistically non-significant even when the Dublin and Antrim controls are omitted, except in the 1891 2SLS model where it is statistically significant at the 5 per cent level. This set of results is not reported.

companies formed by 0.018 per 100,000 persons. Given the mean of 1.4 in 1871, this represents approximately 1 per cent.

Statistically, urbanisation, Dublin, and Antrim, are important, and exert a positive effect on the number of companies formed. However, the other control variables remain statistically non-significant across the years. Urbanisation is increasingly important through time, but some of the urban effect is absorbed by Dublin and Antrim. However, the magnitude of the Dublin and Antrim coefficients is substantially higher, indicative of company formations concentrated in these areas.

Overall, the results suggest that Catholicism is an unimportant factor in company formations, consistent with the idea that Catholicism was not inhibitive to entrepreneurship and business development. Rather, it is likely that geography may have been a more closely related determinant, with companies set up in areas with favourable labour, land, and infrastructure resources. This is reflected in the positive association of company formations with Antrim, Dublin, and urbanisation.

#### *V.E. Joint-Stock Bank Branches*

Table VII shows that Catholicism has generally no statistically significant effect on the number of bank branches scaled by population size, suggesting that Catholicism was not inhibitive to financial development. However, some of the control variables are statistically relevant. Unsurprisingly, the population density control variable (statistically significant from 1891 onward) has a coefficient which is negative, and with a large magnitude. This is because branches may not be the same size, with those in more densely populated areas likely to serve more customers per branch. Persons over 60 is consistently statistically significant with a positive coefficient, suggesting that an older demographic is more favourable for branch prevalence. Urbanisation is also important, with a consistent positive association, which concurs with the notion of

superior urban development tendencies. The professional class becomes statistically more important in later decades.

Overall, the results suggest that Catholicism was not a barrier to financial development as measured by bank branch prevalence. In some ways this is unsurprising as banks were often associated with a particular religious group, perhaps leading to a greater propensity to utilise such services among Catholics. Indeed, in founding the National Bank it was prominent Irish nationalist Daniel O’Connell’s aspiration to provide bank services in rural areas, where Catholics predominated (McGowan 1990, p. 27). Moreover, with ongoing economic development, banking services likely filled an important niche regardless of religious persuasion. Notably, this result differs from saving propensity perhaps because the focus of each measure differs. In particular, the prevalence of savings accounts provides an indication of thrift and basic engagement with financial services, while joint-stock branches concerns a different set of clientele and a broader financial remit.

## VI. CONCLUSION

This paper has revisited a debate initiated by Horace Plunkett at the turn of twentieth century, namely: what is the relationship between Catholicism and economic development in Ireland? Plunkett, similar to his contemporary Max Weber, attributed variation in economic outcomes to religious differences – with Catholicism conveyed as inferior to Protestantism in this respect. In particular, Plunkett (1905, pp. 101–102) suggested that some of the tendencies of Catholicism were inimical to economic advancement, and went further, postulating ‘a defect in the industrial character of Roman Catholics’. The findings of this paper undermine these assertions.

Overall, Catholicism emerges in a positive light – yes lagging in some development outcomes (or starting from a lower base), but in those instances catching up over time,

while for others not differing from Protestantism. Furthermore, there is consistent evidence that Catholicism becomes less important in development outcome variation over time, while the relative importance of other factors rises. Indeed, by the turn of the century Catholic-Protestant differences at the county level are generally no longer important.

These findings are significant in a number of respects. Firstly, they highlight a broadly positive transition in the association between Catholicism and socioeconomic outcomes. This is consistent with historical evidence on the role of the Church in education and the wider embourgeoisement of Catholic society, and also complements Kennedy (1978b), who posits a positive association between the Catholic Church and nineteenth-century development. Secondly, the results convey a negative, but diminishing, Catholic association with saving behaviour. This is consistent with previous literature emphasising Catholic-Protestant differences in saving propensity and financial sophistication. Yet, the diminishing economic importance of religion, and the increased importance of other factors, suggests a positive transition in Catholic engagement with such services. Finally, the results suggest that Catholicism is not a statistically important factor in entrepreneurship variation (when measured by company formations), and financial development variation (when measured by bank branch prevalence). The lack of religious explanation for company formations complements Kennedy (1978b, p. 57), who suggests it unlikely that profit-motivated persons would neglect investment opportunities despite clerical unease about industrialisation or urbanisation, but contrasts with Plunkett (1905, pp. 101–102), who posits a defective Catholic industrial character. Furthermore, the lack of religious explanation for bank-branching behaviour suggests that banking provision was not significantly less prevalent in more Catholic-concentrated areas, and thus conveys

Catholic engagement with financial institutions, which in some ways is unsurprising, given that these banks were often associated with a particular religious group.

Overall, the results presented in this paper have provided important quantitative perspective on the role of religion in Irish Post-Famine development. The revealed patterns of religious convergence and parity across a variety of development indicators contrast with Plunkett's assertions regarding the inimical nature of Catholicism in Irish advancement, and instead fit more closely with the idea of a Catholic Embourgeoisement in the Post-Famine period. As such, and in line with Akenson's (1988) expectations about future research on this topic, these findings go some way to address the erroneous assertion that Catholicism was inhibitive to development,<sup>34</sup> and in doing so portray Irish Catholicism in a more favourable light.

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<sup>34</sup> Akenson (1988, p. 149) writes, 'In the field of Irish history, one of the main errors that will disappear through a more considered appraisal of the available evidence is the belief that there was a causal connection between Roman Catholicism and technological inflexibility and economic backwardness'.

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#### VII.C. UK Data Service

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#### VII.D. Newspapers

- Leader*, 23 September 1905.

TABLE I  
DESCRIPTION OF VARIABLES

<i>Variable Name</i>	<i>Description</i>	<i>Source</i>
Catholicism	The number of Catholics as a percentage of the population.	<i>Irish Historical Statistics</i> , Vaughan and Fitzpatrick (1978); Census Reports
Illiteracy	The number of those aged 12 years and over who can neither read nor write as a percentage of the population aged 12 years and over (where literacy ability known).	UK Data Service, <i>Irish Historical Statistics</i> Database; Census Reports
Irish-only speakers	The number of those who speak Irish only as a percentage of the population.	Census Reports
1st or 2nd class housing	The number of families living in 1st or 2nd class housing as a percentage of total families (where housing class known). Houses are classified by 'extent, as shown by the number of rooms', 'quality, as shown by the number of windows in front', and 'solidity and durability, as shown by the material of the walls and roof. A typical second-class house is described as 'a good farm-house, having five to nine rooms and windows'.	Census Reports
Persons over 60	The number of persons aged over 60 years as a percentage of the population (where age specified).	UK Data Service, <i>Irish Historical Statistics</i> Database; Census Reports
Urban (1500)	The number of persons living in urban settlements of 1,500 or more as a percentage of the population.	Census Reports
Professional class	The number of males aged over 20 years in the professional occupational class as a percentage of all males aged over 20 years.	Census Reports
Savings accounts	The number of savings accounts per 1,000 persons. For 1911 the figures for 1912 are used. (Includes post office and trustee.)	Parliamentary Papers
Company formations	The number of joint-stock companies formed per 100,000 persons.	Parliamentary Papers
Bank branches	The number of joint-stock bank branches per 100,000 persons.	Parliamentary Papers
Population density	The number of persons divided by the land area in acres.	Census Reports
Distance from Stranraer	The linear distance in kilometres between Stranraer (in Scotland) and the largest town.	distancefrom.com

Notes:

Urban areas of 1,500 is selected as a control for urbanisation as it is available in the Census Reports across all years. The area of urban settlements changes slightly with the advancement of time. The definition of the professional class also changes slightly with the advancement of time. Savings banks allocated by county are as in Parliamentary Paper 1913 (272). Bank branches does not include sub-branches or agencies (except on the rare occasion where it is indicated that it is open daily).

TABLE II  
DESCRIPTIVE STATISTICS BY YEAR FOR IRELAND

	Year(s)	Mean	Std. Dev.	Min	Max
Catholicism	1871-1911	81.01	20.01	22.90	98.14
	1871	80.89	19.83	26.71	97.68
	1881	81.04	20.19	25.28	97.92
	1891	80.81	20.44	24.01	98.04
	1901	81.00	20.46	22.99	97.98
	1911	81.31	20.44	22.90	98.15
Illiteracy	1871-1911	18.50	10.19	4.28	55.37
	1871	29.88	10.71	11.57	55.37
	1881	22.67	8.72	8.76	45.05
	1891	16.94	6.46	6.88	34.49
	1901	12.77	5.07	5.53	26.25
	1911	10.26	4.04	4.28	21.76
Irish-only speakers	1871-1911	0.73	1.90	0.00	12.17
	1871	1.45	2.92	0.00	12.17
	1881	0.92	2.14	0.00	9.88
	1891	0.60	1.64	0.00	8.28
	1901	0.36	1.00	0.00	4.90
	1911	0.30	0.91	0.00	4.29
1st or 2nd class housing	1871-1911	60.74	15.32	20.00	93.33
	1871	46.90	13.00	20.00	88.59
	1881	53.21	12.73	22.42	89.32
	1891	60.54	12.09	27.75	90.18
	1901	67.65	11.18	35.44	91.36
	1911	75.41	8.55	54.65	93.33
Persons over 60	1871-1911	11.84	1.99	7.17	17.84
	1871	11.06	1.11	7.81	12.93
	1881	10.97	1.16	7.63	13.17
	1891	10.94	1.14	7.49	12.63
	1901	11.79	1.42	7.17	13.57
	1911	14.43	2.29	8.54	17.84
Urban (1500)	1871-1911	20.08	17.17	0.00	86.37
	1871	17.66	15.52	0.00	81.95
	1881	18.64	16.35	0.00	84.36
	1891	19.56	16.96	0.00	84.53
	1901	21.72	18.49	0.00	86.00
	1911	22.82	18.83	0.00	86.37
Professional class	1871-1911	5.84	3.60	2.43	25.52
	1871	5.40	3.75	2.43	20.53
	1881	6.11	3.49	3.10	19.57
	1891	6.06	3.66	3.27	21.60
	1901	5.60	2.88	3.22	16.42
	1911	6.04	4.27	3.18	25.52
Savings accounts	1881	23.78	18.22	5.65	87.76
	1911	132.51	66.14	61.59	339.30
Company formations	1871-1891	3.24	5.42	0.00	36.50
	1871	1.42	2.24	0.00	10.00
	1881	3.37	3.32	0.00	15.03
	1891	4.93	8.22	0.00	36.50
Bank branches	1871-1911	9.57	3.39	3.23	18.85
	1871	5.89	1.65	3.23	9.52
	1881	8.48	2.12	4.48	13.63
	1891	9.53	2.34	5.10	15.08
	1901	11.20	2.91	7.03	18.23
	1911	12.74	3.07	7.40	18.85

TABLE III  
THE EFFECT OF CATHOLICISM ON ILLITERACY

	1871			1881			1891			1901			1911		
	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS
Catholicism	0.134*** (0.033)	17.663	0.159*** (0.043)	0.083** (0.031)	12.971	0.100** (0.040)	0.054** (0.025)	8.852	0.059** (0.030)	0.019 (0.021)	3.037	0.024 (0.027)	0.008 (0.018)	1.597	0.022 (0.025)
Irish-only speakers	2.069*** (0.314)	46.673	2.076*** (0.282)	2.259*** (0.470)	48.230	2.280*** (0.423)	1.879*** (0.402)	45.050	1.873*** (0.365)	2.668*** (0.570)	46.552	2.654*** (0.522)	2.229*** (0.349)	41.900	2.186*** (0.318)
1st or 2nd class housing	-0.403*** (0.083)	26.053	-0.372*** (0.085)	-0.383*** (0.112)	28.423	-0.360*** (0.110)	-0.365*** (0.079)	32.076	-0.363*** (0.071)	-0.279*** (0.060)	35.282	-0.279*** (0.053)	-0.246*** (0.078)	34.954	-0.249*** (0.068)
Persons over 60	0.934 (0.760)	3.157	0.755 (0.735)	0.857 (0.650)	3.068	0.699 (0.668)	1.973** (0.871)	5.895	1.977** (0.783)	1.670** (0.617)	7.218	1.691*** (0.559)	0.805*** (0.218)	12.745	0.818*** (0.198)
Urban (1500)	0.185*** (0.064)	6.454	0.163*** (0.063)	0.158** (0.066)	7.308	0.143** (0.067)	0.205*** (0.072)	8.126	0.206*** (0.065)	0.162*** (0.055)	7.911	0.165*** (0.051)	0.093** (0.037)	8.803	0.101*** (0.037)
Constant	21.374* (10.877)		20.206** (10.069)	21.940** (9.342)		21.266** (8.410)	7.931 (11.566)		7.354 (10.638)	5.976 (10.299)		5.227 (9.737)	13.766* (8.062)		12.526* (7.422)
Observations	32		32	32		32	32		32	32		32	32		32
R-squared	0.893		0.892	0.872		0.871	0.842		0.842	0.827		0.827	0.806		0.802
<i>1st Stage Regression</i>															
Irish-only speakers			-1.838*** (0.626)			-2.121** (0.969)			-1.687 (1.423)			-2.581 (2.001)			-2.231 (2.024)
1st or 2nd class housing			-0.995*** (0.224)			-0.821** (0.343)			-0.511 (0.369)			-0.548 (0.409)			-0.600 (0.507)
Persons over 60			0.681 (1.642)			1.624 (2.453)			-2.096 (2.520)			0.355 (2.662)			1.553 (1.651)
Urban (1500)			0.545*** (0.185)			0.422 (0.290)			0.049 (0.288)			0.126 (0.351)			0.222 (0.324)
Distance from Stranraer			40.277*** (4.811)			40.025*** (6.162)			41.556*** (5.636)			41.230*** (5.117)			42.275*** (5.230)
Constant			-84.916*** (17.260)			-95.784*** (20.861)			-69.373** (29.424)			-90.035*** (26.411)			-107.449** (41.245)
Observations			32			32			32			32			32
R-squared			0.831			0.785			0.744			0.730			0.734
1st stage F-statistic			32.041			36.755			18.028			24.266			20.025
Partial R-squared			0.747			0.685			0.700			0.678			0.683
Robust F-statistic			70.073			42.189			54.367			64.913			65.339
p-value			0.000			0.000			0.000			0.000			0.000
Exogeneity F-statistic			1.188			0.564			0.100			0.134			1.286
p-value			0.286			0.460			0.754			0.718			0.268

Notes:

The variables used are all county level and defined as follows: Illiteracy is the percentage of illiterates among persons aged over 12 years; Catholicism is the percentage of Catholics in the population; Irish-only speakers is the percentage of Irish-only speakers in the population; 1st or 2nd class housing is the percentage of families residing in first or second class accommodation of all families; Persons over 60 is the percentage of persons aged over 60 years in the population; Urban (1500) is the percentage of persons living in urban areas of 1,500 persons or more in the population. See Table I for full variable information including source. Robust standard errors are in parenthesis. Statistical significance is indicated by asterisking as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. In the 2SLS specifications, Catholicism is instrumented using the natural logarithm of the linear distance in kilometres from Stranraer, to exploit the diffusion of Protestant migrants from Scotland.

TABLE IV  
THE EFFECT OF CATHOLICISM ON PROFESSIONAL OCCUPATIONAL CLASS REPRESENTATION

	1871			1881			1891			1901			1911		
	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS
Catholicism	0.122** (0.051)	25.464	0.158** (0.063)	0.108** (0.040)	28.667	0.152*** (0.048)	0.055** (0.025)	12.111	0.088*** (0.033)	0.032 (0.023)	7.139	0.038 (0.026)	0.037 (0.025)	4.246	0.028 (0.033)
Illiteracy	-0.254 (0.158)	7.822	-0.328* (0.176)	-0.244 (0.171)	5.991	-0.332** (0.166)	-0.153 (0.129)	7.328	-0.238 (0.149)	-0.034 (0.085)	8.043	-0.043 (0.077)	-0.191 (0.251)	10.992	-0.184 (0.222)
Irish-only speakers	0.463 (0.291)	3.188	0.624* (0.335)	0.736* (0.415)	3.965	0.978** (0.418)	0.599 (0.384)	3.413	0.721* (0.399)	-0.070 (0.322)	1.887	-0.062 (0.287)	-0.170 (0.713)	2.023	-0.160 (0.635)
1st or 2nd class housing	-0.028 (0.066)	10.403	-0.026 (0.069)	0.006 (0.077)	9.937	0.023 (0.083)	0.070 (0.093)	10.043	0.050 (0.081)	0.049 (0.046)	9.232	0.047 (0.042)	-0.112 (0.134)	6.046	-0.108 (0.118)
Persons over 60	-1.334 (1.191)	29.239	-1.448 (1.064)	-1.200 (1.025)	25.051	-1.461 (0.964)	-1.979 (1.944)	45.829	-1.787 (1.625)	-2.002 (1.239)	52.122	-1.964* (1.128)	-2.053* (1.162)	60.810	-2.067** (1.036)
Urban (1500)	0.075 (0.074)	23.884	0.067 (0.071)	0.059 (0.080)	26.390	0.042 (0.082)	-0.029 (0.149)	21.276	-0.006 (0.123)	-0.066 (0.094)	21.576	-0.061 (0.088)	-0.094 (0.117)	15.884	-0.099 (0.109)
Constant	17.213 (15.407)		17.603 (13.148)	13.970 (11.907)		14.454 (10.058)	21.853 (21.086)		19.165 (17.333)	25.208 (17.225)		24.413 (15.907)	45.272 (27.462)	45.894* (24.662)	
Observations	32		32	32		32	32		32	32		32	32	32	32
R-squared	0.528		0.511	0.512		0.475	0.440		0.414	0.580		0.579	0.566	0.565	
<i>1st Stage Regression</i>															
Illiteracy			0.331 (0.427)			0.406 (0.512)			0.671 (0.666)			0.189 (0.757)			-0.828 (0.789)
Irish-only speakers			-2.429** (1.120)			-2.961* (1.648)			-2.876 (2.175)			-3.070 (2.881)			-0.461 (1.819)
1st or 2nd class housing			-0.820** (0.350)			-0.641 (0.419)			-0.247 (0.426)			-0.492 (0.509)			-0.817 (0.657)
Persons over 60			0.395 (1.799)			1.274 (2.549)			-3.339 (2.810)			0.034 (3.179)			2.258 (1.854)
Urban (1500)			0.463* (0.239)			0.347 (0.308)			-0.092 (0.297)			0.095 (0.399)			0.310 (0.367)
Distance from Stranraer			38.158*** (4.591)			38.397*** (5.727)			39.904*** (5.305)			41.042*** (4.997)			43.036*** (5.363)
Constant			-87.140*** (19.180)			-100.525*** (24.178)			-71.548** (29.423)			-90.611*** (27.789)			-99.006** (44.232)
Observations			32			32			32			32			32
R-squared			0.834			0.789			0.752			0.730			0.739
1st stage F-statistic			25.893			33.429			15.049			23.108			17.712
Partial R-squared			0.657			0.630			0.662			0.670			0.687
Robust F-statistic			69.078			44.954			56.577			67.459			64.397
p-value			0.000			0.000			0.000			0.000			0.000
Exogeneity F-statistic			1.571			4.265			2.474			0.234			0.144
p-value			0.222			0.050			0.129			0.633			0.707

Notes:

The variables used are all county level and defined as follows: Professional class is the percentage of persons in the professional occupational class among the male population over 20 years; Catholicism is the percentage of Catholics in the population; Illiteracy is the percentage of illiterates among persons aged over 12 years; Irish-only speakers is the percentage of Irish-only speakers in the population; 1st or 2nd class housing is the percentage of families residing in first or second class accommodation of all families; Persons over 60 is the percentage of persons aged over 60 years in the population; Urban (1500) is the percentage of persons living in urban areas of 1,500 persons or more in the population. See Table I for full variable information including source. Robust standard errors are in parenthesis. Statistical significance is indicated by asterisking as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. In the 2SLS specifications, Catholicism is instrumented using the natural logarithm of the linear distance in kilometres from Stranraer, to exploit the diffusion of Protestant migrants from Scotland.

TABLE V  
THE EFFECT OF CATHOLICISM ON THE NUMBER OF SAVINGS ACCOUNTS

	1881A			1881B			1911A			1911B		
	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS	OLS	R <sup>2</sup> %	2SLS
Catholicism	-0.277 (0.170)	14.334	-0.173 (0.147)	-0.543*** (0.159)	17.844	-0.550*** (0.110)	-0.135 (0.396)	3.444	-0.268 (0.482)	-0.543*** (0.142)	3.925	-0.586*** (0.156)
Illiteracy	0.055 (0.485)	8.597	-0.152 (0.494)	0.657* (0.348)	7.390	0.671 (0.425)	-3.192 (2.648)	11.446	-3.081 (2.341)	-1.072 (1.443)	6.749	-1.026 (1.273)
Irish-only speakers	-0.774 (1.227)	3.008	-0.198 (1.097)	-2.586** (1.007)	3.037	-2.627** (1.038)	-7.452 (8.227)	3.482	-7.294 (7.381)	-5.561* (3.173)	2.258	-5.502** (2.738)
1st or 2nd class housing	0.102 (0.324)	24.906	0.141 (0.309)	0.086 (0.316)	19.295	0.084 (0.256)	-1.930 (1.497)	10.199	-1.868 (1.315)	-0.685 (0.648)	6.452	-0.659 (0.582)
Persons over 60	-0.083 (2.858)	12.194	-0.702 (2.350)	2.873 (2.490)	8.929	2.926 (1.793)	-20.295 (12.129)	44.399	-20.511* (10.789)	2.544 (4.123)	23.063	2.612 (3.503)
Urban (1500)	0.714** (0.259)	36.961	0.674*** (0.239)	0.568** (0.242)	27.210	0.569*** (0.205)	0.670 (1.343)	27.030	0.585 (1.246)	1.712*** (0.475)	18.112	1.692*** (0.439)
Professional class				2.462*** (0.500)	16.295	2.483*** (0.461)				11.123*** (0.915)	39.442	11.188*** (0.759)
Constant	27.903 (34.573)		29.052 (29.092)	-6.496 (23.167)		-6.836 (21.168)	601.572** (290.715)		611.589** (259.063)	98.019 (69.137)		98.119* (59.435)
Observations	32		32	32		32	32		32	32		32
R-squared	0.737		0.730	0.846		0.846	0.742		0.741	0.966		0.965
<i>1st Stage Regression</i>												
Illiteracy			0.406 (0.512)			0.550 (0.588)			-0.828 (0.789)			-0.677 (0.863)
Irish-only speakers			-2.961* (1.648)			-3.242* (1.733)			-0.461 (1.819)			-0.334 (1.628)
1st or 2nd class housing			-0.641 (0.419)			-0.602 (0.438)			-0.817 (0.657)			-0.722 (0.669)
Persons over 60			1.274 (2.549)			1.949 (2.947)			2.258 (1.854)			3.718 (2.570)
Urban (1500)			0.347 (0.308)			0.296 (0.320)			0.310 (0.367)			0.375 (0.381)
Distance from Stranraer			38.397*** (5.727)			35.294*** (7.367)			43.036*** (5.363)			42.143*** (4.916)
Professional class						0.532 (0.554)						0.729 (0.567)
Constant			-100.525*** (24.178)			-100.095*** (24.810)			-99.006** (44.232)			-130.403** (61.544)
Observations			32			32			32			32
R-squared			0.789			0.793			0.739			0.750
1st stage F-statistic			33.429			28.111			17.712			19.803
Partial R-squared			0.630			0.472			0.687			0.682
Robust F-statistic			44.954			22.949			64.397			73.490
p-value			0.000			0.000			0.000			0.000
Exogeneity F-statistic			1.141			0.003			0.230			0.177
p-value			0.296			0.955			0.636			0.678

Notes:

The variables used are all county level and defined as follows: Savings accounts is the number of savings accounts per 1,000 persons; Catholicism is the percentage of Catholics in the population; Illiteracy is the percentage of illiterates among persons aged over 12 years; Irish-only speakers is the percentage of Irish-only speakers in the population; 1st or 2nd class housing is the percentage of families residing in first or second class accommodation of all families; Persons over 60 is the percentage of persons aged over 60 years in the population; Urban (1500) is the percentage of persons living in urban areas of 1,500 persons or more in the population; Professional class is the percentage of persons in the professional occupational class among the male population over 20 years. See Table I for full variable information including source. Robust standard errors are in parenthesis. Statistical significance is indicated by asterisking as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. In the 2SLS specifications, Catholicism is instrumented using the natural logarithm of the linear distance in kilometres from Stranraer, to exploit the diffusion of Protestant migrants from Scotland.



TABLE VI  
THE EFFECT OF CATHOLICISM ON THE NUMBER OF COMPANY FORMATIONS (CONTROLLING FOR DUBLIN AND ANTRIM)

	1871		1881		1891	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
Catholicism	-0.018 (0.020)	-0.003 (0.016)	-0.027 (0.020)	-0.008 (0.024)	-0.033 (0.035)	-0.067 (0.043)
Illiteracy	0.027 (0.067)	-0.004 (0.049)	0.118 (0.128)	0.076 (0.115)	0.044 (0.185)	0.114 (0.178)
Irish-only speakers	-0.040 (0.161)	0.029 (0.131)	-0.284 (0.252)	-0.167 (0.273)	-0.165 (0.388)	-0.231 (0.377)
1st or 2nd class housing	0.036 (0.049)	0.037 (0.041)	-0.022 (0.091)	-0.017 (0.076)	-0.116 (0.136)	-0.093 (0.109)
Persons over 60	0.056 (0.284)	0.010 (0.263)	0.488 (0.536)	0.365 (0.492)	-0.829 (0.852)	-1.134 (0.827)
Urban (1500)	0.019 (0.039)	0.019 (0.031)	0.091 (0.064)	0.091* (0.052)	0.374** (0.154)	0.348*** (0.120)
Dublin	4.040 (2.846)	3.545 (2.470)	8.006** (3.437)	7.091** (3.319)	8.435 (7.478)	8.732 (6.469)
Antrim	7.076*** (1.709)	7.262*** (1.553)	10.807*** (2.553)	10.877*** (2.260)	5.667 (5.918)	4.012 (6.387)
Constant	-0.835 (3.347)	-0.791 (3.174)	-3.287 (5.465)	-2.931 (4.868)	15.346 (12.143)	19.357 (12.507)
Observations	32	32	32	32	32	32
R-squared	0.798	0.790	0.807	0.801	0.925	0.921
<i>1st Stage Regression</i>						
Illiteracy		0.585 (0.463)		0.740 (0.639)		0.788 (0.728)
Irish-only speakers		-3.251** (1.464)		-4.152* (2.357)		-2.901 (2.367)
1st or 2nd class housing		-0.774** (0.370)		-0.601 (0.437)		-0.143 (0.455)
Persons over 60		1.811 (2.176)		3.144 (2.664)		-3.962 (2.717)
Urban (1500)		0.170 (0.322)		0.086 (0.439)		-0.246 (0.479)
Dublin		32.807* (17.755)		33.607 (23.474)		12.472 (27.355)
Antrim		17.142 (13.400)		17.654 (18.365)		-4.558 (24.546)
Distance from Stranraer		38.149*** (5.186)		37.229*** (6.393)		37.868*** (7.090)
Constant		-107.657*** (26.629)		-120.674*** (36.365)		-60.203 (50.196)
Observations		32		32		32
R-squared		0.853		0.808		0.760
1st stage F-statistic		774.417		960.518		1381.654
Partial R-squared		0.650		0.603		0.589
Robust F-statistic		54.118		33.907		28.524
p-value		0.000		0.000		0.000
Exogeneity F-statistic		2.077		0.960		0.880
p-value		0.164		0.338		0.358

Notes:

The variables used are all county level and defined as follows: Company formations is the number of joint-stock companies formed per 100,000 persons in that year and the following 4 years; Catholicism is the percentage of Catholics in the population; Illiteracy is the percentage of illiterates among persons aged over 12 years; Irish-only speakers is the percentage of Irish-only speakers in the population; 1st or 2nd class housing is the percentage of families residing in first or second class accommodation of all families; Persons over 60 is the percentage of persons aged over 60 years in the population; Urban (1500) is the percentage of persons living in urban areas of 1,500 persons or more in the population; Dublin and Antrim are dummy variables. See Table I for full variable information including source. Robust standard errors are in parenthesis. Statistical significance is indicated by asterisking as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. In the 2SLS specifications, Catholicism is instrumented using the natural logarithm of the linear distance in kilometres from Stranraer, to exploit the diffusion of Protestant migrants from Scotland.

TABLE VII  
THE EFFECT OF CATHOLICISM ON THE NUMBER OF BANK BRANCHES

	1871		1881		1891		1901		1911	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Catholicism	-0.006 (0.023)	0.002 (0.028)	-0.027 (0.019)	-0.059* (0.033)	-0.002 (0.020)	-0.036 (0.024)	0.007 (0.023)	-0.040* (0.024)	0.035 (0.027)	0.004 (0.031)
Illiteracy	-0.058 (0.080)	-0.073 (0.083)	-0.070 (0.084)	-0.003 (0.099)	-0.200* (0.107)	-0.114 (0.097)	-0.344* (0.168)	-0.281** (0.123)	-0.463** (0.221)	-0.429** (0.186)
Irish-only speakers	-0.183 (0.166)	-0.153 (0.174)	-0.426 (0.270)	-0.619* (0.326)	-0.367 (0.333)	-0.517 (0.334)	-0.256 (0.516)	-0.294 (0.411)	-0.152 (0.661)	-0.110 (0.534)
1st or 2nd class housing	-0.077 (0.054)	-0.077* (0.047)	-0.137* (0.067)	-0.145** (0.062)	-0.187** (0.077)	-0.175** (0.069)	-0.219** (0.081)	-0.211*** (0.079)	-0.136 (0.090)	-0.117 (0.086)
Persons over 60	0.743** (0.336)	0.704** (0.291)	1.402** (0.502)	1.653*** (0.533)	1.966** (0.868)	1.930** (0.774)	2.882*** (0.857)	2.894*** (0.801)	1.314** (0.575)	1.362*** (0.490)
Urban (1500)	0.122** (0.057)	0.121** (0.048)	0.115* (0.067)	0.115* (0.060)	0.206** (0.081)	0.190*** (0.073)	0.284*** (0.084)	0.261*** (0.080)	0.206** (0.089)	0.192** (0.083)
Professional class	-0.067 (0.078)	-0.085 (0.082)	0.012 (0.078)	0.104 (0.081)	0.134 (0.082)	0.203** (0.088)	0.598*** (0.157)	0.732*** (0.184)	0.237* (0.126)	0.284** (0.121)
Population density	-2.601 (1.573)	-2.561* (1.332)	-1.963 (2.067)	-1.751 (1.835)	-4.723** (2.026)	-4.870** (1.971)	-5.999*** (1.525)	-6.184*** (1.508)	-5.698*** (1.966)	-5.690*** (1.933)
Constant	2.781 (4.718)	3.104 (4.005)	2.918 (4.766)	1.185 (4.651)	-0.429 (8.063)	0.566 (7.547)	-11.983 (9.704)	-9.898 (8.853)	1.380 (10.115)	1.462 (8.810)
Observations	32	32	32	32	32	32	32	32	32	32
R-squared	0.431	0.428	0.451	0.415	0.389	0.330	0.526	0.446	0.363	0.330
<i>1st Stage Regression</i>										
Illiteracy		0.497 (0.489)		0.610 (0.605)		0.684 (0.717)		0.277 (0.815)		-0.622 (1.049)
Irish-only speakers		-2.610** (1.157)		-3.424* (1.819)		-2.869 (2.323)		-3.164 (2.876)		-0.502 (1.736)
1st or 2nd class housing		-0.729* (0.382)		-0.586 (0.454)		-0.203 (0.475)		-0.469 (0.581)		-0.704 (0.768)
Persons over 60		1.282 (2.222)		2.414 (2.945)		-3.822 (2.949)		1.122 (4.349)		3.506 (3.668)
Urban (1500)		0.328 (0.280)		0.191 (0.384)		-0.194 (0.429)		0.042 (0.571)		0.326 (0.689)
Professional class		0.531 (0.506)		0.532 (0.525)		-0.204 (0.456)		0.542 (0.865)		0.688 (0.720)
Population density		4.255 (8.048)		7.953 (8.724)		5.467 (11.393)		5.232 (10.037)		1.931 (12.611)
Distance from Stranraer		35.329*** (6.032)		35.395*** (7.394)		40.842*** (6.399)		40.448*** (5.821)		42.166*** (5.035)
Constant		-93.792*** (21.167)		-108.139*** (24.798)		-72.039** (33.256)		-106.447*** (35.389)		-128.454* (63.755)
Observations		32		32		32		32		32
R-squared		0.840		0.796		0.754		0.736		0.750
1st stage F-statistic		20.263		23.728		13.262		27.881		23.311
Partial R-squared		0.526		0.477		0.624		0.644		0.682
Robust F-statistic		34.305		22.919		40.731		48.282		70.125
p-value		0.000		0.000		0.000		0.000		0.000
Exogeneity F-statistic		0.107		1.009		3.831		10.903		3.445
p-value		0.747		0.326		0.063		0.003		0.077

Notes:

The variables used are all county level and defined as follows: Bank branches is the number of joint-stock bank branches per 100,000 persons; Catholicism is the percentage of Catholics in the population; Illiteracy is the percentage of illiterates among persons aged over 12 years; Irish-only speakers is the percentage of Irish-only speakers in the population; 1st or 2nd class housing is the percentage of families residing in first or second class accommodation of all families; Persons over 60 is the percentage of persons aged over 60 years in the population; Urban (1500) is the percentage of persons living in urban areas of 1,500 persons or more in the population; Professional class is the percentage of persons in the professional occupational class among the male population over 20 years; Population density is the number of persons divided by the land area in acres. See Table I for full variable information including source. Robust standard errors are in parenthesis. Statistical significance is indicated by asterisking as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. In the 2SLS specifications, Catholicism is instrumented using the natural logarithm of the linear distance in kilometres from Stranraer, to exploit the diffusion of Protestant migrants from Scotland.