

The Composition for Tithes Act of 1823: Its Revenue Risk Impacts across Ireland*

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ABSTRACT

This paper investigates the economic impacts of the Composition for Tithes Act of 1823, focusing on the incremental revenue risks it imposed on tillage farmers in southeast and northeast Ireland. This reform of the tithe would see its longstanding design as an ad valorem production tax of 10 per cent converted into a lump-sum land tax. Crop farmers would therefore be permanently exposed to all revenue risks, not just 90% of such risks, and those of them who were very risk-averse were net losers under this reform. For many tillage farmers on large lots who could diversify and/or expand their activities to overcome this additional risk and for others who were not so risk-averse, their tithing rates would be discounted by as much as 88%, thereby offering a substantial temporary off-setting economic benefit until their rents were raised by an equivalent amount to the tithe discounts at the next renewal date of their lease. Indeed, this immediate savings induced a sufficient number of them within many parishes to agree to the reform of their tithe. Only in parishes heavily populated by extremely risk-averse cottiers would the composition of the tithe prove unacceptable. Therefore, when Parliament made the composition of the tithe compulsory in 1832, organized civil disobedience emerged – no doubt fuelled in part by longstanding religious tensions – armed police and militia countered and the affray conflagrated into what became known as the Irish Tithe War of 1831-1838 largely in the Catholic south, Munster and Leinster, where risk-averse cottiers were most prevalent. The social impacts of converting the tithe into a composition did not end with the cessation of this civil rebellion, however. Its additional revenue

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risks persisted well into the next decade, increasing the financial vulnerability of small farmers and cottiers, particularly potato farmers who would come to experience an unforeseeable succession of broken harvests and who, more than others, would fall victim to the "Great Famine" of 1845-1850.

1. Introduction

In an earlier paper,¹ it was argued that the reform of the Irish tithe in 1823 from one that was (by law) payable in goods (i.e., an *ad valorem* production tax) to one that was payable in money as a "composition" (i.e., a fixed lump-sum land tax) was indeed welfare-improving, but it was not the more equitable tax reform that Parliament and its supporters claimed. Low-skilled, poorly-equipped farmers on small lots of less than 15 acres and cottiers on lots typically of no more than one acre in size were adversely affected by the reform. They, unlike their larger counterparts, could neither expand nor diversify their operations and thus could not enhance or stabilize their farm revenues to overcome the economic losses they would suffer pursuant to the inherently greater revenue risk. Compounding this projected stagnant revenue expectation was the fact that these farmers could also expect that any reduction in tithe from which they benefited, via to the extension of this ecclesiastical tax over a wider land base that included graziers (previously exempted), would be met by an equivalent increase in rent upon the expiry and renewal of their leases.² The conversion of the tithe into a cash composition

¹ Shaw, Daniel J., "An Economic Perspective on the Irish Tithe War of 1831-1838," in *Journal of European Economic History*, vol. 44, no. 3, 2015, pp. 91-140.

² Modern economics informs us that it is the custodian of the fixed factor of production who bears the burden of the original tithe and, in this case, this agent is the landlord. The tithe in kind (or its monetary equivalent known as the *modus decimandi*) may have been formally paid by tenant farmers, but tenant farmers did not actually bear its burden. Tenant farmers were able to bargain down their rents by an amount somewhat greater than the tithe (see Shaw (2015)). Thus, with the conversion of the tithe into a composition, the owners of land on which tithe-able articles were grown would be able to recapture this lost revenue through the higher rent rates they could charge – equivalent in size to the discount – upon the expiry and renewal of their leases.

thus offered the farmer on a small lot a temporary benefit, but little if anything over the longer term in exchange for the permanent loss of the financial flexibility implicit in the revenue-sharing properties of the tithe as an *ad valorem* production tax. Indeed, a small landholder who was moderately to extremely risk-averse in income would undoubtedly put a premium (i.e., a value exceeding the expected after-tax return of 10 per cent of his crop revenue) on this feature of the original tithe, making him economically worse off under the reform. Empirical support for these positions was found in statistical analyses of a cross-county rent dataset for 1831, the occupational make-up of an 1831 tithe defaulters list, and an 1831-1833 tithe-in-arrears dataset. The findings of this research confirmed that tithe defaulters were principally made up of individuals in a precarious financial position (i.e. mostly cottiers) from places and regions of the country with relatively high ratios of small to large farms, potato to wheat lands, and pig to cow livestock raising.

Although it seems a logical extension that people in precarious financial positions would be disproportionately more risk-averse and less able to cope with an increase in revenue risk resulting from the conversion of the tithe into a fixed lump-sum land tax than other farmers, and that they would consequently be more likely to form the backbone of any opposition movement to such a reform, no quantification of the revenue risk to which these and other farmers were exposed was ventured. This information could have provided valuable support for the view advocated. Indeed, any increase in revenue risk resulting from the reform is central, if not pivotal, to this thesis. One might, therefore, be left wondering: Was the increase in revenue risk due to this reform of the tithe at all significant? If so, was the increase in revenue risk borne equally or disproportionately by the different farm classes (lot sizes) or categories (crop types) within the agricultural community? And, finally, whether borne equally or disproportionately, could the different farming groups not adopt strategies to mitigate the additional revenue risk to which they would be exposed? This paper intends to pursue the investigation into the 1823 reform of the Irish tithe further, addressing these issues directly.

The paper is divided into seven sections. The next section presents a very brief political history of the Irish tithe from the introduction of the first composition act in 1823 to the last in 1838. The third section presents tithing rate data, commodity price data and harvest reports of major crops grown throughout southeast and northeast Ireland that will permit:

- 1) a comparison of tithing rates under both regimes;
- 2) an assessment of the revenue risk to which farmers of different crops and regions were exposed throughout the 1820s and 1830s;
- 3) the quantification of any additional risk incurred (between 1824 and 1831) by crop farmers whose parishes immediately converted their tithe into a composition in 1824; and
- 4) the identification of potential risk-mitigating strategies accessible to different farm classes and categories by region.

The fourth section undertakes a statistical analysis, using regression techniques, of the demographic and agricultural factors that could influence the average parish composition level per county. The fifth section also undertakes a statistical analysis, again using regression techniques, focusing on the structural factors of a county's agricultural sector that could influence the extent of tithe compounding across its many parishes. This inquiry provides some indication of the farming groups who were most likely unable to sufficiently mitigate their exposure to the heightening of risk. The sixth section breaks new ground, looking for a statistical link between the composition of the tithe and the most devastating effects of the "Great Famine" or, more succinctly, the estimated average annual Irish "excess death" rates incurred between 1846 and 1851. Finally the conclusion, bringing together the findings of all the sections, explains which farming groups bore disproportionate shares of the additional revenue risk pursuant to tithe reform; and this discovery, when combined with the relevant data concerning the composition of the agricultural sector by county, allows one to identify the regions of Ireland that stood to gain the most/least from tithe reform. Given this understanding, one will be able to resolve what has so far appeared to be a series of paradoxes regarding the regional pattern of

acceptance rates of the 1823 reform. One will also begin to recognize just how this 1823 legislation had far-reaching effects well into the late 1840s, particularly for small farmers and cottiers who endured five consecutive years of catastrophic potato harvests.

2. The Irish Tithe Composition Acts, 1823-1838

In 1823, the British Parliament adopted the Composition for Tithes Act,³ which would have Irish landholders pay all tithes – at rates negotiated by the clergy and parishioners who paid a relatively large *cess*⁴ subject to the approval of the presiding bishop – to the Church of Ireland in money rather than in goods.⁵ The new tithe was also redesigned to be a revenue-neutral, lump-sum land tax that would apply to grazing as well as tillage, thereby leading to a lower ecclesiastical tax for most of the existing tithe-payers (i.e., tillage farmers). Once the aggregate composition was established, the rate structure of the new tithe would be calculated on the basis of the acre-able size of the parish, what could be produced on each parcel of land (i.e., indirectly graded according to land quality), and the average price of corn (i.e., wheat, oats) taken over a period of seven years prior to 1 November 1821. The tithing rate schedule was not fixed forever but was to be updated every seven years based on the septennial price of corn over the preceding period. Thus, the new and lower tithing rates would be determined jointly by the affected parties, and not imposed on the landholder, as was then widely per-

³ The act may be found in Rickards (1838), pp. 276a-qq.

⁴ A *cess* is a British term for a tax that was usually applied to land as a means of local taxation.

⁵ This tithe was originally levied at one tenth of the gross value of the farmland's annual production and was customarily paid in kind. In 1735, the Irish House of Commons adopted the Agistment Act that provided an exemption from tithes on the products of grassland. From the mid-1700s onward, tithe transactions were, in most cases, executed under an agreement of *modus decimandi* that substituted monetary payments for the original tithe (though the obligation set out in law remained one that was to be paid in kind).

ceived, by the tithe proctor or 'tithe farmer'. This last feature was expected to generate local political support for the reform.⁶

At the heart of this reform legislation were two political/economic motivations:

- 1) more secure and predictable income for Church of Ireland clergy to encourage a greater clerical residency rate in Ireland; and
- 2) greater economic exploitation of the land to alleviate the already heavy population pressure.

In terms of this second motivation, some Members of the House of Commons argued that: 'The tithe system operated as a heavy tax on food and labour, and tended to discourage the cultivation of waste lands. Waste and barren lands were exempted from the operation of the tithe system, which was a sort of premium for keeping them in that useless state'.⁷ Moreover, in addition to providing an added incentive to develop these wastelands, by reducing the disparity in tax treatment between grazing and tillage the new tithe was seen: 'to give a considerable stimulus to tillage, and to bring into cultivation much land which would not have borne the charge of Tithe ()'.⁸

This tithe act can also be understood as the first of two important Parliamentary initiatives aimed at reclaiming the vast bog lands dotting the Irish landscape, the second being an act of 1836 that authorized the formation of the Irish Waste Land Improvement Company. As for the first of these initiatives, the Composition for Tithes Act would provide an additional financial incentive to private individuals to reclaim their wastelands. At that time, the prevailing economic incentives appeared to some observers as inadequate, distorted and pos-

⁶ The tithe-owner could be either a clergyman or a 'tithe farmer' who had paid the clergyman a prescribed amount, which was established by a private agreement or a 'canting' (i.e., public auction), for the right to keep all tithe revenues in excess of the prescribed payment; see Bric (1986), p. 274, and O'Hanrahan, in Nolan and Whelan (1990), p. 482.

⁷ Mr. O'Grady (Hansard, 13 June 1822, 7, cc. 1029-45).

⁸ Second Report of the House of Commons Select Committee on Tithes in Ireland (1832), p. 245-iv.

sibly even counter-productive, with the lion's share of the economic rewards to such endeavours undertaken by tenants largely appropriated by landlords: 'The usual mode () for encouraging the improvement of waste land was () to permit a tenant to creep up a mountain side, or encroach on the edge of a bog; and after some time, when the land was made productive, the agent or landlord () increased the rent () [and] they [the tenants] were not generally allowed () permanent tenure ()'; consequently, the tenants had no confidence that they would enjoy the fruits of their own labours.⁹ Moreover, even when undertaken, the reclamation of such lands does not appear to have been the permanent solution to the financial stresses incurred by peasant landholders as was claimed by some Parliamentarians, but instead was a temporary respite systematically orchestrated by landlords for their own aggrandizement: 'The fundamental cause of reclamation was the tendency for the needs of the peasants to outstrip the yield of the land from which they could derive their sustenance. While the requirements of the peasants increased as their number grew, the persistent tendency of the Irish Landlordism was to restrict the area from which they could derive their subsistence () [A]s rent-land encroached upon potato-land, the peasants were driven to clear for their potatoes the fringes of the bog and the lower slopes of the mountain. Enclosures of mountain and bog, after a year or two under potatoes, made admirable pasture or corn-land; they too () were annexed to the rent-land, and the potatoes were planted higher up the mountain and further into the bog.'¹⁰

Under the second initiative, the Irish Waste Land Improvement Company would be 'authorized to raise money () to take land upon lease for the purpose of reclaiming it, and to obtain a return by letting or selling such land in an improved state. That company has been () giving encouragement and assistance to many poor labouring families, by bringing such land into cultivation.'¹¹ This

⁹ Mr. Poulette Scrope (Hansard, April 1846, 85, cc. 1201-02).

¹⁰ See Connell (1950), p. 53.

¹¹ Devon Commission, Part II, 1848, p. 1143.

initiative, however, could only claim a very limited success: 'Waste Lands in Ireland had () occupied the attention of Parliament for a long series of years. In 1809 a Commission was appointed to inquire into and report upon the Wastes and Bogs of Ireland, and () made several very valuable Reports. In 1819, in 1830, and again in 1835, Committees on the state of Ireland had () in their reports given very useful suggestions () but up to 1843 scarcely any of these recommendations had been adopted.'¹² The problem with one recommendation from these reports that was adopted, namely the creation of the Irish Waste Land Improvement Company, seems to have been that: 'their funds are not large, and their operations are therefore limited.'¹³ Moreover, not unlike the peasantry, this Crown Corporation also encountered problems in obtaining the extended tenure needed to justify the investment: 'Their success has been still further impeded by the difficulty of obtaining the concession of suitable waste lands from any landowner, except for a 21 years lease, a term of tenure too short to afford a sufficient stimulus for very spirited improvements on the part, either of the company itself, or of the tenantry [that] they might settle on the land.'¹⁴

All things considered, Parliament believed that the Composition for Tithes Act represented an equity-enhancing, welfare-improving and politically palatable tax reform that most Irish would welcome. But much to the surprise of the British legislature, the reform was met by extensive and unrelenting resistance that proved successful in thwarting the new law's general application across Ireland. By January 1832, only 1,539 of 2,450 Irish parishes (62.6%) had converted their tithe into a composition.¹⁵ Surprisingly, it was in the Protestant-dominated part of Ulster that makes up present-day Northern Ireland where the lowest rates of conversion were found, as only 123 of its 239 parishes (51%) compounded their tithe. By

¹² Mr. Poulette Scrope (Hansard, 28 April 1846, 85, cc. 1198-99).

¹³ Devon Commission, Part II, 1848, p. 1143.

¹⁴ Scrope (1848), p. 23.

¹⁵ John C. Erck, in Dwyer (1833), Appendix D, pp. 47-101, and Donnelly (2009), p. 215.

comparison, over the same period 62 of 97 parishes in the Catholic-dominated part of Ulster (64%), 520 of 944 Leinster parishes (55%), 572 of 827 Munster parishes (69%) and 212 of 305 Connaught parishes (70%) had their tithe compounded.¹⁶ All told, the 1,539 parishes that compounded their tithe raised revenues for the Church of Ireland's clergy totalling £442,419 in 1831, while the revenues garnered by customary tithes from the 911 non-compounded parishes amounted to £262,000.¹⁷ It was further estimated that if the composition of the tithe had been extended throughout all 2,450 parishes of Ireland, using the average tithe revenue of £283 per parish, total tithe revenues would have been about £704,987.¹⁸

Bolstered by testimony presented to the Select Committee of the House of Lords on the Collection and Payment of Tithes in Ireland, Lord Stanley singled out the two parties he believed were principally responsible for impeding the act's general application: 'The Composition Act divides over the whole of the parish () Those () who possess grazing land, have a strong inducement to resist the application of the Act, and their opposition has been one of the causes which have prevented the Act from coming into general operation. Another cause arises from the opposition which the Bishops have () offered to the terms agreed on between the clergy and their parishioners' ¹⁹ The House of Commons Select Committee on Tithes in Ireland came to the same conclusion.²⁰

¹⁶ These statistics are taken from O'Donoghue (1972), p. 97, who rearranged the data that were originally organized by diocese to a county basis but acknowledged that his data did not include parishes from Drogheda and the cities of County Dublin. His data, however, suffer from an additional inaccuracy. O'Donoghue's data identified 923 parishes that did not enter into a composition when the original data show that only 911 parishes did not do so, and, therefore, he understates the number of parishes that did compound by January 1832 by 50 and overstates the parishes that did not enter into a composition by 12.

¹⁷ Donnelly (2009), p. 215.

¹⁸ Richard Griffith, in Second Report of the House of Commons Select Committee on Tithes in Ireland (1832), p. 282.

¹⁹ Lord Stanley (Hansard, 15 December 1831, 9, cc. 259-296).

²⁰ Second Report of the House of Commons Select Committee on the Tithes in Ireland (1832), p. 245-vi.

So in 1832 a frustrated Parliament responded to this patchy acceptance of the reform by passing the Composition for Tithes (Ireland) Act, which would make the composition of the tithe compulsory throughout the country. But once it became known to the public that the British government would move to make the new Irish tithe regime compulsory, the Irish nonconformists did not stand still. Vocal dissent among the resistance movement would be accompanied by a well-organized campaign of nonviolent civil disobedience as devised at public meetings, usually held under the guise of hurling matches.²¹ Hence, the members of this movement garnered the label of ‘tithe hurlers’. On this score, the chroniclers report nine public meetings of tithe hurlers – each having an attendance numbering in the hundreds or even thousands – held across County Kilkenny at places like Ballyhale, Bennettsbridge (2), Dysart Bridge, Gowran, Graiguenamanagh (2) and Inistroke (2) in 1831. That year also witnessed similar tactical meetings across Leinster province, one meeting each held in counties Carlow, Laois and Wexford.²² Many farmers – large and small – from the south of Ireland subsequently refused to pay the new tithe and defaulted on their obligation beginning in late 1830.²³

Organized civil disobedience of this kind, not unexpectedly, turned both violent and deadly after the civil authorities brought in armed police and militia to enforce the seizure of property from those who were in default of their new tithe and refused to pay. The Irish tithe war was born in this social unrest and was marked by harrowing, intermittent skirmishes between 1831 and 1835, culminating in an estimated 31,624 writs for the recovery of tithes issued by Irish courts, 769 persons imprisoned in connection with the recovery of tithes,²⁴ a death count attributable to tithe collection of about 80 and more than 200 injured.²⁵

²¹ Higgins-McHugh, in Sheehan and Cronin (2011), pp. 84–85.

²² Higgins-McHugh, in Sheehan and Cronin (2011), pp. 84–86.

²³ McCormac (2005), p. 41.

²⁴ Akenson (1971), p. 181.

²⁵ Higgins-McHugh, in Sheehan and Cronin (2011), p. 80.

In the end, the British government devised a political compromise that Parliament saw fit to implement with its adoption of the Tithe Commutation Act of 1838. This act abolished the compositions and introduced a yearly rent-charge that was set at three-quarters of the existing parochial compositions and reassigned its liability to landowners.²⁶ Though landowners would pay this tithe, Parliamentarians expected that its smaller burden would be passed on from landlords to tenants in the form of higher rents.²⁷

3. Crop Revenue Risks in Southeast and Northeast Ireland

Year-to-year variations in weather and, hence, harvest yields could alter the risk-sharing performance of the tithe as a composition relative to the monetary tithe or the tithe in kind because, unlike the last two, it was a fixed lump-sum charge that was not tied to production levels (or farming success). One tenth of the revenue risk inherent in agricultural production was, therefore, shifted from the Church of Ireland clergy to tillage farmers. This section will estimate with greater precision the increase in this risk borne by crop farmers in the first parishes that converted their tithe into a composition in 1824, using commodity price data and harvest reports of the *Waterford Mirror* between 1819 and 1842 and the *Northern Whig* between 1824 and 1842. The newspaper reports provide an annual assessment of the harvests of major crops grown throughout southeast Ireland – counties Kilkenny, Tipperary, Waterford and Wexford – and northeast Ireland – counties Antrim, Armagh and Down – accounting for yields and acreage sown relative to what was considered □typical□ for the time and place. One caveat is needed, however: these news-

²⁶ Public Record Office of Northern Ireland, <http://www.proni.gov.uk/index/family-history/familyhistorykeysources.htm>.

²⁷ Viscount Morpeth (Hansard, 14 May 1838, 42, cc. 1253); Mr. Ward (Hansard, 15 May 1838, 42, cc. 1292); Mr. O'Connell (Hansard, 15 May 1838, 42, cc. 1328 and 26 July 1838, 44, cc. 687); Mr. Lefroy (Hansard, 30 July 1838, 25, cc. 774); Mr. Dillon (Hansard, 28 June 1900, 84, cc. 1370); and Colonel Saunderson (Hansard, 28 June 1900, 84, cc. 1405).

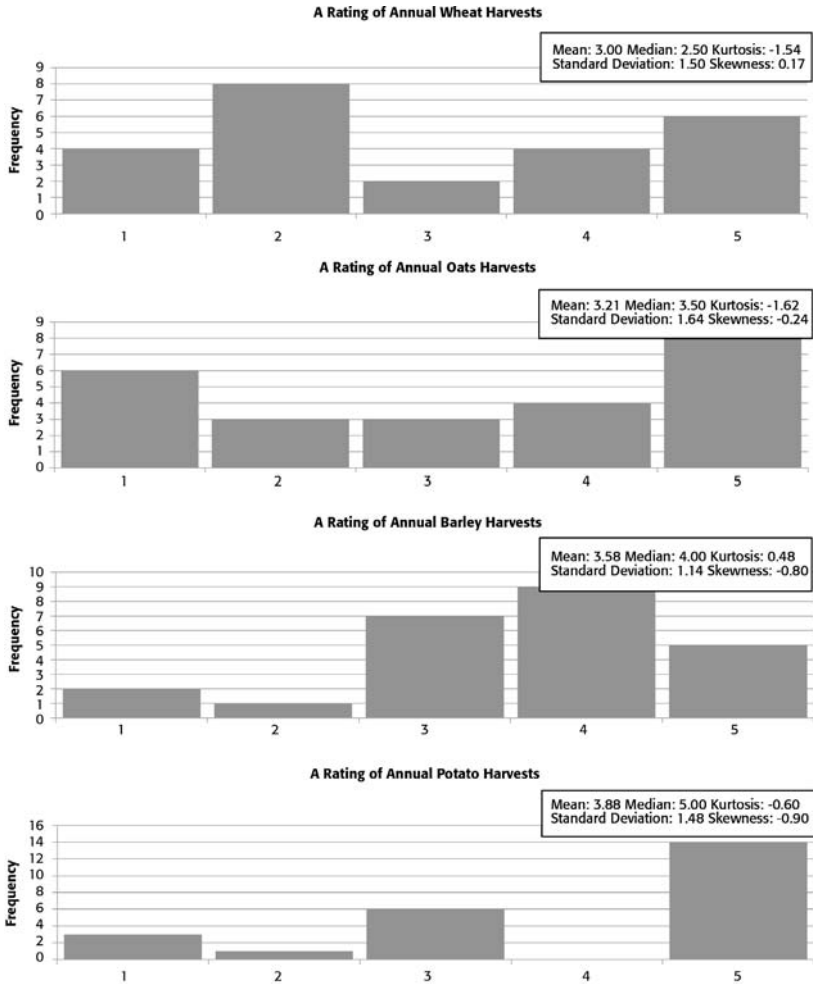
paper accounts did not report harvest quantities but harvest evaluations.

A redeeming feature of these harvest evaluations, however, is that they used rather consistent language that made possible their clear delineation into five categories: "very poor", "poor", "average", "good" and, finally, "very good."²⁸ Following the lead, and relying on the work, of Solar (1989), these evaluations/categories are converted into quantifiable ratings, ranging from 1 to 5, which is a more convenient way of summarizing the information so that the variations in harvests of each crop and the co-variations across crops throughout this period may be examined more systematically. A frequency distribution chart was then constructed for each of four titheable crops – wheat, oats, barley and potatoes – by region and displayed in Figures 1 and 2. These harvests are also combined with their respective commodity prices to provide an estimate of gross revenues that will allow for a calculation of a farmer's entire exposure to revenue risks.

Before commencing an investigation into the revenue risks associated with the major crops grown in Ireland, a cursory visual inspection of the harvest results shown in Figures 1 and 2 is itself informative. In the southeast, the frequency distribution of harvests for oats, barley and potatoes is skewed to the left, whereas that for wheat is skewed to the right. In the northeast, the distribution for wheat, oats and barley is skewed to the left, while that of potatoes is skewed to the right. The distributions of these eight harvests also fail to exhibit normal properties (e.g., all kurtosis statistics are significantly less than 3); the tails of the eight frequency distributions are, therefore, relatively large and worthy of further scrutiny, particularly those whose skew is also positive. Indeed, the scarcity end of the harvest rating continuum, where the adverse impacts of the revenue risks would likely be acutely felt by tillage farmers, is telling. Harvests rated as "very poor" or "poor" for barley (3 of 24

²⁸ See Solar (1989), p. 160, for his analysis of the reporters' interpretations of the harvest results.

Figure 1
Harvest Ratings for Selected Crops in Southeast Ireland, 1819-1842

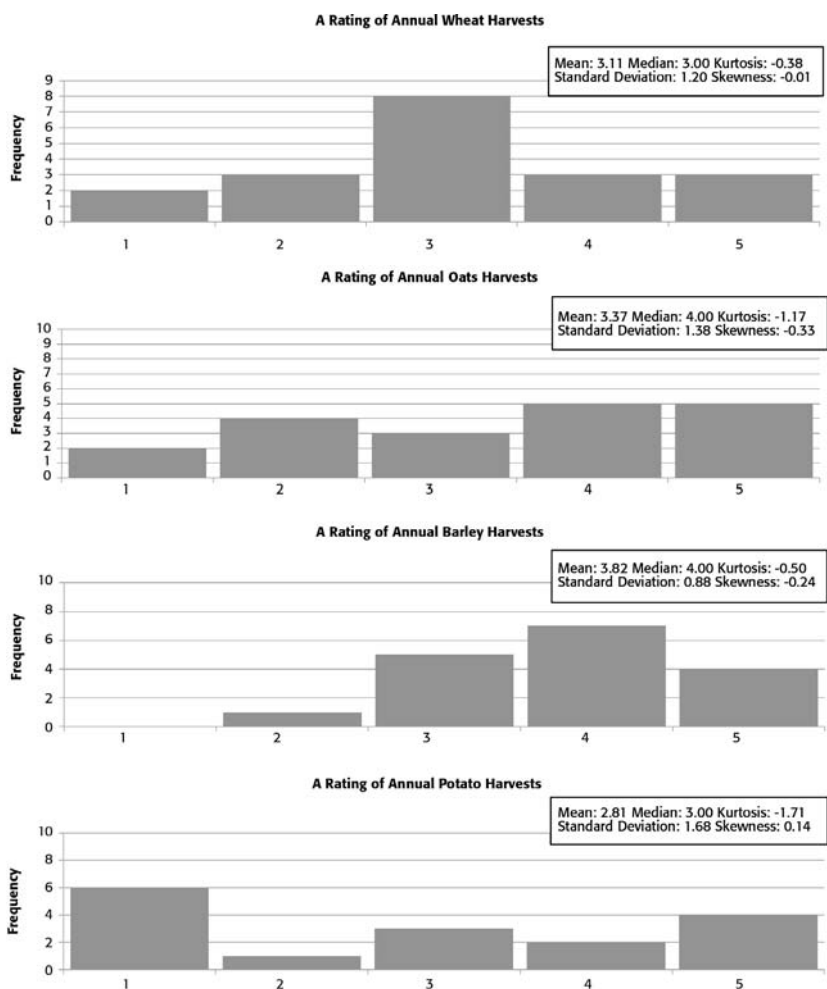


Note: Harvest ratings are: 1 = "very poor", 2 = "poor", 3 = "average", 4 = "good", 5 = "very good".

Source: Solar (1989), Table 1, p. 160.

harvests) and potatoes (4 of 24) in southeast Ireland and for barley (1 of 17) and wheat (5 of 19) in northeast Ireland were quite infrequent during this period. These outcomes contrast sharply with their frequencies for wheat (12 of 24 harvests) and oats (9 of 24) in south-

FIGURE 2
Harvest Ratings for Selected Crops in Northeast Ireland, 1824-1842



Note: Harvest ratings are: 1 = "very poor", 2 = "poor", 3 = "average", 4 = "good", 5 = "very good".

Source: Solar (1989), Table 1, p. 160.

east Ireland and for potatoes (7 of 16) in northeast Ireland that happened with strikingly greater regularity.

Moving on to overall revenue risks – market price and crop yield risks – facing wheat, oats, barley and potato producers for the years

1824 to 1837 (the years the tithe as a lump-sum land tax would have applied to tillage farmers of parishes who voluntarily compounded their tithe from the outset of reform), the estimates are shown in Tables 1 and 2.²⁹ In both of these tables, the annual gross crop revenue figure was obtained by multiplying the average annual regional price of the commodity by its regional harvest rating for that year.

TABLE 1
Southeast Ireland Average Annual Prices and Harvest Ratings
for Wheat, Oats, Barley and Potatoes, and Estimated Annual Gross Crop
Revenue Ratings, 1824-1837

Year	Wheat			Oats			Barley			Potatoes		
	Price (s/cwt) (<i>p</i>)	Harvest Rating (<i>h</i>)	Gross Revenue Rating (<i>p-h</i>)	Price (s/cwt) (<i>p</i>)	Harvest Rating (<i>h</i>)	Gross Revenue Rating (<i>p-h</i>)	Price (s/cwt) (<i>p</i>)	Harvest Rating (<i>h</i>)	Gross Revenue Rating (<i>p-h</i>)	Price (s/cwt) (<i>p</i>)	Harvest Rating (<i>h</i>)	Gross Revenue Rating (<i>p-h</i>)
1824	11.67	5	58.34	6.61	5	33.05	8.54	5	42.69	2.31	3	6.92
1825	11.82	5	59.08	6.89	2	13.77	7.80	3	23.40	2.74	3	8.22
1826	10.93	3	32.79	7.79	1	7.79	8.30	1	8.30	3.50	3	10.50
1827	10.21	2*	20.42	7.05	5	35.29	7.66	4	30.64	2.87	5	14.35
1828	11.26	1	11.26	6.13	1	6.13	7.56	3	22.68	1.27	5	6.35
1829	12.54	2	25.08	6.61	3	19.83	6.84	4	27.36	2.07	3*	6.21
1830	12.26	2	24.52	6.68	5	33.40	6.78	4	27.12	2.50	5	12.50
1831	12.21	5	61.05	6.89	2	13.78	7.31	4	29.24	2.10	5	10.50
1832	10.21	5	51.05	5.11	1	5.11	6.81	5	34.05	1.80	5	9.00
1833	9.55	4	38.20	4.61	4	18.44	5.75	4	23.00	1.65	1	1.65
1834	8.41	2*	16.82	5.04	1	5.04	5.56	4	22.24	2.02	5	10.10
1835	7.60	2*	15.20	5.93	5	29.65	5.44	5	27.20	1.68	5	8.40
1836	10.17	3	30.51	6.89	4	27.56	6.48	4	25.92	1.98	3	5.94
1837	10.59	2	21.18	6.71	5	33.55	6.00	3	18.00	2.05	5	10.25
Mean	10.67	3.07	33.25	6.35	3.14	20.17	6.92	3.79	25.85	2.18	4.00	8.64
Std. Dev.	1.46	1.44	17.43	0.89	1.75	11.71	1.00	1.05	7.83	0.57	1.30	3.16
C.V.	0.14	0.47	0.52	0.14	0.56	0.58	0.14	0.28	0.30	0.26	0.33	0.37

Notes: The price of the tithe-able article is denominated in British shillings per hundredweight (cwt) and harvest ratings are: 1 = "very poor", 2 = "poor", 3 = "average", 4 = "good", 5 = "very good"; * = difficult to classify; Std. Dev. = standard deviation; C.V. = coefficient of variation; *p* = price; and *h* = harvest rating.

Sources: Solar (1989), Table 1, p. 160; Kennedy and Solar (2007), Appendix Tables A.1, A.3, A.5 and A.6, pp. 129-156.

²⁹ The mean and standard deviation for the harvest ratings over the 1824-1837 period, as shown in Tables 1 and 2, are different from those covering the 1819-1842 and the 1824-1842 periods as shown in Figures 1 and 2, respectively. In fact, the 1824-1837 harvests found in Tables 1 and 2 were generally more abundant and less variable than those of the 1819-1842 and 1824-1842 periods, except for oats in the southeast and barley in the northeast.

TABLE 2
Northeast Ireland Average Annual Prices and Harvest Ratings
for Wheat, Oats, Barley and Potatoes, and Estimated Annual Gross Crop
Revenue Ratings, 1824-1837

Year	Wheat			Oats			Barley			Potatoes		
	Price (s/cwt) (p)	Harvest Rating (h)	Gross Revenue Rating (p-h)	Price (s/cwt) (p)	Harvest Rating (h)	Gross Revenue Rating (p-h)	Price (s/cwt) (p)	Harvest Rating (h)	Gross Revenue Rating (p-h)	Price (s/cwt) (p)	Harvest Rating (h)	Gross Revenue Rating (p-h)
1824	12.72	4	50.88	7.53	4	30.13	9.41	4	37.62	1.14	5	5.72
1825	13.18	5	65.91	7.56	4	30.24	9.15	4	36.59	2.06	n.a.	n.a.
1826	11.92	3	35.76	7.94	3	23.82	8.78	n.a.	n.a.	2.52	n.a.	n.a.
1827	10.39	5	51.95	8.49	5	42.45	8.16	5	40.80	2.51	5	12.55
1828	11.59	3	34.77	6.60	1	6.60	7.56	3	22.68	1.32	5	6.60
1829	12.69	2	25.38	6.83	3	20.49	8.22	4	32.88	1.62	1	1.62
1830	13.00	3*	39.00	7.50	2	15.00	7.66	3	22.98	2.45	1	2.45
1831	12.69	4	50.76	7.57	4	30.28	8.07	3	24.21	1.98	5	9.90
1832	11.09	3	33.27	5.43	5	27.15	7.58	4*	30.32	1.07	4	4.28
1833	10.47	2	20.94	5.35	3	16.05	6.53	4	26.12	1.33	1	1.33
1834	8.21	3	24.63	5.81	4	23.24	5.31	4	21.24	1.74	4	6.96
1835	7.71	3	23.13	6.71	2	13.42	6.83	3	20.49	1.33	2	2.66
1836	9.78	3	29.34	6.88	2	13.76	7.19	2	14.38	1.98	1	1.98
1837	11.35	3*	34.05	6.52	5	32.60	7.29	5	36.45	1.89	1	1.89
Mean	11.20	3.29	37.13	6.91	3.36	23.23	7.70	3.69	28.21	1.78	2.92	4.83
Std. Dev.	1.73	0.91	13.22	0.93	1.28	9.64	1.08	0.85	8.11	0.50	1.88	3.62
C.V.	0.15	0.28	0.36	0.13	0.38	0.42	0.14	0.23	0.29	0.28	0.64	0.75

Notes: The price of the tithe-able article is denominated in British shillings per hundredweight (cwt) and harvest ratings are: 1 = "very poor", 2 = "poor", 3 = "average", 4 = "good", 5 = "very good"; * = difficult to classify; Std. Dev. = standard deviation; C.V. = coefficient of variation; p = price; and h = harvest rating.

Sources: Solar (1989), Table 1, p. 160; Kennedy and Solar (2007), Appendix Tables A.1, A.3, A.5 and A.6, pp. 129-156.

Although the harvest rating is not a physical quantity, in order to be able to undertake a systematic review, it is treated as one. In taking this approach, the revenue figure is obviously not a cash amount but a rating and its coefficient of variation – the statistic of most interest – should provide a good proxy for the coefficient of variation of the actual crop revenue earned by these farmers (as a group, not on an individual basis).

From Tables 1 and 2, it appears that the harvests of the tillage sector in both regions of Ireland were superior to what was believed to be the norm, except in the case of potatoes in the northeast. In the southeast, the average harvest of the selected crops for the period

ranged from a rating of 3.07 for wheat to 4.00 for potatoes when the norm for the era was 3.00. In particular, the harvests in 1824, 1832 and 1835 were exceptionally bountiful, and only in 1826 was the southeast Irish tillage sector gripped by a general malaise. In the northeast, the average harvest of the selected crops for the period ranged from a rating of 2.92 for potatoes to 3.69 for barley. The years 1824, 1825 and 1827 were markedly plentiful, while the years 1830, 1835 and 1836 saw the tillage sector suffering substandard harvests. Commodity prices in both regions, on the other hand, were mostly stable and strong from 1824 to 1831, followed by a general weakness from 1832 through 1835 before rebounding thereafter. Despite these trends in prices and harvests, no clear pattern in gross revenue ratings emerged in about half of these cases. In the other half, such as wheat and barley producers in the southeast and wheat and potato producers in the northeast, they saw a rather steady decline in their gross revenue ratings from 1824 to 1837.

More interestingly, both the average annual commodity price and the average annual harvest of all four crops across both regions showed considerable variability throughout this period. In terms of average annual prices, proportionately, wheat, oats and barley prices (across northeast and southeast Ireland) varied the least, with standard deviations of between 13 and 15 per cent of the means (i.e., the coefficients of variation in Tables 1 and 2). Potato prices in Ireland, whether in the northeast or southeast, varied about twice as much as the prices of the other three crops, with standard deviations of between 26 and 28 per cent of the means, respectively.

The variability in the harvests of these commodities during this period was quite a different matter. Potato harvest ratings in the northeast varied drastically, with a standard deviation of 64 per cent of the mean. Oats and wheat harvest ratings in the southeast also varied a lot, with standard deviations of 56 and 47 per cent of the mean, respectively, followed by oats harvests in the northeast and potato harvests in the southeast with standard deviations of 38 and 33 per cent of the mean, respectively. Barley harvest ratings, on the other hand, varied the least of the four crops, with a standard devi-

ation of 23 and 28 per cent of the mean in northeast and southeast Ireland, respectively. Quite clearly, harvest ratings proved to be the more variable of the two factors directly affecting gross revenues as measured by their coefficient of variation. Only in the case of potatoes in the southeast did price fluctuations begin to approach harvest fluctuations in terms of magnitude (i.e., a coefficient of variation of 0.26 versus 0.33, respectively).

As noted above, the prices and harvest ratings for each crop in each year were multiplied to give us the estimated annual gross revenue ratings by crop and region. From 1824 to 1837, the estimated annual gross revenue measure, or rating, for farmers in southeast Ireland by crop was: wheat, 33.25; oats, 20.17; barley, 25.85; and potatoes, 8.64. The associated standard deviation in this measure by crop was: wheat, 17.43; oats, 11.71; barley, 7.83; and potatoes, 3.16. When revenue risk is measured in proportional terms, oats producers, with a coefficient of variation of 0.58, bore the greatest risk during this period, followed by wheat producers at 0.52, potato producers at 0.37, and barley producers at 0.30. In the northeast of the country, the estimated annual gross revenue rating for farmers by crop was: wheat, 37.13; oats, 23.23; barley, 28.21; and potatoes, 4.83. The associated standard deviation in this measure by crop was: wheat, 13.22; oats, 9.64; barley, 8.11; and potatoes, 3.62. Once again, when revenue risk is measured in proportional terms, potato producers bore the greatest risk during this period, with a coefficient of variation of 0.75, followed by oats producers at 0.42, wheat producers at 0.36, and barley producers at 0.29.

As the above data clearly show, crop farming in Ireland involved considerable revenue risk. Both price and harvest fluctuations were inherent sources of financial instability to this sector, but converting the tithe from the monetary tithe or *modus decimandi* to a cash composition would shift the clergy's portion of this risk to the tithe-payer and thus add to the farmer's risk. Obviously, there would have to be a *quid pro quo* benefit for the tillage farmer if such a reform was to meet with general acceptance within a parish. And Parliament's chosen compensation was a lower tithing rate executed through a rev-

enue-neutral parish composition that was to be paid by all landholders including, for the first time, graziers. However, whether recognized or not, the expected lower tithing rate for a tillage farmer from spreading the tithe over a wider land base would be followed by higher rent rates on tillage land once the lease with the landlord expired and came up for renewal, since it was the landlord who ultimately bore the burden of an *ad valorem* production tax such as the monetary tithe. Thus, the tillage farmer's lower tithing rate would provide a temporary benefit at best and, in the end, the upshot of parishioners choosing to convert their tithe into a composition, for the farmer, was that he could be subject to greater revenue risk in perpetuity. Possibly recognizing these eventual developments, tillage farmers tenaciously negotiated huge reductions in their tithing rates with their clergy to increase this temporary benefit. Indeed, the ensuing tithing rate reductions to tillage farming would prove to be so great that they likely resulted in, not a revenue-neutral composition, but a substantial reduction in the aggregate tithe revenues received by the parish.

This last scenario seems to reflect the realities of the case. As was suggested in the previous section, a number of presiding bishops rejected agreements struck between the clergy and parishioners that they believed contained unacceptably low composition levels, levels considerably below the church's legal entitlement. The tithing rate data (shown in Table 3) tend to confirm this scenario as well. Table 3 compares the tithing rates imposed on the selected commodities under the "old system" and before composition to those under composition. The latter were levied on as many as nine grades of land across southeast and northeast Ireland.³⁰ The tithing rates on cereal crops in southeast Ireland, which ranged from 8s to 12s per statute acre before composition, were reduced to 11½d and 2s 4d per statute

³⁰ The tithing rates on land designated as "poor quality" are not included in the calculation since a portion of this land (and its three grades) was most likely not under tillage before the composition was put into effect and, thus, it was newly tithe-able and not directly comparable to tithing rates prior to composition.

acre or by 88 and 71 per cent, respectively. By comparison, the tithing rates on cereal crops in northeast Ireland, which ranged from 5s 5d to 8s per acre, were reduced to 7½d and 3s per acre or by 88 and 62 per cent, respectively. Thus, the tithing rate schedule of east Ulster, which had been generally lower than that of southeast Ireland before composition, ended up generally higher.

TABLE 3
Selected County and Regional Tithing Rates per Statute Acre
Under the Monetary Tithe and the Composition Tithe

Region	Regime	Criterion	Monetary Tithe			Composition Tithe	
			Wheat & Barley	Oats	Potatoes	Medium Quality Land	Good Quality Land
	Kilkenny		10s	8s	10s	1s 3d	2s 4d
	Wexford		12s	8s	10s	11 ½d	1s 5¾d
	Munster		10s 6d	8s	10s 4d	1s 5¼d	
	Antrim					7½d	1s 5d
	Armagh		8s	5s 5d	nil	1s 1½d	3s
	Down					1s 8¼d	2s 11d

Note: The tithing rates were not available by county or land quality in Munster.

Source: John C. Erck, in Dwyer (1833), Appendix D, pp. 47-101.

These new, much lower rates on tillage land offered a significant temporary benefit to many, but not all, crop farmers from parishes that converted their tithe into a composition (see Table 4). For example, wheat and barley farmers gained, on average, anywhere from 6.3s per statute acre on medium-quality lands in County Down to 11s per statute acre on medium-quality lands in County Wexford. On good-quality lands, these grain producers gained slightly less, averaging as little as 5s per acre in County Armagh to as high as 10.5s per acre in County Wexford. Oats farmers, on the other hand, gained somewhat less than wheat and barley producers; their average gains ranged from 3.7s to 7.0s per acre on medium-quality lands, but only 2.4s to 6.5s per acre on good-quality lands across northeast and southeast Ireland.

Potato farmers, on the other hand, recorded mixed results. In Munster, they gained more than oats producers but less than wheat and barley producers. In the southeast, potato farmers gained, on average, from 8.8s to 9s per acre on medium-quality lands and from 7.7s to 8.7s per acre on good-quality lands but, in the northeast, they actually lost from the conversion. Indeed, given that in counties Antrim, Armagh and Down the Church of Ireland clergy did not levy a tithe on potatoes under the *modus decimandi* regime, potato farmers' losses exactly equalled the new tithing rate. These losses averaged from as little as 0.6s per acre on the medium-quality lands of County Antrim to as much as 3s per acre on the good-quality lands of County Armagh.³¹

These estimates of temporary gains and losses can also be viewed from an income perspective, using commodity price and yield data for the 1824-1831 period. Table 4 converts the temporary gains and losses related to a lower or higher tithing rate per acre into a percentage of market value per acre.³² Accordingly, wheat farmer gains varied, on average, between 3.6 and 8.2 per cent of the market value of an acre's production between 1824 and 1831. The fortunes of barley and oats farmers were similar to those of wheat farmers, with their gains averaging between 3.6 and 8.8 per cent and between

³¹ Caveat: these crop farmer gains and losses are temporary in nature, up until their appropriation by their landlords on the expiry and renewal of their leases. Landlord gains on tillage lands (which exclude the potato lands of counties Antrim, Armagh and Down) could be expected to be greater than these estimates as they would also include the allocative efficiency gains (i.e., recoupment of the deadweight loss) from the reform of the tithe. Landlord losses on grazing lands and the potato lands of counties Antrim, Armagh and Down from the new tithe would not kick in until the expiry and renewal of their leases.

³² If a gradation of land is to have any meaning at all, lands of different quality would exhibit different yields. However, such data do not exist for this time period. In their place, the estimated average country-wide yields per acre for the period were used: wheat, 12.5 hundredweight (cwt), oats, 13.0 cwt, barley, 18.0 cwt, and potatoes, 127.9 cwt (see Ó Gráda, 1988, Table 12, p. 62). Therefore, the estimates of the gain/loss as a percentage of market value per acre in Table 4 are overstated in the case of medium-quality land and understated in the case of good-quality land. Caution should, therefore, be observed.

TABLE 4
Average Annual Benefit (Loss) to Farmers of Parishes that Compounded
their Tithe by Selected Commodity and Land Quality per Statute Acre
and as a Percentage of Market Value per Statute Acre - 1824-1831

Crop		Wheat		Barley		Oats		Potatoes	
Tithing Rate		per acre	% of market value	per acre	% of market value	per acre	% of market value	per acre	% of market value
Region - Land Quality									
Kilkenny	– Good	7s 8d	5.8	7s 8d	6.2	5s 8d	6.9	7s 8d	2.8
	– Medium	8s 9d	6.6	8s 9d	7.0	6s 9d	8.2	8s 9d	3.1
Wexford	– Good	10s 6d	7.9	10s 6d	8.4	6s 6d	7.9	8s 8½d	3.1
	– Medium	11s	8.2	11s	8.8	7s	8.5	9s	3.2
Munster		9s	6.7	9s	7.2	6s 6d	7.9	8s 11d	3.2
Antrim	– Good	6s 7d	4.7	6s 7d	4.7	4s	4.5	-1s 5d	(0.6)
	– Medium	7s 5d	5.3	7s 5d	5.4	4s 9d	5.3	-7½d	(0.3)
Armagh	– Good	5s	3.6	5s	3.6	2s 5d	2.7	-3s	(1.3)
	– Medium	6s 10d	4.9	6s 10d	4.9	4s 4d	4.8	-1s 1½d	(0.5)
Down	– Good	5s 1d	3.6	5s 1d	3.7	2s 6d	2.8	-2s 11d	(1.3)
	– Medium	6s 4d	4.5	6s 4d	4.6	3s 8½d	4.1	-1s 8½d	(0.7)

Sources: Tithe data from John C. Erck, in Dwyer (1833), Appendix D, pp. 47-101; price data from Kennedy and Solar (2007), Appendix Tables A.1, A.3, A.5 and A.6, pp. 129-156; yield data from Ó Gráda (1988), Table 12, p. 62.

2.7 and 8.2 per cent of the market value of an acre's production, respectively. In all three cases, southeast Irish cereal farmers' gains were much more substantial than those of their counterparts in the northeast. Potato farmers' gains in the southeast, on the other hand, were much more modest, averaging between 2.8 and 3.2 per cent of the market value of an acre's production. In the northeast, potato farmers incurred losses averaging from 0.3 to 1.3 per cent of the market value of an acre's production.

These estimates of temporary economic gain must also, at the very least, be weighed against the estimated cost of the additional risk borne during this period if a short-term net benefit is to be found, let alone be deemed sufficient to offset the cost of perennial increased revenue risk. To get a handle on the difference in the levels

of risk borne by farmers of parishes who converted their tithe into a composition in 1824 versus those that did not, the new tithing rates are reorganized in terms of an acre's output in hundredweights (cwt). Thus, these tithing rates in southeast Ireland, using estimates of average crop yields for the period,³³ convert into a tithing rate schedule ranging from about 0.25s to 0.57s (or about 3d to 7d) per cwt when wheat is grown on land designated as of medium or good quality, respectively. The maximum tithe thus represents just 1.6 per cent of gross wheat revenues for the 1824-1831 period. For oats, barley and potatoes, these new tithing rates result in a schedule ranging from about 0.22s to 0.54s, 0.16s to 0.39s, 0.02s to 0.12s per cwt, respectively, where the maximum tithe for each crop represents just 2.7, 1.7 and 0.7 per cent of gross crop revenues for the 1824-1831 period, respectively.

The new tithing rates in northeast Ireland, using the same estimates of average crop yields for the period as in the southeast, generate a schedule ranging from about 0.15s to 0.74s (or about 2d to 9d) per cwt when wheat is grown on land designated as of medium or good quality, respectively. This maximum tithe represents just 2.0 per cent of gross wheat revenues for the 1824-1831 period. For oats, barley and potatoes, these new tithing rates convert into a schedule ranging from about 0.14s to 0.69s, 0.10s to 0.69s, 0.01s to 0.07s per cwt, respectively, and where the maximum tithe for each crop represents just 2.9, 1.9 and 1.1 per cent of gross crop revenues for the 1824-1831 period, respectively.

These maximum tithing rates in percentage terms are multiplied by the average gross revenue rating for each crop in each region, as presented in Tables 1 and 2, to provide comparable annual tithing rates under the composition regime. These tithing rates, when subtracted from their respective annual gross revenue rating, provide the annual net revenue ratings for each crop in each region. Tables 5 and 6 display the results of these calculations but, more importantly,

³³ The estimated average yields are found in footnote 32.

Table 5
 Southeast Ireland Estimated Composition Tithing Rates per Acre
 and Annual Gross and Net Revenue Ratings per Acre of Wheat, Oats,
 Barley and Potatoes, 1824-1831

Year	Wheat			Oats		
	Gross Revenue Rating ($p \cdot h$)	Composition Tithing Rate (τ)	Net Revenue Rating ($p \cdot h - \tau$)	Gross Revenue Rating ($p \cdot h$)	Composition Tithing Rate (τ)	Net Revenue Rating ($p \cdot h - \tau$)
1824	58.34	0.57	57.76	33.05	0.54	32.51
1825	59.08	0.57	58.50	13.77	0.54	13.23
1826	32.79	0.57	32.22	7.79	0.54	7.25
1827	20.42	0.57	19.85	35.29	0.54	34.71
1828	11.26	0.57	10.69	6.13	0.54	5.59
1829	25.08	0.57	24.51	19.83	0.54	19.29
1830	24.52	0.57	23.95	33.40	0.54	32.86
1831	61.05	0.57	60.48	13.78	0.54	13.24
Mean	36.57		35.99	20.37		19.83
Std. Dev.	19.90		19.90	11.95		11.95
C.V.	0.54		0.55	0.59		0.60

Year	Barley			Potatoes		
	Gross Revenue Rating ($p \cdot h$)	Composition Tithing Rate (τ)	Net Revenue Rating ($p \cdot h - \tau$)	Gross Revenue Rating ($p \cdot h$)	Composition Tithing Rate (τ)	Net Revenue Rating ($p \cdot h - \tau$)
1824	42.69	0.39	42.30	6.92	0.05	6.87
1825	23.40	0.39	23.01	8.22	0.05	8.17
1826	8.30	0.39	7.91	10.50	0.05	10.45
1827	30.64	0.39	30.25	14.35	0.05	14.30
1828	22.68	0.39	22.29	6.35	0.05	6.30
1829	27.36	0.39	26.97	6.21	0.05	6.16
1830	27.12	0.39	26.73	12.50	0.05	12.45
1831	29.24	0.39	28.85	10.50	0.05	10.45
Mean	26.43		26.04	9.44		9.39
Std. Dev.	9.59		9.59	3.01		3.01
C.V.	0.36		0.37	0.32		0.32

Notes: Std. Dev. = standard deviation, C.V. = coefficient of variation, p = price, h = harvest rating and τ = tithe.

TABLE 6
Northeast Ireland Estimated Composition Tithing Rates per Acre
and Annual Gross and Net Revenue Ratings per Acre of Wheat,
Oats, Barley and Potatoes, 1824-1831

Year	Wheat			Oats		
	Gross Revenue Rating ($p \cdot h$)	Composition Tithing Rate (τ)	Net Revenue Rating ($p \cdot h - \tau$)	Gross Revenue Rating ($p \cdot h$)	Composition Tithing Rate (τ)	Net Revenue Rating ($p \cdot h - \tau$)
1824	58.34	0.57	57.76	33.05	0.54	29.44
1825	59.08	0.57	58.50	13.77	0.54	29.55
1826	32.79	0.57	32.22	7.79	0.54	23.13
1827	20.42	0.57	19.85	35.29	0.54	41.76
1828	11.26	0.57	10.69	6.13	0.54	5.91
1829	25.08	0.57	24.51	19.83	0.54	19.80
1830	24.52	0.57	23.95	33.40	0.54	14.31
1831	61.05	0.57	60.48	13.78	0.54	29.59
Mean	36.57		35.99	20.37		24.19
Std. Dev.	19.90		19.90	11.95		11.00
C.V.	0.54		0.55	0.59		0.45

Year	Barley			Potatoes		
	Gross Revenue Rating ($p \cdot h$)	Composition Tithing Rate (τ)	Net Revenue Rating ($p \cdot h - \tau$)	Gross Revenue Rating ($p \cdot h$)	Composition Tithing Rate (τ)	Net Revenue Rating ($p \cdot h - \tau$)
1824	37.62	0.49	37.14	5.72	0.07	5.65
1825	36.59	0.49	36.10			
1826	40.80	0.49				
1827			40.31	12.55	0.07	12.48
1828	22.68	0.49	22.19	6.60	0.07	6.53
1829	32.88	0.49	32.39	1.62	0.07	1.55
1830	22.98	0.49	22.49	2.45	0.07	2.38
1831	24.21	0.49	23.72	9.90	0.07	9.83
Mean	31.11		30.62	6.47		6.40
Std. Dev.	7.68		7.68	4.22		4.22
C.V.	0.25		0.25	0.65		0.66

Notes: Std. Dev. = standard deviation, C.V. = coefficient of variation, p = price, h = harvest rating and τ = tithe.

they show the relative amount of extra revenue risk borne by tillage farmers whose parishes compounded their tithe immediately upon reform in 1824. It is quite clear from both tables that the tithing rates upon composition, already shown to be very low both in absolute terms and relative to their pre-composition levels and estimated crop revenue ratings, had very little impact on crop farmers' revenue risk from 1824 to 1831. For all four crops in both regions between 1824 and 1831, the coefficient of variation from gross to net crop revenues rose by at most one percentage point. Indeed, these data indicate that tillage farmers of tithe-compounded parishes across Antrim, Armagh, Down, Kilkenny, Tipperary, Waterford and Wexford, in general, would have faced little additional revenue risk from the new design of their tithe by comparison with their counterparts in parishes that chose not to compound the tithe. Skilful and effective negotiation of their parish composition and the tithing rate formulae were clearly pivotal in this outcome.

Farming was manifestly a risky business in Ireland, in particular wheat, oats and potato farming, both in the southeast and in the northeast. However, when and where possible, many crop farmers in Ireland and elsewhere sought to diversify their activities in the hope of mitigating this risk. Additional work by Solar (1989) is, therefore, pertinent. Solar analysed the co-variation of these crop harvests throughout the 1819-1842 period and found that in southeast Ireland hay and wheat harvests, and to a lesser extent oats and potato harvests, varied inversely, suggesting that the mixed farming of wheat and dairying or grazing had the effect of reducing the variations in farmers' incomes arising from yield fluctuations. The results for the co-variation between oats and potato harvests are weaker, but it suggests that by adding the potato to his crop portfolio the farmer in the south-east may have secured a large reduction in the variation of his income. His counterpart in east Ulster may have also gained from this diversification, but apparently not to the same extent.³⁴

³⁴ Solar (1989), pp. 163-164.

The data in Table 7 support two of these three conclusions. For example, the addition of hay to a farmer's wheat operations – a 50-50 split by weight – in southeast Ireland between 1824 and 1837 is estimated to reduce the coefficient of variation in gross crop revenue ratings from 0.52 to 0.23, or by more than 56 per cent. Similarly, the addition of a potato crop to a farmer's crop of oats – a 50-50 split by weight – in southeast Ireland between 1824 and 1837 is estimated to reduce the coefficient of variation in gross crop revenue ratings from 0.58 to 0.35, or by more than 65 per cent. However, adding the potato to a farmer's crop of oats – a 50-50 split by weight – in northeast Ireland between 1824 and 1837 is estimated to raise the coefficient of variation in gross crop revenue ratings from 0.38 to 0.50, or by more than 32 per cent.

TABLE 7
Estimated Annual Gross Crop Revenues of Mixed Wheat-Hay and Mixed Oats-Potato Farms in Southeast and Northeast Ireland, 1824-1837

Year	Southeast Ireland		Northeast Ireland
	Wheat-Hay (50%-50%)	Oats-Potatoes (50%-50%)	Oats-Potatoes (50%-50%)
1824	n.a.	17.83	19.52
1825	24.94	12.03	n.a.
1826	14.71	11.29	n.a.
1827	24.05	24.80	27.50
1828	19.86	11.10	11.88
1829	14.68	13.02	8.45
1830	22.32	22.95	7.46
1831	30.04	15.73	21.49
1832	25.52	10.37	14.63
1833	26.75	7.83	6.68
1834	18.34	10.59	15.10
1835	17.19	19.03	8.04
1836	16.75	15.52	6.65
1837	21.15	21.90	12.62
Mean	21.25	15.28	13.33
Std. Dev.	4.84	5.30	6.66
C.V.	0.23	0.35	0.50

Notes: Std. Dev. = standard deviation and C.V. = coefficient of variation.

Sources: Solar (1989), Table 1, p. 160; Kennedy and Solar (2007), Appendix Tables A.1, A.3, A.6 and A.7, pp. 129-156.

These findings indicate that the revenue risks to tillage farmers in southeast and northeast Ireland were substantial between 1824 and 1837 no matter the crop. When feasible, mixed-crop farming (e.g., wheat and hay, or oats and potatoes) may have been an effective means (at least in southeast Ireland) of alleviating the adverse impact of increased risk due to tithe reform. However, farmers of small single-crop operations and cottiers working a conacre plot who were risk-averse in income could not realistically expand or diversify their operations and would have most probably been net losers from the conversion over the longer term, whether they paid this tithe directly to the Church of Ireland or indirectly through its inclusion in the rent.³⁵ In the short to medium term, however, before the rents on tillage land begin to rise by approximately an equivalent amount to the tithing rate reductions on the expiry and renewal of their lease agreements, small farmers and cottiers who were risk-neutral in after-tax income could have benefited from the reform of the tithe and its tithing rate reductions. Even small farmers and cottiers who were moderately risk-averse in after-tax income might have benefited from the reform during this transition period, because the negotiated tithing rate reductions were huge in both absolute and relative terms, while the additional revenue risk was relatively insignificant. Therefore, for most tillage farmers, the temporary benefits of tithe reform likely outweighed the temporary costs associated with this additional revenue risk.

4. Factors Influencing Parish Composition Levels

A parish's schedule of tithing rates, reflecting what could be produced on any parcel of parish land or, indirectly, the different qual-

³⁵ The Report of the Devon Commission (1845) concluded that an 8-acre landholding was "the lowest size that would support a family in comfort" (MacGregor (1992), p. 480). Somewhat in confirmation, Henry Inglis recounted that in one encounter in County Cork: "The landlord () laid down a rule, that he will have no tenant with a smaller possession than eight acres; because, in an upland country, no man can be comfortable on a less quantity of land ()" (Inglis, 1835, p. 217).

ities of its lands, would itself be a formulation derived from the aggregate composition negotiated by the clergy and parishioners. But this negotiated composition would then, in turn, be the outcome of the economic pressures faced by parishioners and clergy alike. In all probability, these pressures can be presumed to be related to the demographic and agricultural make-up of the parish. A statistical analysis of these structural conditions would therefore seem to be in order.

A number of OLS regressions were run to assess the significance of the variables that could be expected to influence the aggregate tithe composition of a parish. And given that the data are organized on a county basis, each regression was conducted on the average parish tithe composition level (COMPOSITION) per county in 1831. The independent variables chosen were:

POP-PARISH = average population per parish by county in 1831 (see Table 8);

M&B/CULT-LAND = percentage of unimproved mountain & bog land to cultivated land in acres in 1831 (see Table 8);

GRAZE-LAND = percentage of total land available for grazing in 1851;

POT/WHEAT = ratio of land under potatoes to land under wheat in 1851 (see Table 12);

OATS/CROP = ratio of land under oats to total cropland in 1851;

BARLEY/CROP = ratio of land under barley to total cropland in 1851;

RYE/CROP = ratio of land under rye to total cropland in 1851.³⁶

³⁶ The earliest data on acreages of grazing, wheat, barley, oats, rye and potato land and on the herds of cows and pigs available on a county basis are for 1847. However, the 1851 data were chosen to avoid any biases possibly entailed by the 'Great Famine' (1845-1850). It should nevertheless be recognized that by comparison with the 1820s and 1830s these data reflected an agricultural economy vastly changed by the potato blight and the deaths and emigration associated with the famine.

Table 8
Population, Parishes, Land Acreage and Tithe Revenue
in 1831 by County and Province

Province County	Population		Land Acreage			Tithe Composition Revenue	
	Residents	Parishes	Total	Cultivated	Mountain & Bog Land	Total	Average per Parish
Ulster							
Antrim	323,306	63	758,886	483,106	225,970	8,317	319.9
Armagh	220,651	21	328,183	267,317	42,472	5,441	544.1
Cavan	228,050	28	473,449	421,462	30,000	4,581	229.1
Derry	222,416	48	518,270	372,667	136,038	12,486	462.4
Donegal	291,140	59	1,165,107	520,736	644,371	13,663	546.5
Down	352,571	21	611,404	502,677	108,569	7,995	399.8
Fermanagh	149,555	39	471,348	320,599	101,952	1,985	220.6
Monaghan	195,532	21	327,048	309,968	9,236	8,114	477.3
Tyrone	302,943	36	754,395	555,820	171,314	17,419	561.9
Leinster							
Carlow	81,576	43	219,863	196,833	23,030	10,791	359.7
Dublin	386,694	88	248,631	237,819	10,812	10,197	226.6
Kildare	108,401	104	392,435	325,988	66,447	10,347	202.9
Kilkenny	193,024	139	513,686	417,117	96,569	16,494	274.9
Laois	145,843	51	528,166	335,838	60,970	13,563	356.9
Longford	112,391	21	263,645	192,506	55,247	5,691	406.5
Louth	125,533	57	206,261	191,345	14,916	4,409	220.5
Meath	177,023	145	567,127	561,527	5,600	22,212	249.6
Offaly	144,029	46	396,810	394,569	133,349	11,361	264.2
Westmeath	148,161	64	386,251	313,935	55,982	10,478	227.8
Wexford	182,991	132	564,479	545,979	18,500	13,502	275.6
Wicklow	122,301	54	494,704	400,704	94,000	7,659	218.8
Munster							
Clare	258,262	84	802,352	524,113	259,584	14,098	188.0
Cork	807,366	259	1,769,563	1,068,803	700,760	59,498	428.0
Kerry	219,989	87	1,148,720	581,189	552,868	16,766	209.6
Limerick	300,080	137	674,783	582,802	91,981	22,226	281.3
Tipperary	402,598	194	1,013,173	819,698	182,147	40,134	255.6
Waterford	176,898	66	471,281	353,247	118,034	12,193	290.3

(continued)

(continued)

Table 8
Population, Parishes, Land Acreage and Tithe Revenue
in 1831 by County and Province

Province County	Population		Land Acreage			Tithe Composition Revenue	
	Residents	Parishes	Total	Cultivated Statute acres	Mountain & Bog Land	Total	Average per Parish £
Connaught							
Galway	427,407	122	1,485,533	945,212	464,957	19,200	188.2
Leitrim	141,303	18	420,375	266,640	128,167	401	200.5
Mayo	367,956	70	1,355,048	871,984	425,124	7,746	203.8
Roscommon	239,903	56	607,405	453,247	131,063	7,024	152.7
Sligo	171,508	39	454,887	257,217	168,711	5,184	216.0
Ireland	7,727,401	2,412	20,393,248	14,592,972	5,328,740	421,175	282.9
Ulster	2,286,164	336	5,408,070	3,754,352	1,469,922	80,001	432.4
Leinster	1,927,967	944	4,782,058	4,114,160	635,422	136,704	262.9
Munster	2,165,193	827	5,879,872	3,929,852	1,905,374	164,915	288.3
Connaught	1,348,077	305	4,323,248	2,794,608	1,318,022	39,555	186.6

Source: Griffith, Richard, Select Committee of the House of Commons (1832), Tables 2 and 4, p. 279 and p. 281.

A dummy variable (DPOT-TITHE) was also added, in order to single out the counties where the potato was tithe-able before the reform from those where it was not tithe-able, with the aim of determining whether either status had any influence on the aggregate parish composition.

POP-PARISH is simply the county's population divided by the number of parishes. The greater the average parochial population in a county, the greater the need for resources (e.g., benefices/incumbents) to serve parishioners and, in turn, the higher the composition level needed to procure these resources. One would therefore expect a positive coefficient for the POP-PARISH variable.

Unimproved mountain or bog land yields a lower agricultural output per acre than property designated either as arable or grazing land, and, as a consequence of the competition for land, lower rent

commensurate with this lower yield should be expected. It follows then that, the higher the ratio of unimproved mountain and bog land to cultivated land in a county, the lower the average rent for land in that county as a whole should be and, in turn, the greater the economic pressure to lower the parish compositions in the county. One would therefore expect a negative coefficient for the M&B/CULT-LAND variable.

GRAZE-LAND was calculated by subtracting a county's acreage under crops from its acreage classified as agricultural grade, which was then divided by the county's total acreage. Since this land is, on average, less productive and therefore less valuable than land designated as arable, the greater the extent of grazing land in a county, the greater the economic pressure to lower parish compositions in that county should be. One would, therefore, expect a negative coefficient for the GRAZE-LAND variable.

The POT/WHEAT variable provides a direct measure of the relative productivity of the land as demonstrated by its use, wheat farming being generally more productive than potato farming. Accordingly, the higher the county's ratio of land under potato cultivation to wheat cultivation, the lower the overall land productivity in the county should be, and the stronger the economic pressure to lower the parish compositions. One would therefore expect a negative coefficient for the POT/WHEAT variable.

The next three agricultural sector variables, OATS/CROP, BARLEY/CROP and RYE/CROP, refer to the ratios of lands under oats, barley and rye, respectively, to total cropland in a county. Oats production accounted for the greatest acreage of land under corn/cereal in Ireland at about that time (more than two-thirds of cereal cropland in 1851), distantly followed by wheat (less than 20 per cent), barley (less than 10 per cent) and rye (less than 1 per cent); and corn crops accounted for 53 per cent of total cropland.³⁷ The sheer dominance of oats production across Ireland implies that these farmers, as a

³⁷ British Parliament (1855), Table 3, pp. 31-34.

group, should have made the greatest contribution to a parish's composition. However, the higher prices and productivity of barley over oats suggest higher tithing rates, so that a greater relative contribution could be had from barley farming, as was the case with the monetary tithe.³⁸ One cannot, therefore, reliably predict the relationship of these three crops to a parish's composition or its average in any county; one could anticipate either a positive or negative coefficient for these variables.

Table 9
OLS Regressions Undertaken on the Average Parish Composition
across Ireland in 1831 and Summary Statistics

Equation	Constant	Independent Variables							DPOT-TITHE
		POP-PARISH	M&B/ CULT-LAND	CRAZE-LAND	POT/ WHEAT	OATS/ CROP	BARLEY/ CROP	RYE/ CROP	
1	287.55*** (150.16)	0.024*** (0.007)	-0.47 (1.40)	-4.96*** (2.12)	-12.34*** (4.26)	409.11*** (154.83)	-210.70 (334.69)	-4692.82 (3826.59)	115.46*** (26.30)
	n = 32		R ² = 0.852			R ² adj = 0.782		S.E.R. = 52.20	
2	216.80*** (75.24)	0.026*** (0.006)		-4.21*** (1.27)	-13.07*** (3.46)	456.84*** (131.61)		-5517.59** (3224.03)	109.57*** (21.85)
	n = 32		R ² = 0.850			R ² adj = 0.812		S.E.R. = 50.52	
Statistic		COMPOSITION (£)	POP-PARISH (ratio)	M&B/CULTLAND (%)	GRAZELAND (%)	POT/WHEAT (ratio)	OATS/CROP (ratio)	BARLEY/CROP (ratio)	RYE/CROP (ratio)
Mean		301.86	4,275	21.29	43.76	3.55	0.38	0.045	0.0038
Minimum		152.70	1,042	0.99	25.17	0.64	0.21	0.001	0.0003
Maximum		561.90	10,507	55.31	34.10	17.21	0.56	0.156	0.0140

Notes: n = number of observations; parentheses denote standard error of the coefficient; S.E.R. = standard error of the regression; *** (**) denotes significance at the 1% (5%) level; these means are simple county averages and are not weighted according to county size (e.g., acreage, number of parishes).

Sources: Griffith, Richard, Select Committee of the House of Commons (1832), Tables 2 and 4, p. 279 and p. 281; British Parliament (1855), Tables 3 and 9, p. 31 and p. 47.

³⁸ See Tables 1 and 2 and footnote 32.

The regressions testing the model are displayed in Table 9. The two equations testing the hypotheses on the determinants of the average parish composition per county in 1831 work well, explaining about 85 per cent of its variation.³⁹ Indeed, all but two (i.e., M&B/CULT-LAND and BARLEY/CROP) of the seven variables in equation 1 make a significant contribution to explaining the variation in the average parish composition per county in 1831. Thus equation 2, which includes the same variables as equation 1 with the exception of M&B/CULT-LAND and BARLEY/CROP, yields the best results.⁴⁰ All five of its independent variables turn out to be statistically significant. The coefficients of the three variables whose sign could be foreseen (POP-PARISH, GRAZE-LAND and POT/WHEAT) have the sign predicted. The coefficients of the other two variables (OATS/CROP and RYE/CROP) are positive and negative, respectively.

Interestingly, the coefficient of the dummy variable DPOT-TITHE is positive. The most plausible explanation for this relationship is that the counties where the potato was tithe-able before composition were those with lower-than-average ratios of land under potatoes to wheat. This agricultural structure signals that the croplands in these counties were, on average, more productive than those of other counties and therefore, owing to more intense competition for land, had higher rents, parish composition levels and tithing rates.

These findings suggest that when the monetary tithe was converted into a composition, the size of the parish's composition ultimately reflected a number of demographic and agricultural realities

³⁹ Caution is required, however, as the model incorporates as many as five independent variables while relying on a sample of only 32 observations. The problem of small sample size could not be overcome, given that the data were not available on a smaller jurisdictional basis such as a barony or parish.

⁴⁰ Various ratios of farm size (contrasting small farmers and cottiers to others) and of the religious affiliation of the population were tried out in pilot regressions, but they all proved statistically insignificant, adding nothing to the explanatory power of the estimated equation.

of the county, most notably the percentage of grazing land to total land, followed in descending order by the ratio of oats to total cropland, the population per parish, the ratio of potato to wheat land and the ratio of rye to total cropland. For example, using equation 2 of Table 9, in comparing two similar counties, both reflecting the average and differing only in that one has 10 per cent more of its land available for grazing than the other, that county would have an average parish composition level £18.4 lower than the other, which would be equivalent to about 6.5 per cent of the average parish composition per county, namely £283. Repeating this exercise for the other statistically significant cropland variables, one gets an average parish composition level £17.4 higher in the case of 10 per cent more oats land, £4.6 lower in the case of 10 per cent more potato land, and £2.1 lower in the case of 10 per cent more rye land. Therefore, oats production had the greatest positive impact on the average parish composition level per county, while the percentage of land allocated to grazing had the strongest negative impact. Finally, the demographic variable: in comparing two similar counties, both reflecting the average and differing only in that one has an average parish population 10 per cent greater than the other, that county would have an average parish composition level £11.1 higher, or about 3.9 per cent of the average parish composition per county (£283).

There is also some merit in exploring the circumstances of specific counties. First, let us consider the influence of the only demographic variable that proved to be statistically significant: the average parish population density per county. The statistical investigation found (as predicted) that the greater that density, the higher the average parish composition level. On this score, counties Armagh, Monaghan and Tyrone, with the three highest densities per county, had well above-average parish composition levels at £544, £477 and £562, respectively, in 1831. In fact, counties Tyrone and Armagh recorded the two highest average parish composition levels in Ireland. At the other end of this continuum, counties Kildare, Meath and Wexford, with the three lowest average parish population densities, had well below-average parish composition levels of

£203, £250 and £276, respectively, in 1831. Reversing this lens, counties Roscommon, Clare and Galway recorded the three lowest average parish composition levels of £153, £188 and £188, respectively, and, predictably, all three had relatively low average parish populations of 4,284, 3,075 and 3,503.

Finally, let us consider the agricultural structure variable that displays the greatest impact on average parish composition levels: grazing land. The statistical investigation found (as predicted) that the higher the percentage of a county's land given over to grazing, which is on average a lower grade of land than arable land, the lower the average parish composition level. On this score, counties Meath, Limerick and Wicklow recorded the highest percentages of grazing land and all three had below-average parish composition levels of £250, £281 and £219, respectively, in 1831. At the other end of this continuum, counties Donegal, Armagh and Down, with the three lowest percentages of their land available for grazing, had well above-average parish composition levels at £547, £544 and £400, respectively, in 1831. In fact, counties Donegal and Armagh recorded the second and third highest average parish composition levels in Ireland.

5. Factors Influencing Parochial Tithe-Compounding

A parish's composition level constitutes one side of the tithe reform coin; the other side of that coin is a county's parochial acceptance rate of a composition. It is this second aspect of tithe reform that has proven to be so confusing to observers and analysts alike. Indeed, the relatively low countrywide acceptance rate of a reform that was widely touted by Parliament as welfare-enhancing, equity-improving and politically palatable is puzzling, but even more perplexing is the regional pattern of acceptance. For example, consider three longstanding perceived paradoxes that have so far defied coherent explanation:

- 1) Despite the religious dimension to the Irish tithe, whereby

Roman Catholics had long objected to and even rebelled against the obligation to pay for the upkeep of a clergy they did not support, the acceptance rates of the reform were much higher in the counties of Ulster where Roman Catholics were numerically dominant than in Protestant Ulster (approximately present-day Northern Ireland).⁴¹

- 2) The reform of the tithe favoured large over small tillage farming – taking into consideration their respective abilities to expand and diversify in the face of greater revenue risk – and Connaught was the least engaged in large-scale cereal crop production of the four provinces, but the reform found its greatest acceptance in Connaught.
- 3) The reform of the tithe favoured tillage over grazing interests, but the acceptance rate was higher in Munster, where cattle-grazing was a greater agricultural activity, than in Leinster, where cereal crop production dominated all other agricultural pursuits.

It is argued here that these three paradoxes have eluded a rational explanation precisely because of the context in which they have been proposed. Most analyses of the tithe reform, particularly those conducted by the British Parliament, have portrayed tillage farmers as a homogeneous group with uniform interests and, therefore, see them pitted against graziers as a group with opposing interests in the proposed reform of the tithe. This paper instead offers a more nuanced and consequently a more realistic setting, allowing for greater heterogeneity within the farming community. Indeed, in

⁴¹ The religious affiliation of the population is based on data from the Census of 1861. Roman Catholics dominated Protestants numerically in counties Cavan, Donegal and Monaghan (now part of the Republic of Ireland) and County Tyrone. Though Roman Catholics outnumbered Protestants in counties Armagh, Fermanagh and Londonderry/Derry at that time, their respective populations were more evenly split and numerical dominance could not be asserted. Finally, those adhering to the Church of Ireland were found in far greater numbers in counties Antrim and Down than elsewhere in Ulster, though even there they were outnumbered by Roman Catholics who were, in turn, outnumbered by Presbyterians.

order to advance one's understanding of the reform while keeping the analysis tractable, this paper considers the following context:

- two types of tillage farms, large versus small, whose crop yields vary directly and proportionally with random weather conditions;
- two farmer skill categories, each marked by distinctly different population densities and capital equipment intensities – that is, there are a large number of low-skilled farmers with little capital and a small number of high-skilled farmers with an abundance of capital; and
- farmers in both groups are risk-averse in after-tax farm income, their degree of aversion varying uniformly from risk neutrality to extreme risk-aversion.

These economic conditions would be expected to bring about the following changes:

- the opportunity cost of time for farmers on a small lot (unlike those on a large lot) would not be a binding constraint, and they might therefore also be simultaneously engaged in other employment opportunities or occupations;
- there would be more intense competition for small farms than for large farms; and
- farmers on small lots would be disproportionately tenants-at-will, while farmers with large and highly capitalized operations would disproportionately hold long lease periods over which to amortize their capital investments.

Given these circumstances, one could logically conclude that the opportunity cost of time to the low-skilled farmer on a small lot or the cottier would not hold him back from working his entire plot of land whether or not a tithe (of 10 per cent) were imposed on his output.⁴² By the same token, being unable to materially expand operations on his small plot of land, the low-skilled farmer could not anticipate much of an improvement in his farm income from the con-

⁴² Ó Gráda (1988), p. 66, reports that cottiers spent 50 to 60 days a year cultivating and harvesting potatoes from their conacre plot.

version of the tithe into a composition. Indeed, the low-skilled farmer could only expect that any reduction in the tithe that might come to him would be accompanied by an equivalent increase in rent upon the expiry and renewal of his lease agreement.⁴³ The conversion of the tithe into a composition thus offered the low-skilled farmer on a small lot a temporary benefit, but little, if anything, over the longer term in return for the permanent loss of the financial flexibility inherent in the revenue-sharing properties of the original tithe. Moreover, a small landholder who was moderately to extremely risk-averse would undoubtedly place a premium (i.e., a value exceeding the expected after-tax return of 10 per cent of his farm revenue) on this feature of the original tithe, making him economically worse off under the reform. This situation contrasts somewhat with that of a risk-neutral small landholder, who would be indifferent to the reform, and contrasts sharply with that of the large landholder, who could almost immediately expand his operations to compensate for the expected increase in rent, which could not become effective until the next renewal date of the lease – and even then, the rent increase would take some time before being fully implemented with less competition prevailing in this subsector. Upon further reflection on these impacts, the tithe as a lump-sum land tax might be more socially regressive than the original tithe as output tax.⁴⁴ This development alone could contribute to social unrest.

A statistical analysis will be the starting point of this investigation, which focuses on the degree to which agricultural lands across Ireland fell under the rubric of the tithe as a composition. One measure, made readily available by Donoghue (1966, 1972), is the esti-

⁴³ Peirce Mahoney was the only witness at the Parliamentary Committee proceedings to fully appreciate and comment on the economic link between the tithe and rent (see Second Report of the House of Commons Select Committee on Tithes in Ireland (1832), p. 501).

⁴⁴ For a better understanding of the economic and social conditions of small farmers and cottiers in Ireland during the 1830s, see Inglis (1834) and de Tocqueville (1835). See also Mokyr (1983) and Ó Gráda (1988) for statistical analyses of the extent and severity of poverty in pre-famine Ireland.

TABLE 10
Parishes, Tithe-compounded Acreage and Wasteland Grades
by Irish County and Province

Province County	Parishes (1831)			Estimated Tithe- Compounded Acreage (1831)	Wasteland Grades (1844)			Total
	Total	With a Copounded Tithe	Tithe not Copounded		Improvable to		Not Improvable	
					Arable	Pasture		
					Statute acres	Statute acres		
Ulster								
Antrim	63	26	37	313,183	40,000	70,000	67000	177,000
Armagh	21	10	11	156,278	12,000	13,000	10,000	35,000
Cavan	28	20	8	338,178	20,000	28,000	24,000	72,000
Derry	48	25	2,3	606,827	150,000	250,000	369,000	769,000
Donegal	59	20	39	207,256	20,000	30,000	28,000	78,000
Down	21	9	12	202,006	40,000	50,000	25,000	115,000
Fermanagh	39	27	12	358,802	50,000	60,000	71,000	181,000
Monaghan	21	17	4	264,753	7,000	8,000	6,000	21,000
Tyrone	36	31	5	649,618	80,000	120,000	112,000	312,000
Leinster								
Carlow	43	30	13	153,393	17,000	6,000	9,000	32,000
Dublin	88	45	43	127,141	1,500	6,000	11,500	19,000
Kildare	104	51	53	192,444	16,000	31,000	5,000	52,000
Kilkenny	139	60	79	221,735	7,500	6,000	75,000	21,000
Laois	51	43	8	445,316	45,000	94,000	7,000	146,000
Longford	21	14	7	175,763	18,000	38,000	3,000	16,000
Louth	57	20	37	72,372	3,000	5,000	7,000	69,000
Meath	145	89	56	348,099	6,000	8,000	2,000	56,000
Offaly	46	38	8	327,800	18,000	26,000	25,000	45,000
Westmeath	64	46	18	277,618	18,000	37,000	1,000	201,000
Wexford	132	49	83	209,541	16,000	18,000	11,000	296,000
Wicklow	54	35	19	320,641	20,000	70,000	111,000	466,000
Munster								
Clare	84	75	9	716,386	60,000	100,000	136,000	296,000
Cork	259	139	120	949,688	100,000	150,000	216,000	466,000
Kerry	87	80	7	1,056,294	150,000	250,000	327,000	727,000
Limerick	137	79	58	389,108	30,000	40,000	51,000	121,000
Tipperary	194	157	37	819,939	30,000	60,000	88,000	178,000
Waterford	66	42	24	299,906	20,000	30,000	55,000	105,000
Connaught								
Galway	122	102	20	1,242,003	160,000	250,000	298,000	708,000
Leitrim	18	2	16	46,708	30,000	36,000	50,000	116,000
Mayo	70	38	32	735,597	170,000	300,000	330,000	800,000
Roscommon	56	46	10	498,940	40,000	80,000	10,000	130,000
Sligo	39	24	15	279,930	30,000	60,000	62,000	152,000
Ireland	2,412	1,489	923	12,589,365	1,425,000	2,330,000	2,602,500	6,421,000
Ulster	336	185	151	2,977,658	419,000	629,000	712,000	1,760,000
Leinster	944	520	424	2,634,184	186,000	345,000	267,000	862,000
Munster	827	572	255	4,066,852	390,000	630,000	873,000	1,893,000
Connaught	305	212	93	3,005,012	430,000	726,000	750,000	1,906,000

Sources: O'Donoghue (1966), p. 82; O'Donoghue (1972), p. 97; Griffith, Richard, in the Report of the Devon Commission (1848), p. 53.

mated percentage of parishes per county that compounded their tithe. Unfortunately, this gauge fails to capture the true extent of tithe compounding, because it does not take the size of the parishes into account. This statistic is, therefore, modified to better reflect the acreage under the tithe as a composition in the following way: the estimated percentage of parishes in a county that compounded their tithe is multiplied by the county's total acreage and then divided by the county's population in 1831, giving us the estimated tithe-compounded acreage per capita by county (COMP-ACRE/POP).

Next, a number of OLS regressions are carried out on the variables expected to influence COMP-ACRE/POP (see Tables 8 and 10). The independent variables chosen are, for each county:

WASTE-TO-PASTURE = percentage of wasteland in 1844 that was improvable to pasture land (see Table 10);⁴⁵

ACRES-HOLD = average acreage per holding in 1854;

PIGS/COWS = ratio of pigs to cows in 1851;

POT/WHEAT = ratio of land under potatoes to land under wheat in 1851 (see Table 12); and

GRAZE/TILL = ratio of available grazing land to arable land in 1851.

Additionally, a dummy variable (DPOT-TITHE) was added to separate the counties where the potato was tithe-able before the tithe was converted into a composition from those where it was not, in order to determine whether either status influenced the county's aggregate tithe-compounded acreage per capita.

The WASTE-TO-PASTURE variable is obtained by dividing the acreage graded as wasteland that can be improved to pasture land by the total acreage of wasteland.⁴⁶ Given that the new lump-sum tithe on wasteland would provide an additional financial incentive

⁴⁵ The data were provided by Richard Griffith to the Devon Commission and can be found in the Devon Commission, Part II, 1848, p. 53; similar data for 1831 are not publicly available.

⁴⁶ The percentage of all wastelands that were improvable (i.e., to arable and pasture grades) to total wasteland in 1844 was also tried in pilot regressions, but it did not fare as well.

to improve land that was reclaimable by drainage and manuring or by other means, a county possessing a higher percentage of such wasteland could be expected to embrace tithe reform more warmly. A greater number of county acres encompassing a compounded tithe per capita would result, so one should anticipate a positive coefficient for this variable.

The ACRES-HOLD variable is obtained by dividing the total acreage of a county by the total number of landholdings in that county in 1854.⁴⁷ Given that a farmer on a larger landholding could expand and/or diversify his crops to mitigate if not completely overcome the heightened revenue risk more easily than other farmers, one would expect that the greater the average landholding in a county, the greater the number of parishes that converted their tithe into a composition. Hence, there should be more acres on which the tithe as a composition applies per capita in that county, and one would expect a positive coefficient for the ACRES-HOLD variable.

The PIGS/COWS variable was chosen as a proxy for the ratio of small livestock operations – pig raising, owing to an abundant supply of potatoes for fodder – to large grazier operations. Both groups opposed the reform of the tithe, but their relative numbers in a county might have had an influence on the county acreage encompassing a compounded tithe, since their opposition would have different impacts. For instance, in a county where graziers outnumbered tillage farmers, composition should have been less likely to gain acceptance and one would expect fewer county acres encompassing a compounded tithe per capita and, in turn, a positive coefficient for the PIGS/COWS variable. On the other hand, in counties where cereal crop farmers outnumber graziers, small tillage farmers and cottiers would most likely outnumber the large cereal crop farmers, and the most risk-averse ones would tactically choose to reject composition. In this case the PIGS/COWS variable should show a negative coefficient. As a consequence, depending on which

⁴⁷ Landholding sizes, other than the average, were tried in pilot regressions, but they did not fare as well.

of these two forces dominates, one would expect either a positive or negative coefficient for this variable.

The POT / WHEAT variable measures the relative importance of potato and wheat farmers or, alternatively, small and large tillage farms. A higher ratio of land under potatoes relative to wheat would be expected to be associated with greater opposition to tithe reform and, therefore, fewer acres per capita under a compounded tithe. Hence, one would anticipate a negative coefficient for this variable.

GRAZE / TILL refers to the ratio of pasture to arable land in a county. Given that the tithe reform would both rescind the graziers' exemption and reduce the rates on tillage products, the following economic developments could be expected: rents on arable land rise while those on grazing land fall, bringing rents across the county more closely into line with relative land scarcity. In turn, this realignment of land rental prices could be expected to induce farmers to shift away from grazing and towards tillage and thus bring about a more efficient allocation of resources, greater land development and reclamation, and higher levels of agricultural output. These positive economic effects are likely to have been more pronounced in parishes and counties with higher ratios of grazing to tillage land, so one would expect a positive coefficient for the GRAZE / TILL variable.

The regressions testing the model are displayed in Table 11. The three equations testing the hypotheses on the determinants of compounded acreage per capita in 1831 work well,⁴⁸ explaining between 72 and 85 per cent of the variation in the dependent variable. More specifically, equation 1 does a reasonably good job of explaining the variation, but the data from County Kerry prove to be an extreme outlier. Clearly, there is something distinctive about County Kerry that the explanatory variables could not pick up; and the likely cause is that its estimated tithe-compounded acreage per capita is higher than the actual figure. In fact, the Kerry parishes that compounded

⁴⁸ Once again, caution is required, as the model incorporates five independent variables while relying on a sample of only 32 observations.

TABLE 11
OLS Regressions on the Estimated Compounded Acreage per Capita
by County in Ireland in 1831 and Summary Statistics

Equation	Constant	Independent Variables					DPOT-TITHE	DKERRY
		WASTE-TO-PASTURE	ACRES-HOLD	PIGS/COWS	POT/WHEAT	GRAZE/TILL		
1	0.2350 (0.6579) $n = 32$	1.0707 (0.8528)	0.0258** (0.0133)	-1.6206*** (0.6323)	-0.0483 (0.0371)	0.4080** (0.1760)	0.7674*** (0.2595)	
			$R^2 = 0.715$		$R^2_{adj} = 0.647$		S.E.R. = 0.537	
2	0.8734 (0.5160) $n = 32$	1.3202** (0.6452)	-0.0007 (0.0116)	-1.5231*** (0.4771)	-0.0847*** (0.0291)	0.5224*** (0.1351)	0.8242*** (0.1960)	2.3146*** (0.5175)
			$R^2 = 0.845$		$R^2_{adj} = 0.799$		S.E.R. = 0.404	
3	0.8586** (0.4382) $n = 32$	1.3179** (0.6310)		-1.5207*** (0.4657)	-0.0840*** (0.0264)	0.5174*** (0.1013)	0.8186*** (0.1659)	2.2995*** (0.4368)
			$R^2 = 0.845$		$R^2_{adj} = 0.807$		S.E.R. = 0.396	
Statistic		WASTE-TO-PASTURE (ratio)	COMP-ACRE/ POP (statute acres)	ACRES-HOLD (statute acres)	PIGS/COWS (ratio)	POT/WHEAT (ratio)	GRAZE/TILL (ratio)	
Mean		0.39	1.73	34.91	0.40	3.55	1.56	
Minimum		0.33	0.33	14.44	0.12	0.64	0.52	
Maximum		0.03	4.80	66.62	0.97	17.21	4.18	

Notes: n = number of observations; parentheses denote standard error of the coefficient; S.E.R. = standard error of the regression; the means are simple county averages and are not weighted according to county acreages; ***(**) significance at the 1%(5%) level.

Sources: Griffith, Richard, Select Committee of the House of Commons (1832), Tables 2 and 4, p. 279 and p. 281; Griffith, Richard, in Devon Commission Inquiry into the Occupation of Land in Ireland, p. 585; British Parliament (1855), Tables 3 and 9, p. 31 and p. 47.

their tithes (96 per cent) were most probably the smaller parishes, so that the estimated tithe-compounded acreage per capita used in the regression overstates the case. To deal with this problem, a dummy for County Kerry (DKERRY) was introduced into equations 2 and 3. However, in equation 2, the average county acreage per holding in 1854 (ACRES-HOLD) was no longer statistically significant.

Equation 3, whose formulation is the same as equation 2 exclud-

ing ACRES-HOLD, provides the best results.⁴⁹ All three independent variables in this equation turned out to be statistically significant. The coefficients of POT/WHEAT and GRAZE/TILL have their predicted sign, and that of PIGS/COWS is negative. In this last case, it must have been, in general, that tillage farmers outnumbered graziers in the county, but within the tillage community risk-averse small farmers and cottiers outnumbered large cereal farmers. Given this structural make-up of the farming community, it must have been the numerically dominant group of small farmers and cottiers who rejected the composition of their tithe, which explains this negative coefficient. In retrospect, this scenario should not be so surprising, since small farmers and cottiers are likely to have been more forceful than graziers in opposing the reform, as the latter could always convert some of their surplus grazing land to tillage and thus mitigate the adverse impact of the new tithe.

Interestingly, the coefficient of the dummy variable DPOT-TITHE is positive, indicating that the new tithe may have been less objectionable to potato farmers who already paid the tithe than to those who were first-time tithe-payers, which is not that surprising since their payment was expected to decline with the reform. This result is also consistent with the positive coefficient of DPOT-TITHE reported in the previous section, given the variable's positive relationship with the average parish composition level per county.

One can now examine the impacts of the four statistically significant independent variables in equation 3, beginning with wasteland reclaimable for pasture. Using the coefficient of the variable regarding the percentage of wasteland in 1844 that was so improvable (WASTE-TO-PASTURE), in comparing two similar counties, both reflecting the average and differing only in that one has a 10-percentage-point higher ratio of waste to pasture, the tithe-com-

⁴⁹ Given the religious dimension, we also ran a number of pilot regressions including such variables as the ratios of Catholics to Anglicans and Catholics-and-Dissenters to Anglicans, but the results were insignificant, adding nothing to the explanatory power of the estimated equation.

pounded acreage in that county would be greater than in the other county by 12,328 statute acres. Given that an Irish county is, on average, 637,289 statute acres, this impact represents, on average, 1.9 per cent of a county's total land or 3.1 per cent of the estimated tithe-compounded land of 393,418 statute acres.

Let us now move on to the two variables that deal with the structural make-up of a county's agricultural sector (i.e., PIGS/COWS and POT/WHEAT). Using their coefficients taken together, in comparing two similar counties, both reflecting the average and differing only in that one has a 10-percentage-point higher ratio of pigs-to-cows and of potato-to-wheat land, the compounded acreage in that county would be less than in the other county by 14,763 and 7,203 statute acres, respectively, or by 21,966 statute acres in total. These figures added together represent 3.4 per cent of the average total land per county and 5.6 per cent of estimated tithe-compounded land.

Finally, using equation 3 to explain the meaning of the coefficient of GRAZE/TILL, in the case of two similar counties, both reflecting the average and differing only in that one has a 10-percentage-point higher ratio of grazing-to-arable land, the compounded acreage in that county would be greater than in the other by 19,503 statute acres. This figure represents 3.1 per cent of total land per country and 5.0 per cent of estimated tithe-compounded land.

These results, with a little more digging into the data, also help to resolve the three perceived paradoxes mentioned at the outset of this section. First is the relatively low acceptance rate of the composition in Protestant Ulster compared with the counties of Ulster where Roman Catholics were numerically dominant. Our data clearly show that this low acceptance rate was restricted to counties Antrim, Armagh and Down. The acceptance rates in counties Fermanagh and Londonderry/Derry (where Catholic and Protestant populations were more evenly balanced) and Tyrone (where Catholics were numerically dominant) were actually exceptionally high. Thus, in reviewing the three most important structural factors affecting the estimated tithe-compounded acreage per capita, one finds that counties Antrim, Armagh and Down had relatively large

numbers of small farmers and cottiers, indirectly ascertained by high ratios of pigs-to-cows, and less grazing land than elsewhere in Ulster. Thus, from an economic perspective, farmers had less opportunity to shift from grazing to tillage in counties Antrim, Armagh and Down than in the rest of Ulster and therefore had relatively less to gain from the conversion of the tithe into a composition. In addition, from a political perspective, parishes' ability to spread a composition over a larger land/tax base that would now include graziers and, in turn, reward its cereal crop farmers with lower rates was also more limited in these three northeastern counties. Indeed, as Table 3 shows, the tithing rate data bear this point out. The tithing rate schedule in northeast Ireland was lower than in southeast Ireland under the 'old system' and before the conversion of the tithe, but afterwards, under the composition, the reverse was true. There was a complete reversal of relative positions between northeast and southeast Ireland tithe-payers with the reform. Consequently, the tillage farmers of counties Antrim, Armagh and Down, as a group, would have had to bear relatively more revenue risk and so would have had less to gain from the conversion, particularly potato farmers, who would also be paying a tithe for the first time. Thus, it may have been that these economic issues trumped the longstanding religion-based objections to the tithe.

Moving on to Connaught, it is the diversity of acceptance rates of the reform across all five counties that stands out the most. County Leitrim had the lowest acceptance rate of any county at just 11 per cent, but counties Galway and Roscommon had exceptionally high acceptance rates of 84 and 82 per cent, respectively. The latter two results obviously dominated the former and thus brought the average acceptance rate in the province up. Considered as a whole, Connaught had the lowest ratio of pigs-to-cows and the highest ratio of grazing-to-arable land of the four provinces. This situation meant that Connaught had the greatest opportunity to shift resources from grazing to tillage and, therefore, had relatively more to gain with the conversion than the other three provinces. At the same time, from a political perspective, with the lowest ratio of small livestock to large

grazier operations, Connaught tillage farmers, as a group, could expect to see the largest decreases in tithing rates and thus to face relatively less revenue risk than their counterparts in the rest of Ireland.

Finally, despite the fact that the reform of the tithe favoured tillage over grazing interests, its acceptance rate was much higher in Munster, where cattle-grazing was a greater agricultural activity, than in Leinster, where cereal crop production dominated. The statistical analysis above explains this outcome as a consequence of Munster's higher ratio of grazing-to-arable land. Indeed, this one structural factor appears to have dominated the other two (i.e., the ratios of pigs-to-cows and potatoes-to-wheat land), which would have had the effect of driving down the acceptance rate of the reform much more for Munster than Leinster. In the end, Munster farmers possessed greater opportunities to shift resources from grazing to tillage than did Leinster farmers and, therefore, would have had more to gain economically from the conversion. In addition, from a political perspective, Munster parishes had the ability to spread the composition over a relatively larger land/tax base than Leinster parishes, and could therefore reward tillage farmers with relatively greater reductions in tithing rates. This economic explanation thus adds to the political one (advanced in Shaw, 2015) which held that fewer parishes were dominated by farmers with small landholdings in Munster than in Leinster and, as a result, were more capable of securing the composition of their tithe there than in Leinster.

6. Tithe Composition and the "Great Famine"

Upon the adoption of the Composition for Tithes Act of 1823, the Church of Ireland clergy and parishioner representatives negotiated very large tithing rate reductions, reductions that were far greater than would have been needed to achieve the objective of revenue neutrality. With such favourable terms in place, almost two thirds of Irish parishes voluntarily converted their tithe from its original design as an *ad valorem* production tax into a lump-sum land

tax. The British Parliament, in 1838, even enriched these concessions by a further 25 per cent to persuade the remaining hold-out parishes to accept the same. But these tithing rate reductions were not the only impacts on tillage farmers. Eventually, the long-term leases held by all renters would expire and, as an indirect result of tithe reform, the rents on tillage lands would be renegotiated upwards in somewhat equivalent measure to the tithing rate reductions. In the end, these rent increases would fully offset the tithing rate reductions, leaving only the transfer to tillage farmers of the 10 per cent of revenue risk that had originally been borne by the clergy. Many small farmers and cottiers failed to fully grasp this ultimate and perennial impact of tithe reform, which did not become clear to them until late in the 1845 growing season when *phytophthora infestans* struck the potato crop, heralding five consecutive years of largely failed harvests. In 1848, with the benefit of hindsight, the Devon Commission would remark on the plight of cottiers: □We must not omit to notice the system (□) of letting land for one or more crops, commonly known as the con-acre system. (□) [W]e are convinced that some practice of this nature is essential to the comfort, almost to the existence, of the Irish peasant. (□) Although the taker of con-acre ground may, in ordinary years, receive a good return for the rent which he assumes (□) a bad season, and a failure in the crops, leave the latter in a distressed condition, subject to a demand which he is wholly unable to meet□⁵⁰

This understanding of the financial vulnerability of cottiers leads one to question what contribution, positive or negative, tithe reform made to the severity of the □Great Famine□ To answer this question, a number of OLS regressions were carried out on variables that are expected to influence the average annual □excess deaths□ per 1,000 population (upper bound) from 1846 to 1851 as estimated by Mokyr (1980) and displayed in Mokyr (1983) or XSDEATHS (see Table 12).⁵¹ The independent variables chosen are:

⁵⁰ Devon Commission (1848), Part II, p. 35.

⁵¹ The data on □excess deaths□ (lower bound) estimated by Mokyr (1980) were tried in pilot regressions, but they did not fare as well.

TABLE 12
Estimated Average Annual "Excess Deaths" per 1,000 Population
1846-1851 and Land under Potatoes and Wheat by County and Province

Province County	Estimated Average Annual Excess Death Rates per 1,000 Population, 1846-1851		Land under Potatoes			Land under Wheat
	Lower Bound	Upper Bound	1845	1851	Percentage Change (%)	1851
	%		Statute acres			
Ulster						
Antrim	15.0	20.3	64,304	41,013	-36.2	9,938
Armagh	15.3	22.2	47,563	31,887	-33.0	16,320
Cavan	42.7	51.8	65,129	22,175	-66.0	2,657
Derry	10.7	18.7	75,505	34,432	-54.4	6,470
Donegal	6.7	12.5	86,753	49,439	-43.0	33,319
Down	29.2	39.1	39,091	13,059	-66.6	2,643
Fermanagh	5.7	10.1	65,135	26,793	-58.9	5,329
Monaghan	28.6	36.0	45,394	23,354	-48.6	5,518
Tyrone	15.2	22.3	67,782	39,937	-41.1	7,994
Leinster						
Carlow	2.7	8.8	26,447	11,154	-57.8	10,191
Dublin	-2.1	0.7	19,064	10,315	-45.9	10,945
Kildare	73.4	12.0	27,198	11,149	-59.0	17,098
Kilkenny	12.5	18.1	73,715	26,398	-64.2	37,036
Laois	18.0	24.9	42,055	15,295	-63.6	14,192
Longford	20.2	26.7	27,030	11,333	-58.1	2,070
Louth	8.2	14.6	30,139	13,172	-56.3	12,535
Meath	15.8	21.2	48,245	15,647	-67.6	24,322
Offaly	21.6	29.1	45,877	20,875	-54.5	23,072
Westmeath	20.0	26.3	32,168	12,963	-59.7	6,147
Wexford	1.7	6.6	74,492	31,282	-58.0	38,081
Wicklow	10.8	14.6	27,501	11,218	-59.2	6,889
Munster						
Clare	31.5	46.5	89,670	28,625	-68.1	9,293
Cork	32.0	41.8	277,070	100,405	-63.8	64,901
Kerry	22.4	36.1	78,436	24,892	-68.3	3,532
Limerick	10.0	20.9	88,322	21,331	-75.8	14,219
Tipperary	23.8	35.0	150,956	43,348	-71.3	55,110
Waterford	20.8	30.8	63,212	29,536	-53.3	33,214
Connaught						
Galway	46.1	58.0	133,272	38,227	-71.3	16,396
Leitrim	42.9	50.2	24,971	19,054	-23.7	1,107
Mayo	58.4	72.0	147,937	42,140	-71.5	6,172
Roscommon	49.5	57.4	52,469	30,683	-41.5	5,049
Sligo	52.1	61.1	49,906	21,872	-56.2	2,489
Ireland	23.8	29.6	2,186,798	873,003	-60.1	504,248
Ulster	18.8	25.9	556,656	282,089	-49.3	90,188
Leinster	16.9	17.0	473,921	190,801	-59.7	202,578
Munster	23.4	35.2	747,666	248,137	-66.8	180,269
Connaught	49.8	59.7	408,555	151,976	-62.8	31,213

Sources: Mokyr, Joel, *Why Ireland Starved: A Quantitative and Analytical History of the Irish Economy, 1800-1850*, 1983, Table 9.1 and 9.2, pp. 266-267; Ó Gráda, Cormac, *Black '47 and Beyond: The Great Irish Famine in History, Economy and Memory*, 2000, Table 1.1, p. 23; British Parliament, *Returns of Agricultural Produce in Ireland*, 1854, 1855.

&POT-LAND = percentage change in land under potatoes 1845-1851 (see Table 12);

1-15/O15ACRES = ratio of landholdings of 1-to-15 acres to over-15 acres in 1841;

3rd&4thHOUSING = proportion of 100 families who occupy 3rd and 4th class accommodation in 1841;

CONACRE = estimated percentage of potato land under conacre in 1844;

POT/CROP = ratio of land under potatoes to total cropland in 1851;

POT/WHEAT = ratio of land under potatoes to land under wheat in 1851 (see Table 12); and

COMP-PAR = percentage of parishes that compounded their tithe by 1831.

The "Great Famine" was defined by five years of devastatingly poor potato harvests. The &POT-LAND variable, therefore, attempts to directly capture this disastrous harvest performance through the subsequent decline in farmland devoted to potato production. That is, the greater a region's decline in potato production throughout the 1845-1850 period and, in turn, the greater its loss in land subsequently put under potatoes between 1845 and 1851, the greater the region's expected average annual "excess death" rate between 1846 and 1851. Since the &POT-LAND values are negative, one would expect a negative coefficient for this variable.

The next five variables refer to the relative size or economic importance (measured in various ways) of the hypothesized financially vulnerable group who were most likely to be severely affected, as suggested in the quote above, by the potato blight. For example, the 1-15/O15ACRES variable measures the ratio of small farms to large farms in 1841, taking 15 acres as the pivotal size.⁵² The 3rd&4thHOUSING variable is the percentage of families occupying third- and fourth-class accommodation in 1841.⁵³ CONACRE measures the rel-

⁵² Other farm sizes were tried in pilot regressions, but they did not fare as well.

⁵³ The HOUSING variable measures the proportion of 100 families who occupy different classes of accommodation in 1841. Fourth-class accommodation, the lowest class, refers

ative importance of cottiers in Irish potato production just prior to the "Great Famine" POT/CROP measures the relative importance of the potato crop to all crops grown in the relevant territory. And POT/WHEAT measures the relative importance of potato to wheat farmers or, alternatively, small to large tillage farmers. In all five cases, a higher percentage/ratio is expected to be associated with greater financial vulnerability and, hence, more "excess deaths" between 1846 and 1851. One would, therefore, anticipate a positive coefficient for all five variables.

The composition of the tithe ultimately transferred 10 per cent of the total crop revenue risk from the Church of Ireland clergy to tillage farmers. If this added risk contributed positively to the severity of the "Great Famine", then one would expect that the average annual "excess death" rates between 1846 and 1851 would be more pronounced in the parishes that voluntarily converted their tithe to a composition before 1832 and, in turn, in the counties with higher parish acceptance rates by that year. Simply put, their tillage farmers would have borne more revenue risk for a longer period of time than those of other counties and would, therefore, be financially weaker and relatively more vulnerable to five years of potato harvest failures, even as late as the late 1840s. Alternatively, if tithe reform helped to lessen the severity of the disastrous effects of the "Great Famine" – say, because tillage farmers adapted earlier to the new tithe regime by taking extra precautionary financial steps and were, therefore, better equipped to deal with the heightened risk – they would have been relatively less financially vulnerable to the harvest failures. In this case, the average annual "excess death" rates between 1846 and 1851 would be less pronounced in the parishes that voluntarily converted their tithe before 1832. The 1831 tithe variable, COMP-PAR, puts these alternative hypotheses to the test. Depend-

to a mud cabin with one room. Third-class accommodation refers to a mud cabin with two to four rooms and windows. Second-class accommodation refers to a good farm house or, in a town, a house in a street, having five to nine rooms and windows. First-class accommodation refers to all houses of a better description than the preceding classes.

ing on which of the two scenarios is correct, one could expect either a positive or negative coefficient for both these variables.

The regressions testing the model are displayed in Table 13. Its three equations, which test the two hypotheses on the determinants of the estimated average annual $\square$ excess death $\square$ rates per 1,000 people between 1846 and 1851, work well,⁵⁴ explaining between 86 and 92 per cent of the variation in the dependent variable. Equation 1 does a reasonably good job of explaining the variation in the estimated average $\square$ excess death $\square$ rates across Ireland, with five of the six variables (&POT-LAND, 1-15/O15ACRES, 3rd&4thHOUSING, POT/CROP and POT/WHEAT) being statistically significant. However, closer scrutiny of the data points to counties Derry and Donegal as extreme outliers. There is definitely something distinctive about these two counties that the explanatory variables could not pick up, as their predicted average annual $\square$ excess death $\square$ rates between 1846 and 1851 were significantly higher than those observed. Unfortunately, the cause of this discrepancy cannot be readily ascertained. To deal with this problem, a dummy variable for counties Derry and Donegal (TWO COUNTY DUMMY) was introduced into equation 2, while CONACRE was dropped. Equation 2 does a better job of explaining the variation in the estimated average $\square$ excess death $\square$ rates across Ireland than equation 1, with its coefficient of variation rising to 90 per cent.

More importantly, equation 3 tests the hypothesis that the composition of the tithe was a factor (either positive or negative) in the estimated average annual $\square$ excess deaths $\square$ across Ireland between 1846 and 1851. Using COMP-PAR in addition to the five independent variables relating to the hypothesized financially vulnerable groups found in equation 2 explains almost 92 per cent of the variation in the dependent variable. The coefficients of &POT-LAND, 1-15/O15ACRES, 3rd&4thHOUSING, POT/CROP and POT/WHEAT

⁵⁴ Once again, caution is needed for a model with six independent variables and a sample size of only 32 observations.

TABLE 13
OLS Regressions Undertaken on Estimated Average Annual "Excess Deaths"
per 1,000 Population by County, 1846-1851, and Summary Statistics

Equation	Constant	Independent Variables							TO COUNTY DUMMY
		Δ POT-LAND	1-15/O15 ACRES	3 rd &4 th HOUSING	CONACRE	POT/CROP	POT/WHEAT	COMP-PAR	
1	-66.635*** (19.734)	-47.943*** (15.376)	1.707*** (0.466)	0.420 (0.331)	0.39 (0.25)	137.347*** (41.564)	0.542 (0.640)		
	$n = 32$		$R^2 = 0.855$			$R^2_{adj} = 0.820$		S.E.R. = 7.542	
2	-70.638*** (15.412)	-51.227*** (12.700)	1.378*** (0.388)	0.489** (0.247)		140.786*** (33.669)	0.839 (0.522)		-16.787*** (4.694)
	$n = 32$		$R^2 = 0.901$			$R^2_{adj} = 0.878$		S.E.R. = 6.214	
3	-70.342*** (14.593)	-45.726*** (12.344)	1.313*** (0.369)	0.432** (0.236)		139.826*** (31.882)	1.021** (0.503)	0.120** (0.061)	-17.045*** (4.447)
	$n = 32$		$R^2 = 0.915$			$R^2_{adj} = 0.890$		S.E.R. = 5.883	
Statistic	XSDEATHS (per 1,000)	Δ POT-LAND (%)	1-15/O15 ACRES (ratio)	3 rd &4 th HOUSING (%)	CONACRE (%)	POT/CROP (ratio)	POT/WHEAT (ratio)	COMP-PAR (%)	
Mean	29.58	-56.76	5.95	82.20	12.14	0.15	3.55	61.63	
Minimum	0.70	-75.85	1.38	65.60	0.57	0.07	0.64	11.11	
Maximum	72.00	-23.70	17.01	95.50	32.95	0.25	17.21	91.95	

Notes: n = number of observations; parentheses denote standard error of the coefficient; S.E.R. = standard error of the regression; ***(**) denotes significance at the 1%(5%) level; these means are simple or un-weighted county averages.

Sources: Mokyr, Joel, *Why Ireland Starved: A Quantitative and Analytical History of the Irish Economy, 1800-1850*, 1983, Tables 9.1 and 9.2, pp. 266-267; Ó Gráda, Cormac, *Black '47 and Beyond: The Great Irish Famine in History, Economy and Memory*, 2000, Table 1.1, p. 23; British Parliament (1855), Tables 3 and 9, p. 31 and p. 47; O'Donoghue (1966), p. 82; and O'Donoghue (1972), p. 97.

possess their predicted sign and are statistically significant. The coefficient of the title variable, COMP-PAR, is positive and statistically significant, meaning that this variable helps to explain the variation in average annual "excess death" rates per county between 1846 and 1851. In short, the scenario of increased financial vulnerability of small farmers and cottiers is supported by the data, so it appears that tithe reform did contribute indirectly to higher average annual

“excess death” rates throughout Ireland during the “Great Famine”

One can now examine the magnitude of the impact that each of the six statistically significant independent variables in equation 3 had on the average annual county “excess death” rates, beginning with the percentage reduction in land under potatoes between 1845 and 1851. Using the coefficient of $\Delta \text{POT-LAND}$, in comparing two similar counties, both reflecting the average and differing only in that one has a 10-percentage-point greater reduction in its ratio of potato to total cropland between 1845 and 1851, that county’s average annual “excess death” rate between 1846 and 1851 would be higher than the other’s by 2.6 per 1,000.

Now consider the four statistically significant variables that deal with the structural make-up of a county’s agricultural sector: the ratio of county landholdings of 1-to-15 acres to more than 15 acres ($1-15/O15\text{ACRES}$), the percentage of families occupying third- and fourth-class accommodation ($3^{\text{rd}}\&4^{\text{th}}\text{HOUSING}$), land under potatoes as a percentage of total cropland (POT/CROP) and the ratio of land under potatoes to land under wheat (POT/WHEAT). Using the coefficients of these variables, in comparing two similar counties, both reflecting the average and differing only in that one has a 10-percentage-point higher percentage/ratio of landholdings of 1-to-15 acres to more than 15 acres, of families occupying third- and fourth-class housing, of land under potatoes to total cropland, and of land under potatoes to land under wheat, that county’s estimated average annual “excess death” rate between 1846 and 1851 would be higher than the other’s by 0.8, 3.6, 2.1 and 0.4 per 1,000 population, respectively. Thus, the data suggest that the Irish potato blight had consequences that went beyond the group of farmers with conacre plots to affect many other small farmers with lots up to 15 acres in size. Furthermore – but not surprisingly – the class of housing of tenant farmers was the most important indicator of financial vulnerability and the greatest contributor to “excess death” rates.

Finally, the hypothesis of greatest interest: the impact of tithe reform on the severity of the “Great Famine” itself. Using equation 3 to explain the meaning of the coefficient of COMP-PAR in the case

of two similar counties reflecting the average and differing only in that one had a 10-percentage-point higher percentage of parishes that accepted the composition of their tithe by 1831, that county's average annual "excess death" rate between 1846 and 1851 would be higher than the other's by 0.7 per 1,000 population. So, in the end, the reform of the Irish tithe that began in 1823 and ended in 1838 not only inadvertently instigated a civil rebellion that involved countless injuries and many deaths, it also unintentionally aggravated the severity of the "Great Famine" that brought widespread disease and unimaginable numbers of deaths.

7. Conclusion

This paper set out to continue the investigation into the economic impacts of the 1823 reform of the Irish tithe on different farming groups begun in Shaw (2015) and to explain the unexpectedly low countrywide acceptance rate of a reform that Parliament had touted as welfare-enhancing, equity-improving and politically palatable. To date, commentators on this reform have proffered two basic reasons for the failure of the Composition for Tithes Act of 1823 to gain countrywide application:

- 1) the parish vestries numerically dominated by graziers, who until then had not paid a tithe, refused composition outright; and
- 2) the parish vestries numerically dominated by tillage farmers would not accept the conversion of the tithe into a composition unless there was a reduction in the aggregate composition commensurate with the decline in agricultural prices following the Napoleonic wars, a condition which, in some cases, proved unacceptable to the presiding bishop.⁵⁵

Obviously, the first of these causes for failure is clear-cut and

⁵⁵ O'Donoghue (1965), p. 9 and p. 15; Donnelly (2009), p. 215; Stopford, Reverend E., Second Report of the Select Committee of the House of Lords on the Collection and Payment of Tithes in Ireland (1832), pp. 119-122.

needs no further discussion. The second, however, is unsatisfying. There is considerable evidence that the tithing rates relative to agricultural prices pre- and post-reform were comparable. Moreover, as presented above, the average county-wide amount of the parish composition in 1831, which ranged from as little as £152 to as much as £570, reflected many of the important demographic and agricultural circumstances of the county. Statistical analysis of the factors that influenced the average parish composition in a county showed that its level varied according to the average parish population density, the county's available grazing land, and the production of the county's most important crops, such as oats, wheat, potatoes, and even rye.

This paper instead introduces into the discussion, as the primary cause of the resistance to reform, the risk aversion in after-tax income of small farmers and cottiers who could not overcome the loss of the risk-sharing properties of the original tithe. Indeed, the alteration of the Irish tithe from an *ad valorem* production tax to a fixed lump-sum land tax would shift revenue risk, mostly due to variable weather and harvest yields, from the Church of Ireland clergy to the tithe-payers. Tillage farming was an inherently risky business in Ireland at that time, particularly wheat, oats and potato farming, and the additional risk that Parliament's reform would place on tithe-payers could have been substantial. In response, large tillage farmers would need to both expand and further diversify their operations, enabling them to better stabilize and increase revenues, to alleviate and possibly overcome the economic losses stemming from this potential additional risk. Low-skilled, poorly-equipped farmers on small lots of less than 15 acres and cottiers on lots typically of no more than one acre in size, on the other hand, could not avail themselves of these strategies. For most of them, the only viable option would have been to negotiate huge reductions in their tithing rates from their clergy in order to enhance the temporary benefit that the reform offered. Indeed, farmers in many parishes across the northeast and southeast of the country found themselves in this situation, managing to negotiate tithing rate reductions on the order of 62 to 88 per

cent. These reductions provided cereal crop farmers with an estimated average gain ranging from about 2.7 to 8.8 per cent of the market value of their production. For potato farmers in the south-east, the average gains were more measured, ranging from about 2.8 to 3.2 per cent of the market value of production, while potato farmers in the northeast incurred losses averaging from 0.3 to 1.3 per cent of the market value of their production. As a consequence, for many tillage farmers, the additional revenue risk from the conversion of the tithe – in the interim period before their leases expired – did not turn out to be prohibitive. For others, the most risk-averse farmers, who either could not tolerate the fixed structure of the new tax or resided in parishes whose clergy and/or bishop were not so amenable in their tithing rate reductions, the composition of their tithe would prove too risky and unacceptable.

This analysis brings to the fore the analytical *faux pas* of framing the reform of the Irish tithe in 1823 simply as an issue that pitted graziers against tillage farmers. The tillage farm community in Ireland was far too diverse and multifaceted to be considered a homogeneous grouping as regards the issues of tithe and tithe reform. Once this intricacy is understood, it becomes conceivable that the economic impacts of the reform were not evenly distributed across Ireland's tillage subsector, counties or even provinces. And this perspective brings us face-to-face with three perceived paradoxes *à propos* the regional pattern of acceptance of the reform:

- that the acceptance rate was much higher in Roman Catholic Ulster than in Protestant Ulster;
- that the reform found its greatest acceptance in Connaught, the province least engaged in large-scale cereal crop production and, therefore, populated by the smallest contingent of farmers who were presumably the ones most likely to benefit from the lower tithing rates; and
- that the acceptance rate was higher in Munster, cattle-grazing country, than in Leinster, tillage country.

These three apparent paradoxes can be explained by the different structural make-ups of the agricultural sector in the various re-

gions of Ireland. Indeed, this paper's statistical analysis indicates that regions with higher ratios of grazing-to-arable land and lower ratios of small farmers and cottiers to large farmers (both wheat farmers and graziers), indirectly ascertained by the ratios pigs-to-cows and potato-to-wheat land, provided greater economic gains and fewer political impediments and opposition to reforming the tithe into a composition. Therefore, these three reputed paradoxes were actually logical outcomes of the different regional agricultural structures. Indeed, these factors suggest that it was Connaught farmers who gained the most in economic terms from the reform and that in Ulster, only in three of its Protestant-dominated counties were farmers adversely affected in a significant way. It should not be surprising, then, that when Parliament made the composition of the tithe compulsory in 1832, dissident behaviour surfaced and conflated into what would become known as the Irish Tithe War of 1831–1838 mainly in the south, Munster and Leinster provinces, where risk-averse cottiers were most prominent. Put differently, it was immediate economic concerns about the increase in revenue risk embedded in the new tithe that reignited the longstanding religious tensions and fuelled the Irish tithe war.

The social impacts of tithe reform did not end with the cessation of this civil rebellion, however. The reform's principal function was to shift the portion of the revenue risk of crop farming originally borne by the clergy to tillage farmers. In doing so, it may well have been that Parliament's intentions were to stabilize clerical incomes, spur the reclamation of wasteland, and improve the efficiency of the agricultural sector by encouraging a shift away from pasturage and towards tillage. But the reform also produced unintended effects that were camouflaged by the very enticing and immediate benefits of lower tithing rates. The reform of the tithe into a composition would eventually lead to higher off-setting rents, leaving small farmers and cottiers with increased variability in their farm incomes as its principal net effect. This delayed net effect would not, therefore, be clearly manifest until the late 1840s, with the "Great Famine". Indeed, a statistical investigation of tithe reform indicates that the con-

sequent increase in the financial vulnerability of small farmers and cottiers contributed indirectly to the severity of five consecutive years of failed potato harvests, and was even a factor in higher estimated average annual "excess death" rates across Ireland between 1846 and 1851.

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