

THE LONG-RUN IMPACT OF THE DISSOLUTION OF THE ENGLISH MONASTERIES*

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We use the effect of the Dissolution of the English Monasteries after 1535 to test the commercialization hypothesis about the roots of long-run English economic development. Before the Dissolution, monastic lands were relatively unencumbered by inefficient feudal land tenure but could not be sold. The Dissolution created a market for formerly monastic lands, which could now be more effectively commercialized relative to nonmonastic lands, where feudal tenure persisted until the twentieth century. We show that parishes affected by the Dissolution subsequently experienced a rise of the gentry and had more innovation and higher yield in agriculture, a greater share of the population working outside of agriculture, and ultimately higher levels of industrialization. Our results are consistent with explanations of the Agricultural and Industrial Revolutions which emphasize the commercialization of society as a key precondition for taking advantage of technological change and new economic opportunities. *JEL Codes:* N43, N63, N93, O14, Q15.

I. INTRODUCTION

A remarkable economic transition took place in large parts of the world in the past 250 years. This “Great Divergence” (Pomeranz 2000) led to the gap between poor and rich nations of the world expanding from a factor of 4 or 5 to as much as 100. It

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started with technological innovation, industrialization, and urbanization in Britain. Critical to this process was a labor force that was mobile enough to move to the new factories and industrial cities such as Manchester and Birmingham and an agricultural surplus to feed them. The ability of factors of production to be allocated commercially through the market, rather than via feudal regulation or custom, has long been hypothesized to be a major factor behind the success of Britain and is one hypothesis for why the Industrial Revolution started there, rather than elsewhere (Pirenne 1927; 1936; Polanyi 1944; Hicks 1969).

In this article, we empirically test this commercialization hypothesis. We do so by focusing on the Dissolution of the English Monasteries, which occurred during the English Reformation in the 1530s, as a natural experiment.¹ This experiment exploits the fact that before the Reformation, monastic land could not legally be sold, thus inhibiting its efficient allocation to people who could use it best. The Dissolution changed this because the Crown rapidly sold off the expropriated monastic assets (Habakkuk 1958). In terms of the formal marketability of land, this put monastic land on par with unentailed nonmonastic land. Yet a key difference in the de facto marketability between monastic and nonmonastic lands was the lower incidence of feudal land tenure on monastic lands. Critically, few monastic tenures were perpetual, “customary,” copyholds (Kerridge 1969).² After the Dissolution, the greater tenurial flexibility meant that both land and labor were now freer to be reallocated through the market, allowing reallocation to whoever could use them best. On nonmonastic land feudal land tenure persisted into the twentieth century. Our research design therefore compares less feudal monastic land to more feudal nonmonastic land, cross-sectionally and before and after it became commercially available.

Feudal copyhold tenure was disadvantageous because it dis-incentivized investment and led to inefficiently low labor mobility, a point we illustrate through a simple, historically grounded model of perpetual copyhold tenure in the [Online Appendix](#). First,

1. The Dissolution began in 1535 when Henry VIII expropriated all monastic assets in England. By doing so, he broke with the Catholic Church and founded the Anglican Church.

2. Most important for us was a specific type of customary tenure known as copyhold of inheritance. This fixed the nominal rent of the tenant (and his heirs) in perpetuity. There were other forms of copyhold whose rents could be renegotiated, usually after three lives, effectively 100 years.

even though a copyholder, who paid a fixed nominal rent to the owner of the land, is the residual claimant of the returns on his investment, this investment is specific. This leads to inefficiently low rates of separation and labor mobility because the specific investments cannot be liquidated in the presence of potentially attractive outside options. Second, for the copyholder, the presence of such options naturally leads to underinvestment, since a more attractive outside option may come along. Third, the presence of perpetual copyholding undermines the efficient allocation of land because those owners who could use it best are unable to benefit from any productivity increases they bring because such benefits would completely accrue to the copyholders.³

The difference in the incidence of feudal tenure between monastic and nonmonastic land was a direct consequence of the Black Death. The monasteries, and the Church more broadly, were powerful landlords, and whereas tenants negotiated perpetual leases at low fixed nominal rents after the Black Death with nonmonastic landlords, monasteries were more effective at negotiating short leases. As a result, the incidence of perpetual copyhold tenure on monastic lands was 70% lower than on nonmonastic lands. When monastic lands became marketable after the Dissolution, we anticipate these lands to commercialize and develop through reallocation and investment. To test this hypothesis we collected data on the local impact of the Dissolution, on commercialization, as well as on the hypothesized social and economic changes that may have resulted from the commercialization of the English countryside across 15,000 parishes—the lowest administrative unit in England until about 1860.

To measure the impact of the Dissolution, we digitized the *Valor Ecclesiasticus*, the survey of each monastic asset in the entire country with its annual income that Henry VIII commissioned prior to the expropriation after 1535. One important feature of these data is that they record every manor each monastery owned, generating variation in where monasteries were landlords, rather than where the monks themselves lived. For our main explanatory variable, we code an indicator variable to measure the presence of monastic properties in a parish. This captures the discrete

3. One can think of this in terms of “misallocation” in the sense of [Hsieh and Klenow \(2009\)](#). [Restuccia and Santaaulalia-Llopis \(2017\)](#) provide evidence on the relationship between this and the commercialization of land, though in a very different context.

impact of the release of the monastic lands following the Dissolution. To validate our narrative on the local effect of the Dissolution, we first use data on the presence of markets in 1600 and the survival of perpetual copyhold into the nineteenth century. We find that former monastic parishes are more likely to have a recurring market, and are less likely to be unencumbered by feudal copyhold tenure, consistent with our interpretation of the shock.

Our first main results focus on social change. The most prominent historical hypothesis on the effects of the Dissolution is due to [Tawney \(1941a, 1941b\)](#) who stressed that the expropriation and subsequent sale of the assets held by the monasteries in England led to the rise of the gentry, a class of commercialized farmers in between the traditionally feudal classes of lords and the yeomen farmers (the model of [Doepke and Zilibotti 2008](#) can be thought of as a microfoundation for this change). We use a unique census from 1700 that records the number of gentry in each town and village in England and Wales to measure the presence of the gentry. The Reformation was not just about the breaking up of monastic assets, of course. Potentially more profound was the religious conversion that scholars since [Weber \(1905\)](#) and [Tawney \(1926\)](#) have connected to entrepreneurship, human capital formation, and industrialization ([Barro and McCleary 2003](#); [Becker and Woessmann 2009](#); [Cantoni 2015](#); [McCleary and Barro 2019](#)). To investigate the effect of the Dissolution on religion, we digitized the 1767 Returns of Papists, which was a government investigation reporting the number of Catholics in each parish. We find, consistent with Tawney, that gentry are more likely to be present on formerly monastic lands. We also find that monastic lands experienced more rapid conversion and thus subsequently had fewer Catholics, a point to which we return below.

For our second set of main results, we directly test the effect of the Dissolution on long-run development—specifically, structural change and industrialization. Using census data, we show that monastic parishes employ a smaller share of the working-age male population in agriculture in 1831 and a commensurately larger share in commercialized sectors, like trade and handicraft. Moreover, using data on all textile mills in England in 1838, we find that monastic parishes are more industrialized than non-monastic parishes. [Figure I](#) visualizes the relationship between the Dissolution and industrialization, and [Figure II](#) does the same for employment in agriculture.

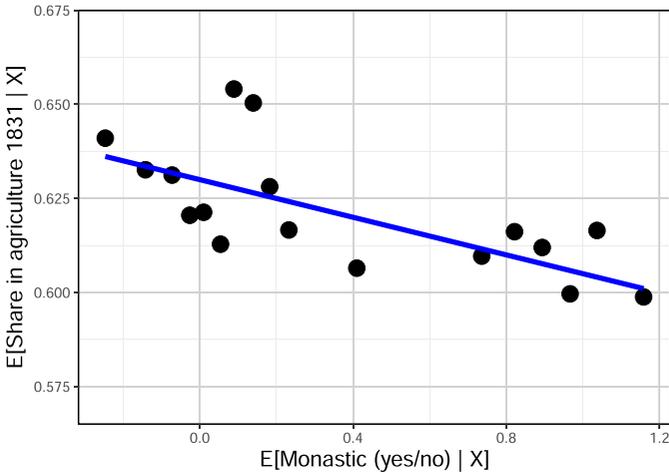


FIGURE II

The Dissolution and Employment in Agriculture in 1831

The regression line is fitted on our full data set. The dots summarize the data by computing the mean of the monastic indicator and the share of men over 20 in agriculture in 1831 within 17 bins of values of the monastic indicator, after partialing out total revenue per capita in the 1525 lay subsidies, parish area, and a vector of county fixed effects.

that former monastic parishes are 26% more likely to be home to gentry and have 33% fewer Catholics living in them (of the post-Reformation mean incidence of Catholics). Employment in monastic parishes is 15% less agricultural, and 13% higher in commercialized sectors of the economy. Finally, monastic parishes are 1 percentage point more likely to be industrialized, relative to the mean of 4%.

Taken together, our results are consistent with the rise of the gentry thesis and with commercialization of the countryside as a precondition for industrialization. The final part of the article aims to understand the mechanisms via which the changes in society (gentry and Catholics) and economic institutions (markets) may have affected structural change and industrialization.

Our theory suggests that the greater allocative efficiency that arose from allowing those best able to use lands unencumbered by feudal tenures would spur investment. We measure investment using data recently compiled by [Dowey \(2013\)](#) on the number

of agricultural patents registered in a parish between 1672 and 1852. We use data from [Heldring, Robinson, and Vollmer \(2021a\)](#) on the universe of parliamentary enclosures, an investment in the reorganization of property rights. We use data from [Caprettini and Voth \(2020\)](#) on where threshing machines were used between 1800 and 1830 to capture capital investment in agriculture. Finally, we use data on wheat yields per acre in 1840 from [Kain \(1986\)](#) to directly proxy agricultural productivity. We find that the presence of formerly monastic properties in a parish is positively and significantly correlated with patenting, enclosure, investment, and agricultural yield. These results are consistent with our model of the adverse incentive effects of perpetual copyholding.

What was the role of the social changes we documented in these processes? It is plausible that the impact of gentry or the persistence of Catholics on these investment outcomes was significant. The gentry would have had greater investment incentives, a point we substantiate with a review of the case study literature, because they could enter into economically rational tenurial relations. They could also more effectively enclose common land because they had good connections to Parliament, which had to enact this type of property rights rationalization. Catholics, on the other hand, were discriminated against, facing arbitrary expropriation of land and assets, higher tax rates, and exclusion from becoming Members of Parliament or state employees. The case study literature suggests this severely inhibited their incentives to invest, as we discuss in the next section. We assess the relative importance of the gentry and Catholics in a correlational mediation exercise, where we regress the presence of a textile mill on the share of Catholics in the population before the Industrial Revolution and on the number of local gentry. We find that Catholics are strongly negatively associated with industrialization, whereas the presence of gentry is strongly positively correlated. These effects operate independently, as including both measures in a horse race exercise does not change their estimated effects, nor the estimates' precision. Our results showing that places with more Catholics do worse economically are consistent with [Cantoni, Dittmar, and Yuchtman \(2018\)](#) who show that in Germany, expropriation of monasteries during the Reformation led to university students moving into secular subjects and building efforts being redirected toward more secular uses.

In sum, our findings link the spread of the market, brought about by the Dissolution, to economic and social change. These changes have been hypothesized to be preconditions for the Agricultural Revolution and ultimately industrialization, but they have not been tested before. Our results suggest that the end of monastic restrictions on the marketability of one-third of the land in England and relative incidence of customary tenure, itself directly linked to feudalism, were important for fundamental economic change. The lagged abolition of feudal land tenure in France and Germany may be behind why England pulled ahead on the world stage in the eighteenth century. Continental Europe only transformed after their political revolutions in the nineteenth century finally did away with servile labor and customary land tenure relationships (Acemoglu et al. 2011).⁴

Our article is related to quite a few other contributions in addition to those we have discussed above. Our findings are consistent with the literature on the Agricultural Revolution that has stressed that this was due to changes in economic institutions, particularly the spread of markets often in connection with enclosures (Jones 1974; Overton 1996). Though our evidence does not speak to the issue of the extent to which the Agricultural Revolution helped cause the Industrial Revolution (see Clark 2014), they are consistent with them being connected. Our results are also consistent with Tawney's hypothesis and with Catholicism being an impediment to industrialization.

This article proceeds as follows. The next section provides the relevant historical background to this article, including a discussion of the process of the Dissolution of the Monasteries and what happened to monastic lands afterward. Section III discusses the data in detail, particularly the collection of the Valor, and how we compiled these data. We also discuss the other variables we use in

4. Although our account restores a rather traditional theory of the prominence of England among Western European countries to the center of the discussion, our findings likely generalize outside this context. Precolonial Africa, for example, was characterized by an almost total absence of factor markets and land is not a marketable asset in most of the continent today. Though a labor market appeared in the colonial period, slavery also persisted until after World War II in large areas. Similarly, Eastern Europe was relatively poor and characterized by serfdom until the middle of the nineteenth century. In Latin America, explicit restrictions on indigenous labor persisted in Guatemala until the 1940s and Bolivia until the 1952 revolution. Finally, scholars point to the development of factor markets in Song China as one of the reasons it had higher living standards than England before the Industrial Revolution (von Glahn 2016).

the analysis and present some of the descriptive statistics. Finally, we describe our econometric models. Sections IV–VI present our results. Section VII concludes.

II. SETTING: THE MONASTERIES AND CUSTOMARY TENURE

In this section, we provide the necessary background to the Dissolution of the Monasteries and our hypotheses. We discuss the initial establishment of monasteries in England and their subsequent development. We focus on the crucial roles of the Black Death and the Dissolution in determining the incidence of feudal tenure across parishes in England. We also discuss the key friction that made copyhold of inheritance, the relatively more common form of land tenure in nonmonastic parishes, detrimental to productivity and labor mobility. Finally, we discuss how monastic regulations impeded transactions in monastic lands prior to the Dissolution.

II.A. *Early Monasteries*

After the fall of the Western Roman Empire, several large monasteries were founded, such as Glastonbury, Lindisfarne, and Jarrow. Many of these Benedictine establishments were raided by the Vikings, resulting in the virtual (but not full) destruction of monasticism in England by the early ninth century. The fraction of land held by monasteries in the north, where raids were more frequent, fell to well below 10% (Fleming 1985). On the eve of the Norman Conquest, there were a mere 35 monasteries in England (Douglas 1964).

After the Norman Conquest in 1066, there was a steep acceleration in monastic foundation. About 600 monasteries were founded in the century after 1066 (Knowles and Hadcock 1994). At the time of the Dissolution in 1535, there were 825 monasteries in all of England and Wales. This boom in foundations was closely related to the process through which monasteries are founded.

II.B. *Monastic Foundation*

Monasteries were founded by a patron, usually the head of a wealthy landowning family. This person would endow the monastery with land to build the physical monastery on, and with lands that would generate income to support the monks. Over time, patrons from the same family could add land to the

endowment of the monastery. In exchange, the patron was entitled to stay at the monastery, and it was understood that the monks would pray for their patron. Endowing a monastery was seen as an act of piety. After 1300, because of legal changes we discuss below, new foundations drop considerably. Instead, endowing private chapels in churches, or chantries, becomes the popular expression of piety. Monastic patronage could be sold, but if a family died out, monastic patronage escheated to the Crown (Stoerber 2007).

Because patrons endowed monasteries with land from their own holdings, the pattern of monastic landholding was determined by where the patron owned land. We know a great deal about landownership around the Conquest because it was recorded in the Domesday book. The Domesday book recorded the annual income, or value, of essentially all productive assets in England in 1086, when it was collected, and retrospectively for 1066. It also records the name of the owner and their feudal overlords. Finally, it provides estimates of the annual income of each unit before the Conquest.⁵ William the Conqueror expropriated all Anglo-Saxon nobles save a handful, and redistributed their lands to his followers from Normandy. He deliberately scattered their landholdings. He did this because lords could raise militias in proportion to their landholdings, and William worried that if he gave consolidated landholdings, a lord could raise a large army in one place and challenge him. He made an exception for the Welsh and Scottish borders, where he needed Marcher Lords to defend the country (Douglas 1964). We see the scattering of landholdings in our data. Many monasteries hold land all over England.

We can validate the claim that by and large monastic landownership was determined by the scattering of properties by William using data from the Domesday book (Hull 2018). We compute the total income generated in a parish in 1086, and in 1066, before the Conquest. For each manor in the Domesday book, we record whether it was owned by a monastery before the Conquest in 1066 and after, in 1086. We code an indicator equal to 1 if

5. The original survey is not complete. It excludes London and Winchester, which were tax exempt, and Durham, where the bishop had the right to tax. In addition, Westmorland, Cumberland, and Northumberland are missing. It records for each tenant of the king, his subtenants, the productive assets they own, like land, ploughs, and salt pans. It then estimates the annual income, or value, these assets create. The Domesday online project aggregated the value of all assets, and has transcribed the location of each asset. This allows us to map the total value of productive assets in the Domesday to our parishes (Hull 2018).

a manor was not owned by a monastery before the Conquest, but was passed to a monastery after the Conquest. We then assign each manor to a parish and regress this indicator on the income generated by the manor before the Conquest, in 1066, in a bivariate linear regression. Results are in [Online Appendix Table A-2](#). If monasteries were endowed with particularly (un)productive land, we expect to see a correlation between income before the Conquest and our indicator. Absence of such a correlation would be consistent with the historical narrative in this section. We find a small and insignificant correlation. This suggests that where monasteries got land in the wave of monastic foundation after the Conquest is uncorrelated with the economic output of a manor and is consistent with the scattering of landholdings for political rather than economic purposes.

After this initial wave of establishment, monastic endowment effectively stopped after Magna Carta in 1215 and the passing of the Statutes of Mortmain in 1279 and 1290 ([Raban 1974](#)). These documents prohibited donating land to monasteries because the feudal dues on the land were no longer payable to the Crown after donation.

The subsequent relevant history of the monasteries revolves around two massive events: the Black Death, which created variation between monastic and nonmonastic landlords in the type of tenancies they had on their lands, and the Dissolution, which ended monasticism in England but bequeathed the difference in land tenure relationships to the new owners of the monastic lands.

II.C. The Black Death and the Incidence of Feudal Tenure

The Black Death ended serfdom as the dominant way of organizing rural labor relationships. Due to the large drop in population, the villeins enjoyed increasing bargaining power and were able to negotiate advantageous leases at low fixed nominal rents, called copyholds. They sought to maximize the wedge between the rental rate and the price they got for agricultural output (see [Bailey 2016](#) for a comprehensive review of the evidence on the decline in serfdom and [French and Hoyle 2007](#) for a clear discussion of the nature and importance of copyhold). There were two sorts of copyholds: of inheritance, which lasted forever, and for lives, usually three lives (or three generations). It was called copyhold because a copy of the agreement was kept in the local manor court. The link between villeinage and copyhold has been pointed out

frequently by medieval historians. [Vinogradoff \(1923, 80\)](#) traces copyhold to norms that “a free man ... cannot be ejected by his lord against his will, providing he is doing the services due from the holding,” arguing that this was the “germ of copyhold tenure.” [Tawney \(1912, 46–47\)](#) observed “copyholders are the descendents of villeins ... copyhold tenure, is in fact, villein tenure to which the courts from the end of the fourteenth century have gradually extended their protection.” [Overton \(1996, 31\)](#) notes “villein tenure gradually changed its name to copyhold.” Villeins preferred such tenure because rents were lower. We can see this in an inquisition made in the early sixteenth century into “inclosures” by the Tudor government. Rents are lowest for copyholders, lower than rents on the demesne, for leaseholders, freeholders, or tenants-at-will ([Davenport and Leadam 1898, 561–565](#)).

Importantly, there was variation in the success of villeins in securing indefinite copyhold. [Swanson \(1989\)](#) notes that the Church was more aggressive in opposing the changes that were forced on landowners by the collapse in their labor supply, arguing that after the Black Death there was a “gradual decline (but not total abolition) of serfdom. Here again, ecclesiastics faced the same forces as their lay counterparts, but were seemingly less willing to give way” ([Swanson 1989, 201–202](#)). For example, Durham priory was drawing up lists of serfs until well into the fifteenth century, in 1497 Tavistock abbey was collecting servile dues and enforcing labor services, and in 1502–3 the bishopric of Lichfield and Westminster Abbey demesne leases were still demanding customary labor services from serfs (see [MacCulloch 1988](#) on the widespread persistence of serfdom into early Tudor England). These authors suggest that because monasteries were better able to bargain with villeins, the incidence of the feudal tenure that was most favorable to the ex-villein, copyhold of inheritance, was lower on monastic lands. Instead, the predominant forms of tenure were leasehold, or copyhold for lives, which usually expired every 99 years, although there was regional variation in what was considered a life.

How stark was the difference between monastic and non-monastic landlords? At the time of the Dissolution, as much as two-thirds of all land in England was held as copyhold ([Youings 1967, 308](#)). Although we are not aware of systematic medieval surveys of the extent of types of land tenure, we are able to reconstruct a partial picture.⁶ When a monastic property was expropriated as

6. See [French and Hoyle \(2007\)](#) for a discussion of available sources.

part of the Dissolution, surveyors would often draw up a final valuation, which determined the tax base when its customary taxes reverted to the Crown. In some cases, these records include additional information on the type of contract between the monastery and the tenant. Many of these surviving additional returns are published in the seven volumes of the *Monasticon Anglicanum* (Dugdale 1693). For 2,136 tenure contracts we are able to ascertain whether it was a perpetual copyhold of inheritance contract or another type of contract. Thirteen percent of these contracts were copyhold of inheritance contracts. Although it is not clear how representative this sample is, the number is consistent with the conventional wisdom among historians that copyholding of inheritance was relatively rare on monastic lands. Youngs's estimate is that two-thirds of land was under copyhold in all of England, with about half copyhold of inheritance and half copyhold for lives (Tawney 1912, 26; Overton 1996, 35). Therefore, our estimate of 13% for monastic lands implies that the incidence of copyhold of inheritance is almost 70% lower there.

Remarkably, copyhold tenure, a direct descendant of feudal tenure, lasted until it was finally abolished in 1925 by the Law of Property Act. In 1688 around two-thirds of the land remained under copyhold (Allen 1992, 95). Even as late as the nineteenth century, copyhold was widespread, and Beckett and Turner (2004) document that the Copyhold Commission, formed in 1841 to convert copyholds into freeholds, had to deal with thousands of cases, nearly all, logically enough, copyholds of inheritance.

II.D. The Frictions Introduced by Copyhold of Inheritance

The difference between monastic and nonmonastic tenancies is significant because copyholds of inheritance, relatively absent from monastic lands, had significantly negative effects on productivity, labor mobility, and the efficient allocation of land. We make these points more formally in the [Online Appendix](#) with a simple model of copyhold of inheritance tenure. We show three main results. First, compared to different types of contractual relationships, copyhold of inheritance led to lower investment. Second, it led to inefficiently low labor mobility. Finally, it was associated with inefficient matching between farmers and farms.⁷

7. These results all necessitate some degree of financial market imperfections or liquidity constraints, otherwise the landlord could buy the tenant out of the copyhold of inheritance contract which was legally possible.

The intuition for these results is simple. A tenant (and his dynasty) with a copyhold of inheritance pay a fixed nominal rent. They are thus the residual claimant on investment. However, the investment is specific in the sense that if they leave, they cannot liquidate it. In a world of increasing mobility and potentially attractive outside options, this leads to inefficient underinvestment relative to a situation either where the landowner farms the land or rents it out at market rents. Under copyhold of inheritance, the landlord does not want to invest, because the returns would accrue to the tenant. The fact that investment is specific leads not just to too little investment but also to inefficiently low mobility because individuals wish to stay to enjoy their investments. Finally, the nature of this contract means that there will not be efficient matching. In a world where some farmers can use the land more productively than others, there will be no tendency for matching to be efficient when all of the productivity gains accrue to a copyholder. These effects were less pronounced on copyhold for lives because, while nominal rents were also fixed at customary levels, after three lives, possibly 100 years, the copyhold contract lapsed and had to be renegotiated. At such a juncture, landlords could adopt more market-based contracts to claim part of the agricultural surplus that accrued to tenants under customary land relations. Such inefficiencies were even less prevalent on shorter leases, like freeholds.

II.E. The Situation before the Dissolution

On the eve of the Dissolution, there were 825 monasteries in England and Wales.⁸ These monasteries, together with cathedrals and parish churches, owned about one-third of all land in England and Wales (see [Table I](#); [Woodward 1966](#), 33; [Mingay 1976](#), 44). We saw that these lands were spread out all over England, and often were far away from where the monks lived. The largest monastic orders were the Benedictines and the Franciscans, but Cluniacs,

8. See [Woodward \(1966, 2\)](#). There were many types of monastic religious establishments, such as nunneries, friaries, abbeys, and priories. We use the term “monasteries” throughout this article. Much has been written on the Dissolution and the Reformation more generally; see [Gasquet \(1899\)](#), [Woodward \(1966\)](#), [Youngs \(1971\)](#), [Knowles \(1979\)](#), and [Duffy \(2005\)](#). [Savine \(1909\)](#) deals exclusively with the *Valor Ecclesiasticus*. See [Haigh \(1993\)](#) and [Bernard \(2007\)](#) on the Reformation more broadly, [Scarbrick \(1968\)](#) on Henry VIII, and [Elton \(1953\)](#) on Henry’s government.

TABLE I
DISTRIBUTION OF LANDOWNERSHIP IN ENGLAND IN 1436 AND 1688: PERCENTAGES OF
CULTIVATED LAND OWNED

	1436	1688
Aristocracy and greater gentry	15–20	15–20
Middling and lesser gentry	25	45–50
Yeomen, family farmers, and other small owners	20	25–33
Church and Crown	25–35	5–10

Note. Adapted from [Clay \(1984, 143\)](#)

Cistercians, and Gilbertines operated several houses in England as well.

II.F. The Dissolution

Henry VIII, who had become king in 1509, declared himself head of the Church in England in 1534. His initial objective was to appropriate all taxes that churches and monasteries traditionally paid to the pope. To assess the revenue potential of the Church, Henry ordered an assessment of the yearly income of all ecclesiastical possessions in England. The resulting reports were published in 1535 as the *Valor Ecclesiasticus*.⁹ Between 1536 and 1540 Parliament passed several acts that transferred the ownership of all monasteries in England to the Crown, effectively expropriating all assets of the entire monastic sector.¹⁰ Expropriation often involved a peaceful handover of the monastic buildings and its assets to the Crown, and pensioning off the monks and nuns. Sometimes it was done forcefully, and many important Catholic relics were destroyed in the fervor that accompanied Dissolution. The Dissolution went hand in hand with Henry's withdrawal from the

9. We list and describe the titles and specifics of the relevant acts, the state of the surviving *Valor* records, the methods of the *Valor* enumerators, as well as our method of coding the *Valor* data in the [Online Appendix](#). We also include a description of the *Valor* records for the manor of Helton, Lolbroke, and Bell as an example.

10. Dissolution of Church property was not without precedent in England. During the Hundred Years War and throughout the later Middle Ages, the alien priories (priories that were dependent on a monastery in France) were dissolved. In 1520, Cardinal Wolsey dissolved some 20 monasteries to pay for the foundation and endowment of an Oxford college and a school in Ipswich. On the continent, Swedish, German, and Swiss rulers had successfully dissolved several Catholic monasteries in the early sixteenth century ([Woodward 1966, 49](#)).

Roman Catholic Church and as such constituted the Reformation in England.

Initially, Henry had intended to manage the monastic lands and collect taxes. He instituted a new ministry for this purpose, the Court of Augmentations, but he soon decided to sell all formerly monastic land to finance an escalating war with France. He sold some of his most coveted assets, like the monastic buildings that he left standing, to friends and followers, but individual manors were largely sold at the fixed price of 20 years' income. We do not have a full manifest of who bought what, but what is clear is that many of the former nonreligious functionaries of the monasteries, like the bailiffs, who collected rents for the monks, and the stewards, who represented the monasteries in civil society, were often among the buyers (Savine 1909; Liljegren 1924).

It is also evident that the Dissolution greatly thickened the land market. In 1603, one commentator remarks: "In these days there go more words to a bargain of ten-pound land a year than in former times were used in the grant of an earldom" (Youings 1967, 304). By 1600, the land market had developed, and many buyers had consolidated small pieces of lands into estates. One commentator remarks in 1610: "lands pass from one to another more in these latter days than ever before" (Youings 1967, 303). In Devon, the number of transactions in the land market tripled in the years immediately after the Dissolution (Kew 1970). The most comprehensive study of the land market after the Dissolution is Habakkuk (1958), who first documented the increased dynamism in land markets. These changes contrast with nonmonastic lands, for which there had always been a land market, with the important exception that land held by the aristocracy was often held in entail. Habakkuk (1950, 18–19) estimates that as much as half of the land owned by the aristocracy was held in entail and could not be sold (see also Beckett 1984).

II.G. The Rise of the Gentry

The most famous historical hypothesis about the effects of the Dissolution is Tawney's rise of the gentry (Tawney 1941a, 1941b). Tawney noted the emergence of a class of commercialized farmers in the sixteenth and seventeenth century who rose relative to other groups in society (see Table I; Coss 2005 on the origins of the English gentry). Tawney related the rise of the gentry to support for Parliament in the English Civil War and hypothesized

that the Dissolution enabled their rise.¹¹ There is a large body of case study evidence that suggests that the people who bought the monastic land became members of the gentry later on.¹² For instance, of the leading gentry families in Hertfordshire in 1642, less than 10% had been settled there before 1485. In Essex this figure stood at 18%, in Norfolk at 42%, and in Suffolk at 13% (Mingay 1976, 9).¹³ Families such as the Knatchbulls from Kent and the Cholwicks from Devon were yeomen at the beginning of the sixteenth century but rose to be among the gentry over the course of the century, rising to the peerage later. Overall, as noted in Table I, the proportion of land owned by the gentry increased from 25% in 1436 to 45%–50% by 1688. The Church and Crown's share went from 25%–35% in 1436 to 5%–10% in 1688.¹⁴ The shares of land owned by great landowners and the yeomanry were relatively stable. The numbers in this table square with a great deal of other evidence. For example, the 1524 lay subsidy suggests that there were 200 knightly families and 4,000 to 5,000 esquires and gentlemen in England at that time. Thomas Wilson, in his book *The State of England Anno. Dom. 1600*, estimated

11. Tawney's papers generated a large body of literature. This focused on a plethora of issues; whether the aristocracy had really declined in favor of a rising class of gentry (Stone 1965); whether gentry really were more commercial or efficient than large landowners (Heal and Holmes 1994, chap. 3 for this literature); and whether the gentry were the group who led the rebellion against Charles I (see Jha 2015 for evidence on this). The consensus view of historians on these issues, as expressed by Clay (1984, 1985) and Overton (1996), now seems to be that indeed there was a big change in the distribution of land in sixteenth-century England as a result of the Dissolution and, moreover, that it makes sense to talk about the rise of the gentry.

12. Despite the preponderance of the term there is no one definition of the gentry. Mingay (1976, 2) states that a gentleman was distinguished by "education, profession, military rank, wealth, freedom from manual labor, and the right to wear arms." An often quoted contemporary definition is from Harrison originally in 1577: "Whosoever studieth the laws of the realm, whoso abideth in the university ... or professeth physic and the liberal sciences, or besides has service in the room of a captain in the wars, or good counsel given at home, whereby his commonwealth is benefitted ... is able to bear the port, charge and countenance of a gentleman, he shall for money have a coat and arms bestowed upon him by the heralds ... [and be] reputed for a gentleman ever after" (Harrison 1968, cited in Heal and Holmes 1994, 113–14).

13. For additional evidence for Monmouthshire, see Gray (1987). For evidence on sales of monastic land around 1600, see Outhwaite (1971).

14. For a detailed study of these patterns in Huntingdonshire, see Bedells (1990).

that these numbers had increased to 500 and 16,000, respectively (Wilson 1936). Gregory King's calculations of the social structure of England in 1688 (King 1810) suggest there were 620 knights, 3,000–3,500 esquires, and 12,000–20,000 gentlemen (see Thirsk and Cooper 1972, 755, 766–68; Cooper 1983, 20–42). Even though the population of England approximately doubled over this period, this suggests that the gentry were indeed relatively rising. Micro-estimates for different counties tell a similar story, for instance, in Yorkshire heraldic evidence suggests that there were 557 gentry families in 1558, 641 in 1603, and 679 in 1642 (Cliffe 1969, 5f). For Warwickshire a similar measure increases from 155 families in 1500 to 288 in 1642 (Carpenter 1992, 90; see Heal and Holmes 1994, 11–12, for more discussion).

In the introduction to the article, we suggested that even though this connection has not been explored much before, there is a great deal of case study evidence that suggests that the gentry played important roles in the Industrial Revolution (see also Bogart and Richardson 2009, 2011). For example, in his study of the history of the British coal industry, Nef pointed out the intensity with which gentry were involved not just in mining the coal under their own lands but also renting other lands with coalfields. In Lancashire and the West Riding of Yorkshire there were

the Andersons of Lostock, who had pits in Leeds and the surrounding manors, the Ashtons, a well-known Lancashire family with many branches who had pits in the lands around Oldham, the Hultons of Preston, who had pits near Bolton, the Listers, a West Riding family with colliery interest about Halifax and also at Colne, the Gascoignes of Gawthorpe, with colliery interests at Kippax and Barwick-in-Elmet, the Mallets of Normanton, who worked coal in the adjoining manor of Rothwell, and many others. Among the Lancashire families, the Listers alone appear to have been of yeoman extraction. In Durham and Northumberland many of the prominent local Gentry became interested during the sixteenth and seventeenth century in the coal industry. (Nef 1966, p. 9)

The central role of the gentry in the Lancashire coal mining industry is amply documented by Langton (1979a, 1979b). He notes for the period 1590 to 1689 that in the coal industry, “the landed gentry provided most of the investment and ability” (Langton 1979a, 74). His data indicate that for the period between 1690 and 1739, almost 50% of the collieries in central Lancashire were both owned and operated by landed gentry

and more were leased and operated by gentry (Langton 1979a, fig. 28, 124).¹⁵

A fascinating case that brings together many of our arguments is that of the Hesketh family. The Hesketh family had lived in Rufford in Lancashire since around 1250. On the eve of the Dissolution, the family owned several manors around Rufford and leased lands from Chester Abbey. After the Dissolution, these lands were leased from the king. One member of the Hesketh family, Thomas, was knighted in 1553, and in 1561 he purchased the manor of Hesketh-with-Becconsall (around five miles from Rufford) that had until recently been part of the Priory of St. John of Jerusalem in England. His son, called Sir Robert Hesketh, was elected a member of Parliament for Lancashire. His will indicates that he had the right to “dig and delve for coal and other materials.” Indeed, by the middle of the seventeenth century, we find the Heskeths partnering with four local gentlemen and a yeoman to open a mine in Wrightington, some six miles from Rufford. Many years later, in 1761, a Thomas Hesketh acquired the title of baronet. The baronetcy is called “the Hesketh baronetcy, of Rufford in the county palatine of Lancaster.” By this time, the Heskeths were not only regular members of Parliament, they were financing the Industrial Revolution, being involved in several mines in Shevington, a mere eight miles from Rufford (Farmer and Brownbill 1908; Langton 1979a, 76, 126; Hasler 2006).

Note that the importance of the gentry was not simply that they themselves were involved in industry, but that they also played an important role in forming partnerships and financing the main entrepreneurs—for example, the relationship between the gentleman Thomas Bentley and Josiah Wedgewood (McKendrick 1964; see Hudson 2002 for more examples).

II.H. The Reformation

The Dissolution was part of the much broader Reformation. In 1530, to a first approximation, 100% of people in England were Catholics. Initially the creation of the Church of England did not stop people maintaining their Catholic beliefs. In fact, it was only during the reign of Elizabeth I, particularly after the pope excommunicated her in 1570, that strong pressure was brought to

15. Swain (1986, 197) concludes his study of Lancashire by noting, “Thus we find that the gentry predominated amongst colliery entrepreneurs.” See Jenkin (1983) for a similar conclusion in the case of South Wales.

convert. Already the 1559 English Act of Uniformity had required all men and women to attend Protestant churches on Sunday or pay a 12 shilling fine. A 1563 act levied a fine of 100 marks and up to a year in prison on anyone attending a Catholic mass. A 1581 act raised the fine for failing to attend church to £20 per month and equated the activities of priests with treason. This latter decision was spurred by an influx of continental-trained Catholic priests after 1574 aimed at reconverting the country. Over 100 priests were executed. Refusing to convert, typically signalled by a refusal to attend a Protestant church on Sunday, became known as “recusancy.” In addition to the monthly fine, a convinced recusant could be imprisoned (many were) and two-thirds of their lands and all their goods were potentially forfeit. In the reign of Charles I, this was adjusted so that alternatively recusants would have to pay rent to the government on two-thirds of their land. As Charles himself put it, he wanted to make sure that “in the course of time they would [not] become mendicants,” adding “we do not seek their ruin” (quoted in [Havran 1962](#), 92). James I had previously strengthened the recusancy laws by barring Catholics from the professions and from holding public office. He introduced an oath of allegiance, which if refused, something the pope advocated, could be met with life imprisonment and the forfeiture of all property. Catholics were discriminated against until the Catholic Emancipation Act of 1829. After 1693, Catholics had to pay double the rate of the land tax and after 1700 were forbidden to buy land, and Protestant next of kin could claim the inheritance of Catholics.

The net effect of these measures, among other things, was a sharp decline in the number of Catholics. An authoritative estimate, from [Bossy \(1975\)](#), 192) is that in 1603 there were 40,000 Catholics in England (see [Sheils 2004](#), 257, 264, for an argument that this is likely a serious underestimate, probably by one-half). For 1760, we see in our data that there are 64,300 recorded Catholics in England.

The literature has proposed various explanations for the different rates of conversion in different parts of England.¹⁶ From

16. There are three main arguments in the historical literature. [Bossy \(1975\)](#) placed central emphasis on the role of Catholic missionary activity from the continent. He argued that more Catholics lived where the missionaries went. He also recognized however that Catholicism persisted longer in the north and west because there were “a variety of administrative barriers between oneself and hostile authority” ([Bossy 1975](#), 82). Effectively, people feared the implementation of the fines and penalties less, and this reduced the opportunity cost of staying

our perspective, the economic consequences of remaining Catholic must have been highly significant. Undoubtedly the fines and penalties on Catholics were imperfectly enforced, with Cliffe (1969, 221) noting “the pressure applied was not so consistently heavy as to force them inexorably into bankruptcy and ruin.” Nevertheless, between 1600 and 1642, 102 Yorkshire families had their main estates seized for recusancy (Cliffe 1969, 224). Cliffe’s reconstruction of the finances of Philip Constable, a Catholic gentleman from Everingham, shows that in 1632–33 he paid about 20% of his income in recusancy fines (Cliffe 1969, 222). He concludes, “the potential dangers could not be lightly ignored and many Catholic landowners preferred to attend Protestant services rather than hazard their estates” (Cliffe 1969, 181). Heal and Holmes’s (1994) conclusions are similar and they record that “Catholic families experienced financial difficulties, became enmeshed in debt, and sold up” (150).¹⁷

These facts have two important implications for our study. First, holding the intensity of people’s religious beliefs constant, whether one converted depended on the opportunity costs of doing so. In highly productive places, for example, the threat of losing one’s land is greater. Second, to the extent that one remained Catholic, the threat to property rights and excess taxes might plausibly reduce investment. Because our argument is that the Dissolution created better economic opportunities, one would then expect this first argument to imply that more Catholics converted in places affected by the Dissolution. The second implies that the greater the number of Catholics in a parish, the worse long-run economic outcomes ought to be.¹⁸

Catholic. Finally, Haigh (1975) argues that Catholicism persisted in places where religious beliefs were more intense and especially where there was a devotion of Mary and the saints. See also Pfaff (2013) on the importance of saint’s cults, and Barro and McCleary (2016) on sainthood. As Sheils puts it, “the distribution of Elizabethan Catholics reflected those areas with the strongest attachment to traditional forms in the early sixteenth century” (Sheils 2004, 259).

17. “Some figures suggest that financial embarrassment was suffered by a higher proportion of recusant than of Protestant gentry families: a disproportionate number of the gentry families in late Elizabethan Sussex and Surrey obliged to sell land were recusants; in early Stuart Yorkshire 51% of recusant families, as against 34% of their Protestant counterparts, were in financial difficulties” (Heal and Holmes 1994, 150). Aveling (1966) and Manning (1969) contain many similar examples from Yorkshire and Sussex respectively.

18. An alternative hypothesis would be that Catholics held back development through lower investment in education and human capital. Though we do not have

In sum, we hypothesize that the Dissolution's immediate effect was on markets and the allocation of factors of production. Following Tawney, we hypothesize that there was an intermediate impact of the Dissolution on social change. Finally, we hypothesize that ultimately there was a reduced-form effect of the Dissolution on industrialization, in line with the commercialization explanation of the English Industrial Revolution.

III. DATA AND EMPIRICAL FRAMEWORK

For our empirical specifications, we use parishes as our unit of observation. There were about 15,000 parishes and parish-like units in England in the nineteenth century.¹⁹ Parishes are the relevant local ecclesiastical and civil administrative unit for much of England's history, and their boundaries changed very little between the Dissolution and the Industrial Revolution. Importantly, medieval manors, the relevant economic unit in the countryside, were often coincidental with parishes. Names of individual villages and manors within our parishes sometimes changed considerably over time. Section 3 in the [Online Appendix](#) describes the procedure we followed to assign observations in different data sets to the appropriate parish.²⁰ We provide a full overview of all data sources in section 6 of the [Online Appendix](#).

III.A. *The Valor Ecclesiasticus*

We obtain our main independent variable, an indicator for whether a monastery owned a manor within a parish, from the *Valor Ecclesiasticus*. We refer to such parishes as monastic parishes. We use a transcript of the surviving original returns made by the British Record Commission in the first half of the nineteenth century as our source ([Caley and Hunter 1810, 1814, 1817, 1821, 1825, 1831](#)). We exploit the fact that each manor is

historical sources to investigate this, the available evidence does not make this channel likely. Most Catholics were in the north, and as [Houston \(1982\)](#) showed, if anything literacy was higher in northern early modern England than the rest of the country.

19. In some parts of England, territories were covered by hamlets, chapelries, extraparochial tracts, or other local units. We use these instead of a parish if they are the relevant lowest-level administrative unit.

20. [Kain and Oliver \(2001\)](#) reconstructed the administrative map of parishes for England. Their map has been digitized as the GIS of ancient parishes, which we use in this article.

located in a village and a parish and therefore has a place name. This enables us in principle to identify each unit and attribute it to a parish, even though the owner of the unit, such as a monastery, may be located elsewhere. This way we measure whether the local lord of the manor is a monastery, irrespective of where the monastery is located. [Figure III](#) maps the spatial distribution of monastic properties across England and shows that our data covers modern England almost entirely.²¹ In the [Online Appendix](#), we discuss the Valor in detail and [Figure A-1](#) shows the returns for the manor of Helton, Lolbroke, and Bell. We alternatively measure the effect of the Dissolution by the total revenue generated in a parish, with similar results.

III.B. Outcome Variables

We record most of our outcome variables at two points in time, once after the Dissolution and once before. In this section, we describe each data source we use.

1. *Markets.* To measure the initial development of markets following the Dissolution, we use the *Gazetteer of Markets and Fairs in England and Wales to 1516* ([Letters et al. 2003](#)). This source records medieval physical markets and fairs in towns and villages across England up to 1516 and their survival until 1600. Because the total number of markets fell over this period, we measure whether a market survived until 1600 with an indicator equal to 1 if a parish had a market in 1600, 0 if it had one in 1516 but no longer in 1600, and missing otherwise. It is important to note that these are goods markets primarily, and we use these data instead of measures of the development of the land or labor market from the mid-sixteenth century, which are not available to us.

2. *Copyhold.* We record copyhold from two sources. Post-Dissolution, we rely on the annual reports of the Copyhold Commission which, between 1842 and 1883, published yearly reports detailing archaic, virtually all perpetual, copyhold contracts that were converted to freehold or leasehold, parish by parish. We observe 2,421 parishes with surviving perpetual copyholds, and a

21. We restrict our attention to income from physical assets. This income is referred to in the records as temporal income. The Valor also records spiritual income, which are mostly customary duties payable to monastic or ecclesiastical officers.

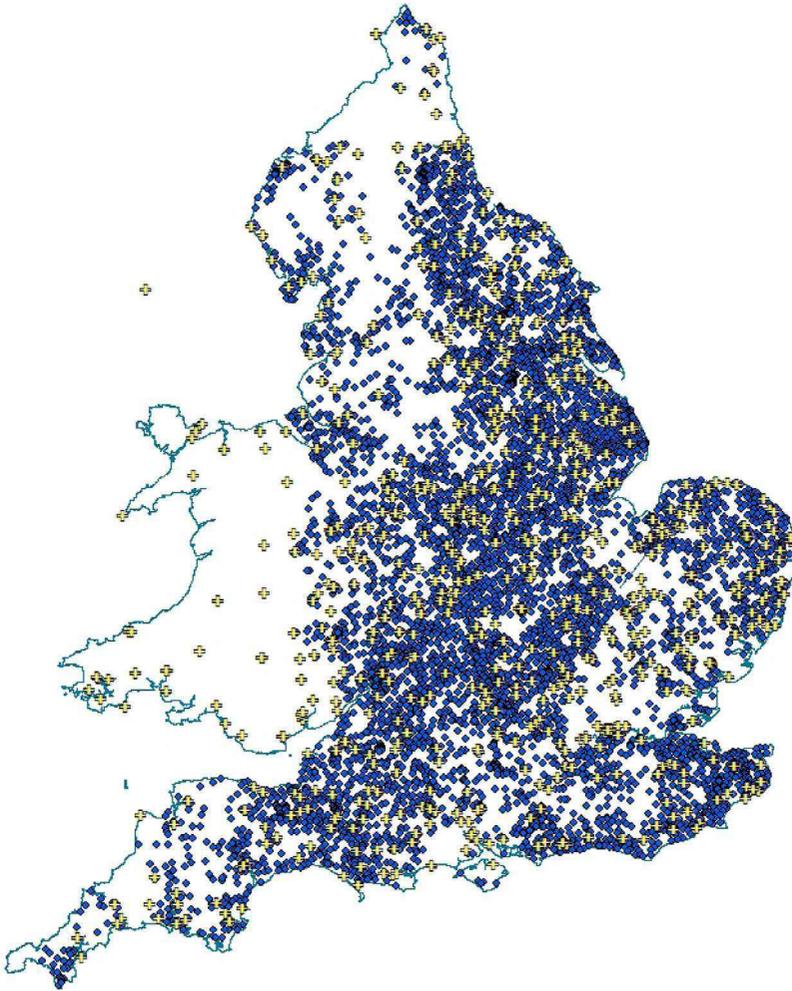


FIGURE III

Spatial Distribution of Monastic Property

A cross indicates a location of a monastery around 1535. These we plot for England and Wales, as well as a single monastery on the Isle of Man. Dots indicate at least one monastic manor in a parish in 1535. These we plot for England only.

total of 16,913 contracts. We use the total number of copyhold contracts converted over this period as our measure of the incidence of copyhold. Because the Copyhold Commission did not convert all copyholds, we omit parishes that are not mentioned in

the annual reports. For the pre-Dissolution period, we use the Tudor *Domesday of Inclosures* (Davenport and Leadam 1898), which records whether a copyhold was enclosed in the early sixteenth century, for Berkshire and Buckinghamshire counties. We record the count of copyholds in a parish in this data source.

3. *The Gentry.* We collect data on the presence of the gentry from Adams (1700), which is a systematic survey of the 24,000 largest cities/towns/villages in England published originally in 1680. We use the total number of gentry living in a particular locality from the most up-to-date version published by Adams, from 1700. Data before the Dissolution come from the Inquisitions post mortem (see Campbell and Bartley 2006). The inquisitions are asset enumerations drawn up at the death of a tenant of the king to establish feudal inheritance and taxation. We compiled the universe of inquisitions between 1399 and 1477 which record whether a tenant of the king had a sir, knight, or chevalier title and where he owned manors. In total, about 9,000 parishes are mentioned in these returns.²² Because these data vary at the manor level, and we record the title of the lord of each manor, we overestimate the number of gentry if an individual gentleman owned more than one manor. We return to this point in the results section.

4. *Religion.* In the eighteenth century, the English House of Lords initiated several surveys to document the extent of Catholicism in England. The most complete of such Returns of Papists is from 1767, and it documents 64,000 Catholics in nearly 2,500 parishes (Worrall 1980, 1989). We digitized this source and count the total number of Catholics in each parish. We normalize the total number of Catholics by population in 1831.²³

5. *Occupational Structure.* We use the digitized version of the 1831 Population Census (Gatley 2005) to compute shares of the adult male population that is older than 20 employed in

22. The source for these data is Mapping the Medieval Countryside, <http://www.inquisitionspostmortem.ac.uk/> (accessed November 2020).

23. We assume that if a parish does not appear in the Returns of Papists, there were no Catholics. Note that the normalization means that the number of observations we have for this variable is equal to the number of observations in the 1831 census.

different occupational categories.²⁴ We focus on the share of adult men over 20 years of age employed in agriculture which, on average, equals 62% across our data set of parishes, and the share employed in trade and handicraft, which equals, on average, 21%. Other categories that are distinguished in the census data are people employed as laborers, people employed as bankers or in other skilled professions, and a category for those not fitting one of these categories. There is a small category for manufacturing, employing 2% of adult men. Since we cannot find a credible matching category in the fourteenth century for manufacturing, we focus on trade and handicraft. Results using just manufacturing for the nineteenth century are similar.²⁵ To measure occupation structure before the Dissolution, we record the fraction of people employed in agriculture and in trade and handicraft from the 1381 poll tax, which was raised to fund the ongoing Hundred Years War (Fenwick 1998, 2001, 2005; Gibbs 2015). In our data we observe about 33,000 individuals with their occupations, and we map each individual occupation to a category that matches the 1831 census categories. We report the conversion table of occupations to occupational categories in the [Online Appendix](#), section 5.

6. *Industrialization.* In 1838, Parliament ordered a return of the “number of persons employed, of the description of the manufacture, and of the nature and amount of the moving power in all the Factories. . .” (Parliament 1839, 3). This return records each industrial mill in England indicating its manufacture (cotton, wool, worsted, flax, or silk), whether it was water or steam powered, and the number of people employed. We coded an indicator variable equal to 1 if a parish contains at least one textile mill, and a variable measuring the number of mills in a parish. To capture the potential location of mills before the Dissolution, we record the presence of mills in the fifteenth century (1399–1477) from the Inquisitions post mortem. Since these surveys record all assets with their manors, we can record whether a manor had a water mill in the fourteenth century.

24. The 1831 census is the first proper complete census in England; earlier returns in 1801, 1811, and 1821 are all incomplete and were collected indirectly (for example, by asking local priests).

25. We have been able to reconstruct census data for about 12,000 of our parishes. Regressions including variables based on the census will therefore have a lower number of observations than regressions that do not include such variables.

III.C. Mechanisms

1. *Agricultural Patents.* We compute the number of patent holders from the returns of patent holders in [Woodcroft \(1854\)](#), which were previously used by [Dowey \(2013\)](#). These returns record the place of residence of the patent holders, and we used this place to geographically locate the patents. We use the count of patents in a particular place, not the count of patentees (there can be multiple patentees on one patent). The variable we construct is the total number of patents that were registered to people living in a parish between 1672 and 1852.

2. *Enclosures.* We use data on the location of parliamentary enclosures from [Tate and Turner \(1978\)](#) as compiled and analyzed by [Heldring, Robinson, and Vollmer \(2021a\)](#). We record parishes mentioned in each enclosure act and code a dummy that is equal to 1 if land in a parish was enclosed between 1750 and 1830.

3. *Threshing Machines.* Following [Caprettini and Voth \(2020\)](#), we use the presence of threshing machines in a parish as a measure of capital investment. We use their data, which records the number of threshing machines present in a parish between 1800 and 1830.

4. *Agricultural Yield.* We record wheat yields from the 1840 tithe surveys, digitized by [Kain \(1986\)](#), as our proxy measure of productivity. As part of the Tithe Commutation Act, which commuted the tithe into money payments, agricultural statistics were collected for large parts of England. After assigning parishes to individual yield observations in this data set, we obtain a sample of 4,148 parishes for which we have wheat yield, measured in bushels per acre.

III.D. Control Variables

1. *Lay Subsidies.* We record a proxy for income from the lay subsidies of 1332 and 1525 as a summary measure of development differences before the Dissolution. The lay subsidies taxed movable wealth, and the extant returns record, parish by parish, total tax revenue and the total number of taxpayers. For 1525, our source is the Tudor lay subsidies analyzed by John Sheail ([Sheail 1968](#); see [Hoyle 1994](#) for a useful introduction to interpreting Tudor tax subsidies) and for 1332 we rely on

Glasscock (1975). The 1525 lay subsidy taxed, for each household, the most important source of income of the head of a household, defined as either personal property, landed incomes, or wages (Sheail 1968, 111).²⁶ Tax rates were: a flat rate of four pence per pound if the primary source of income was wage income, one-fortieth (six pence per pound) on goods, and one-twentieth (one shilling per pound) on landed incomes. If the goods were valued at more than £20, the rate increased to one-twentieth as well. Hence taxation was to some extent progressive. If the household did not earn at least £1 in wages a year, have £1 in landed income a year, or possess £2 worth of goods, it was not recorded in the survey. From this data, we record total tax revenue normalized by the number of taxpayers in each parish. The lay subsidy for 1332 was similar. It taxed one-tenth of all movable wealth above a threshold but excepted personal effects like household goods. We proceed similarly and record total tax revenue, normalized by the number of taxpayers.

III.E. Other Data

We use several geographical covariates. To account for the different sizes of parishes, we control for parish area throughout. Using ArcGIS, we compute the distance to London, the distance to the sea, or the border with Scotland (whichever one is nearest) and the distance to the nearest river (we include all rivers with year-round water flow (perennial) since we care more about water as a source of power than transport). From the Food and Agricultural Organization, we got data on wheat suitability and soil type.²⁷ In ArcGIS we measure for each parish the soil type and

26. The returns cover the entire country except for Northumberland, Durham, Cumberland, Westmorland, and Cheshire (all in the north). The Cinque Ports (Hastings, New Romney, Hythe, Dover, and Sandwich) were also omitted. Sometimes there are several returns available (such as one for 1524 and one for 1525). In these cases, we average over the available returns.

27. The FAO has classified the Earth's land surface into 32 reference soil groups, based on observable characteristics, such as accumulation of organic matter and porosity (for a full description, see IUSS Working Group, 2014). These classifications have been published as a GIS raster file. The most common soil types in our data set are Cambisols ("Soils with at least the beginnings of horizon differentiation in the subsoil, evident from changes in structure, colour, clay content or carbonate content," 143), Gleysols ("Soils with clear signs of groundwater influence," 150), Luvisols ("Soils with a pedogenetic clay differentiation (especially clay migration) between a topsoil with a lower and a subsoil with a higher clay content, high-activity clays and a high base saturation at some depth," 156),

wheat suitability under the centroid in this parish. Ideally, we would like to average over the shape, but the granularity of the suitability and soil type grids is too coarse to enable us to do this. We also control for elevation and slope, again measured under the centroid. To obtain the distance to the nearest coalfield for each parish, we digitized a map of the coalfields in England and Wales in 1912 (Strahan 1912) and computed the distance in ArcGIS. Finally, we control for distance to the nearest market town in 1680. The data on locations of market towns come from Adams (1700).

III.F. Descriptive Statistics

Table II contains the descriptive statistics of our outcome variables and our variable of interest, an indicator equal to 1 if a parish was monastic. The first two columns give means and standard deviations of all variables. Subsequent columns give means for parishes that were monastic and parishes that were not. The last two columns provide a *t*-test of the difference of means. In Online Appendix Table A-1 we provide summary statistics for all variables used in this article.

There are several interesting patterns in this table. First, about one-third of parishes are monastic, which is in line with the estimates cited in Section II of the total share of land owned by monasteries being equal to about one-third. Second, when we implement a simple difference of means exercise in Panel A, we see that monastic parishes have more markets and fewer copyholds. We also see that the number of gentry is higher and the number of Catholics lower. Finally, monastic parishes are more likely to have a textile mill, and employment is lower in agriculture and higher in commercialized professions in monastic parishes.

III.G. Estimation Framework

In this section we present our main estimating equations and discuss the nature of selection into monastic status.

Our starting point is a simple model that aims to estimate the cross-sectional relationship between the impact of the Dissolution

and an “Urban, mining, etc.” group. Soil groups differ in irrigation and drainage requirements, salinity, and fertility and are therefore differentially suitable for agriculture. Cambisols, for instance, “generally make good agricultural land and are used intensively” (144). For Gleysols, on the other hand, “the main obstacle to utilization is the necessity to install a drainage system to lower the groundwater table” (150).

TABLE II
SUMMARY STATISTICS FOR SELECTED OUTCOME VARIABLES

	N	Mean	Std. dev.	Non-monastic	Monastic	Difference	t-stat
Panel A: Post-Dissolution							
Monastic (yes/no)	16,290	0.32	0.47				
Market (yes/no) 1600	2,146	0.31	0.46	0.27	0.35	-0.08	-4.01
Copyhold count 1842-83	2,399	7.01	16.76	6.93	7.17	-0.23	-0.32
Number of gentry 1700	16,290	0.67	1.00	0.58	0.87	-0.29	-17.61
Share Catholic 1767	12,546	0.03	0.11	0.04	0.02	0.01	7.65
Share in agriculture 1831	12,859	0.62	0.25	0.62	0.62	0.01	1.82
Share in trade/handicraft 1831	12,859	0.18	0.13	0.17	0.19	-0.02	-7.86
Mill (yes/no) 1838	16,290	0.04	0.20	0.04	0.05	-0.01	-2.26
No. of mills 1838	16,290	0.16	2.28	0.14	0.19	-0.05	-1.34
Panel B: Pre-Dissolution							
Monastic (yes/no)	16,290	0.32	0.47				
Copyhold count 1516	155	0.41	0.88	0.34	0.54	-0.20	-1.33
Number of gentry 1399-1477	9,321	0.74	0.45	0.73	0.77	-0.04	-4.41
Share in agriculture 1381	1,035	0.35	0.34	0.33	0.37	-0.04	-1.78
Share in trade/handicraft 1381	1,035	0.12	0.18	0.12	0.13	-0.01	-0.91
Mill (yes/no) 1399-1477	9,321	0.06	0.24	0.06	0.06	0.00	0.14
No. of mills 1399-1477	9,321	0.07	0.29	0.07	0.07	0.00	0.29

Notes. Monastic (yes/no) is an indicator equal to 1 if a parish contained at least one manor owned by a monastery in 1535. Market (yes/no) is an indicator equal to 1 if a parish had a market. Copyhold count is the number of copyhold contracts recorded in a parish. Number of gentry is the number of members of the gentry that live in a parish in 1700. For the fifteenth century, it is the number of gentry either living in a parish or owning the manor in a parish. Share Catholic is the number of Catholics in a parish in 1767 normalized by population. Before the Dissolution, we assume everyone was Catholic. Share in agriculture is the share of the population (male, over 20 years old) employed in agriculture for 1831. For 1381, it is the share of the total working population employed in agriculture, male and female, in the 1381 poll tax. Share in trade/handicraft is the share of the population (male, over 20 years old) employed in trade or handicraft for 1831. For 1381, it is the share of the total working population employed in trade or handicraft, male and female, in the 1381 poll tax. Mill (yes/no) is an indicator equal to 1 if a parish had a textile mill in 1838, or a water mill in the fifteenth century. No. of mills is the number of textile mills a parish had in 1838, or the number of water mills in the fifteenth century.

of the Monasteries and our outcome variables. We estimate the following model using OLS:

$$(1) \quad y_{pc} = \gamma_c + \alpha_M \cdot M_p + \mathbf{X}'_p \cdot \alpha_X + \varepsilon_{pc}.$$

Here y_{pc} is our dependent variable of interest in parish p in county c which could be, for instance, the proportion of the labor force employed in agriculture. M_p is an indicator if a monastery owned land in parish p so that α_M is the main coefficient of interest. γ_c is a vector of county fixed effects ($n = 44$). The vector \mathbf{X}'_p always includes the physical area of parish p and lay subsidy revenues per capita in 1525, as a summary measure of development differences

before the Dissolution. Finally, ε_{pc} is a heteroskedasticity-robust (White) standard error. We report Conley (1999) standard errors throughout as well, to understand whether spatial correlation affects inference. We refer to estimates from this model as OLS estimates. We find that, typically, Conley standard errors do not differ from heteroskedasticity-robust standard errors.

In a series of robustness checks, we allow the level of fixed effects to vary and include numerous covariates in \mathbf{X}'_p . These covariates capture the broad geographical attractiveness of a parish for economic activity, such as the proximity of coal deposits, underlying soil productivity, and proximity to markets or London.

1. *Cross-Sectional Selection.* We naturally face the question what determines whether a manor is owned by a monastery. Ultimately, as we described in Section II, this is the product of a long historical process, starting with the founding of early Benedictine monasteries after the collapse of the Roman empire. Because most of these early monasteries were destroyed in Viking raids, the most important defining event for the distribution of monastic properties was the Norman Conquest in 1066. William the Conqueror redistributed virtually all land in England to his knights and abbots of new monasteries. This introduced the continental orders to England (e.g., Franciscans, Cluniacs) and reshaped the pattern of land ownership in England. We saw that in the immediate aftermath of the Conquest, monasteries did not get particularly (un)attractive land. But, subsequent patterns of bequest of land to the monasteries may have favored land that was more desirable.

We approach this issue first through the use of covariates, the most important ones being differences in development as captured by the lay subsidies and county fixed effects. These covariates ensure that we make local comparisons. If historically monasteries were simply located in the richest or most productive parts of the country, we would not expect to see a relationship between the Dissolution and industrialization, conditional on our covariates. It may of course still be the case that there are unobservables that vary at the parish level that correlate with subsequent development, and are not captured by preexisting development differences. We cannot rule this out, but we think it is relatively unlikely in light of the overall development of the English economy between the late Middle Ages and the Industrial Revolution. Before the Dissolution, the richest and most developed part of

England was the south, which was heavily involved in the wool trade with the European Continent. The Industrial Revolution made the north the richest part of the country (Darby et al. 1979). Our results are therefore more likely to be confounded by monastic and nonmonastic parishes being on different trends.

2. *Trends and Comparisons over Time.* The second part of our empirical analyses focuses on differences over time. For most of our outcome variables, we observe data at two points in time, after the Dissolution early on in the Industrial Revolution, and in the later Middle Ages. This allows us to estimate changes over time, comparing changes in monastic parishes to changes in nonmonastic parishes. We do so by estimating the following model:

$$(2) \quad y_{pt} = \beta_M \cdot M_p \cdot T_{post} + T_{post} + r_p + v_{pt},$$

where now y_{pt} is an outcome of interest for parish p either before or after the Dissolution, $t \in \{pre, post\}$. T_{post} is a time period fixed effect, and $M_p \cdot T_{post}$ measures the effect of a parish being monastic after the Dissolution. Since r_p is a vector of parish fixed effects, β_M measures the change over the Dissolution in monastic parishes, relative to the same change in nonmonastic parishes. v_{pt} is a heteroskedasticity-robust standard error, clustered at the parish level. For each outcome, we restrict the sample to create a balanced two-period panel. In practice this means we restrict to parishes for which we have pre-Dissolution data.

For a comparison of changes to be identified, we require monastic and nonmonastic parishes to be on parallel pretrends. We assess this assumption in Table III, using data from the Domesday book for 1066, before the Conquest, and for 1086, after the Conquest, and the lay subsidies of 1332 and 1525. We compute the changes in income or tax revenue per capita/taxpayer in between each of these surveys, and estimate equation (1) using these measures as the dependent variable.²⁸ Columns report the different pairwise comparisons, and our indicator for a parish being monastic is the variable of interest. We report standardized coefficients (coefficients obtained after subtracting from each outcome and right-hand-side variable its mean and dividing

28. Before we compute percentage changes, we min-max rescale each measure to obtain unit-free measures. We also omit the lay subsidy covariate from equation (1) because it is now part of the construction of the dependent variables.

TABLE III
TRENDS BEFORE THE DISSOLUTION

Dep. var: % change in income/revenue p.c. between	1332–1525 (1)	1086–1525 (2)	1066–1525 (3)	1086–1332 (4)	1066–1332 (5)	1066–1086 (6)
Monastic (yes/no)	0.0139 (0.0121)	−0.00844 (0.0125)	0.0149 (0.0129)	−0.0198 (0.0201)	−0.00879 (0.0242)	0.00145 (0.0126)
Control for parish area	Y	Y	Y	Y	Y	Y
County fixed effects	Y	Y	Y	Y	Y	Y
Conley Standard error	0.0121	0.0125	0.0128	0.0200	0.0240	0.0125
Observations	6,645	7,105	5,480	3,928	2,757	5,480
No. fixed effects	34	40	40	28	28	40
R^2	0.04	0.01	0.03	0.02	0.05	0.06

Notes. All regressions are estimated using OLS. The unit of observation is a parish. The dependent variables are percent changes in tax revenue or income per capita or per taxpayer between four surveys: the 1525 lay subsidy, the 1332 lay subsidy, which record tax revenue; and the 1086 Domesday survey, and the 1066 Domesday survey, which record income. We min-max rescaled revenue or income recorded in each survey, by subtracting the minimum value, and dividing by the range (max-min). We compute percentage changes between surveys using these rescaled measures. Monastic (yes/no) is an indicator equal to 1 if a parish contained at least one manor owned by a monastery in 1535. Parish area is the geographical area of a parish. County fixed effects are indicators for ancient counties. Standard errors correcting for heteroskedasticity at the parish level are in parentheses. * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.

by its standard deviation). Row 1 reports results. For example, column (1) uses the change in tax revenue per taxpayer in between the 1332 and 1525 lay subsidies as the dependent variable. If we find that our monastic indicator is correlated with this measure, this means that monastic parishes are growing differently than nonmonastic parishes between 1525 and 1332. We find a small and insignificant coefficient. We find similarly small coefficients for each pairwise comparison. This suggests that, on average, monastic parishes were not on different trends prior to the Dissolution.

3. *The Reformation as a Simultaneous Shock.* When we estimate equation (2), we include parish fixed effects, accounting for any unobserved level differences between parishes. Because monastic parishes are not on different pretrends, we capture the change in the outcome variable due to the expropriation of monastic parishes, subject to one important caveat. An informal requirement for models like ours is that any effects are observed close in time to treatment. If this isn't the case, other shocks may have happened that correlate with the Dissolution. The most natural

candidate for such a shock is the Reformation itself. The Reformation had two main effects that are relevant for our study: the conversion of Catholics to Anglicans, and the pensioning off of monks and nuns. We discussed the first shock at length earlier, and we test for a direct effect of the Dissolution on the presence of Catholics below. The effect of the removal of monks may be important, in light of previous contributions emphasizing the cultural importance of the presence of monks and nuns (Andersen et al. 2017). However, note that we measure the effect of the Dissolution using data on where the monks owned land and were landlords. This does include parishes with the monastic buildings themselves. It may also be the case that the Dissolution proxies for a future correlated shock. However, the consensus in the historical literature on agricultural development certainly is that the Dissolution was a watershed event, perhaps only rivaled by the parliamentary enclosure movement in terms of effects on the countryside, but we cannot rule out that there is some unmeasured other shock affecting our results. Subject to this caveat, we pursue our interest in the long-run effect of the Dissolution, and we refer to estimates from our model as ‘long-diff’ estimates, emphasizing this aspect of our study.

III.H. Markets and Copyhold

We argued that the Dissolution had two early effects. First, by making land available on the land market that was not previously tradable, the Dissolution facilitated matching productive individuals to land. Monastic land, in addition, was less encumbered by perpetual copyhold tenure. This meant that land tenure contracts would lapse after the Dissolution and could be renegotiated.

In this section, we attempt to measure these effects. We have no means to directly measure the depth of land markets, but we hypothesized that the greater levels of investment and productivity induced by the Dissolution should have spurred markets more broadly. We therefore use as an outcome variable the presence of local goods markets from Letters et al. (2003). To measure copyhold, we count the number of copyholds that were converted in the nineteenth century. For the sixteenth century, we count the number of copyholds in a smaller set of parishes from Davenport and Leadam (1898).

Table IV shows the results. We find that monastic parishes are 9 percentage points more likely to have a surviving market,

TABLE IV
THE DISSOLUTION, MARKETS, AND COPYHOLD

Dep. var.:	Market	Market	Copyhold	Copyhold
	(yes/no)		count	
	1600	(yes/no)	1842–83	count
Model:	OLS	Long-diff	OLS	Long-diff
	(1)	(2)	(3)	(4)
Monastic (yes/no)	0.09*** (0.021)		-0.18 (0.758)	
Monastic (yes/no) * Post-Dissolution		0.08*** (0.020)		-1.63** (0.678)
Control for lay subsidy revenue	Y	Y	Y	Y
Control for parish area	Y	Y	Y	Y
County fixed effects	Y	N	Y	N
Parish fixed effects	N	Y	N	Y
Post-Dissolution fixed effect	N	Y	N	Y
Conley standard error	0.021	0.020	0.750	0.674
Mean dep. var.	0.31	0.66	7.00	0.84
Observations	2,144	4,292	2,394	310
No. fixed effects	43	2,146	42	155
R^2	0.06	0.76	0.07	0.51

Notes. All regressions are estimated using OLS. The unit of observation is a parish. For our long-diff models, columns (2) and (4), we observe parishes twice, before and after the Dissolution. Market (yes/no) is an indicator equal to 1 if a parish had a market. Copyhold count is the number of copyhold contracts recorded in a parish. Monastic (yes/no) is an indicator equal to 1 if a parish contained at least one manor owned by a monastery in 1535. Post-Dissolution is an indicator equal to 1 for observations measured after the Dissolution. Lay subsidy revenue is the natural log of total tax revenue divided by total population in the 1525 lay subsidy returns. Parish area is the geographical area of a parish. County fixed effects are indicators for ancient counties. Parish fixed effects are indicators for ancient parishes. Standard errors correcting for heteroskedasticity at the parish level are in parentheses. In columns (2) and (4), these are clustered at the parish level. * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.

relative to a mean of 0.3. As we noted in the data section, the sample consists of parishes that had a market in 1516. The sample average therefore shows that one-third of parishes that had a market in 1516 still had a market in 1600. In monastic parishes, the survival rate is 9 percentage points higher. As a verification, we find an equal treatment effect in column (2), estimating [equation \(2\)](#). In columns (3) and (4), we test for the presence of copyhold. In column (3), we find a negative treatment effect, indicating that between 1842 and 1883, monastic parishes had fewer surviving copyholds. This effect is negative but imprecisely estimated. Importantly, however, we can compare changes over time in column (4). We find that in the balanced sample of parishes for which we have information before the Dissolution, the Dissolution is associated with a large reduction in the number of copyholds

equal to about 23% of the sample mean of the nineteenth-century copyholds (the overall sample mean is lower because the number of recorded contracts per parish is lower in the sixteenth-century data). Since after the Dissolution copyhold for lives contracts got converted into shorter leases on both monastic and nonmonastic lands (Youings 1967), we interpret the lower incidence of copyhold on monastic lands as consistent with our claim that perpetual copyhold—surviving into the nineteenth century—was lower on monastic lands before the Dissolution.

These results are consistent with the idea that the effect of the Dissolution was to increase the dynamism of markets, and that prior to the Dissolution, monastic lands were relatively less encumbered by perpetual copyhold tenure. In the rest of the article, we test the long-run effects of the Dissolution.

IV. MAIN RESULTS

Here we present the main results of our article. We first focus on social changes brought about by the commercialization of the countryside. Tawney's rise of the gentry thesis posited that the Dissolution facilitated the rise in income and social status of the gentry, a social class of commercial farmers, in between the feudal lords and yeomen. We find that monastic parishes are home to more members of the gentry in 1700. Due to the taxation and formal repression of Catholics, it was much less attractive to be Catholic in places that rapidly transformed after the Dissolution. As a result, we find fewer Catholics in monastic parishes in 1767. We then estimate the reduced-form effect of the Dissolution on economic outcomes during the Industrial Revolution. We find that parishes that were affected by the Dissolution employ fewer people in agriculture and more in trade and handicraft. Finally, these parishes were more likely to be industrialized in the nineteenth century.

IV.A. The Rise of the Gentry and Catholic Conversion

We study the effect of the Dissolution on the presence of gentry and Catholics in Table V. In column (1), we use the number of gentry in 1700 as our outcome. Most parishes with gentry are home to 1 gentleman, but some central London parishes have up to 12 gentlemen. On average, parishes have 0.67 gentlemen, and the median parish has none. In column (2), we use our data from

TABLE V
THE DISSOLUTION AND SOCIAL CHANGE

Dep. var.:	No. gentry 1700	No. gentry	Share Catholic 1767	Share Catholic
	OLS (1)	Long-diff (2)	OLS (3)	Long-diff (4)
Monastic (yes/no)	0.23*** (0.018)		-0.01*** (0.002)	
Monastic (yes/no) * Post-Dissolution		0.20*** (0.025)		-0.01*** (0.002)
Control for lay subsidy revenue	Y	Y	Y	Y
Control for parish area	Y	Y	Y	Y
County fixed effects	Y	N	Y	N
Parish fixed effects	N	Y	N	Y
Post-Dissolution fixed effect	N	Y	N	Y
Conley standard error	0.018	0.025	0.002	0.002
Mean dep. var.	0.67	0.77	0.03	0.51
Observations	16,243	18,642	12,522	25,092
No. fixed effects	43	9,321	42	12,546
R^2	0.12	0.52	0.17	0.99

Notes. All regressions are estimated using OLS. The unit of observation is a parish. For our long-diff models, columns (2) and (4), we observe parishes twice, before and after the Dissolution. Number of gentry is the number of members of the gentry that live in a parish in 1700. For the fifteenth century, it is the number of gentry either living in a parish or owning the manor in a parish. Share Catholic is the number of Catholics that live in a parish in 1767 normalized by population. Before the Dissolution, we assume everyone was Catholic. Monastic (yes/no) is an indicator equal to 1 if a parish contained at least one manor owned by a monastery in 1535. Post-Dissolution is an indicator equal to 1 for observations measured after the Dissolution. Lay subsidy revenue is the natural log of total tax revenue divided by total population in the 1525 lay subsidy returns. Parish area is the geographical area of a parish. County fixed effects are indicators for ancient counties. Parish fixed effects are indicators for ancient parishes. Standard errors correcting for heteroskedasticity at the parish level are in parentheses. In columns (2) and (4) these are clustered at the parish level. * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.

the Inquisitions post mortem to understand the pre-Dissolution distribution of gentry. Here we rely on titles, such as knight, to identify those who are precursors of the later commercial gentry (Coss 2005). Parishes have a maximum of two gentlemen in the fifteenth century. However, we cannot distinguish between where a gentleman lives and where he owns land. Therefore, we observe more parishes with a gentleman than we otherwise would have, and the median parish in this data source has one gentleman. On average, parishes have 0.74 gentlemen. We do not think that this matters very much for our results. We account for the period-specific mean number of gentry through time fixed effects.

In column (3), we use the number of Catholics in 1767, normalized by population from the first reliable census from 1831.

The median parish does not have any Catholics. Some parishes have a large number of Catholics. East Lulworth, for example, is home to 114 Catholics in 1767 and was, from 1786 onward, home to the first newly built Catholic chapel in England after the Reformation. As a validation, in column (4), we assume that everyone was Catholic before the Dissolution, and estimate [equation \(2\)](#) using the share of Catholics as the dependent variable as well.

Columns (1) and (2) study the the presence of the gentry. We find positive and significant effects in both our OLS and long-diff models. We find that the effect of the Dissolution is associated with a 0.2 (std. err. 0.02) increase in the number of gentry, relative to a sample mean of about 0.67. This result is as far as we are aware the first test of the connection made by Tawney between the Dissolution and the rise of the gentry ([Tawney 1941a, 1941b](#)).²⁹ More broadly, this result is consistent with the case study evidence cited earlier on the gentry being able to take advantage of the opportunities offered by the Dissolution.

In columns (3) and (4), we test for the effect of the Dissolution on the geographical spread of Catholics. We find that monastic parishes have a significantly lower share of Catholics in the cross-section (column (3)) and in our panel (column (4)). In column (3), for example, we find that the fraction of Catholics is about 1 percentage point lower in monastic parishes, relative to a sample mean of 3%. We validate this result in column (4), subject to the caveat that the preperiod share of Catholics is artificially set to 1 everywhere.

Naturally, an important open question is whether having gentry or Catholics is associated with improved or worse economic outcomes. We return to this point below.

IV.B. Occupational Structure

In [Table VI](#), we directly study the commercialization thesis. The core of this thesis is the notion that as the technological changes that precipitated the Industrial Revolution unfolded, England was particularly well positioned to take advantage of its opportunities because factors of production, especially labor, were more mobile. In column (1), we use the fraction of the adult male labor force employed in agriculture to test this idea. In column (2), we estimate our long-diff model, using the share of individuals in

29. [Jha \(2015\)](#), using different sources of information, fails to find support for Tawney's secondary claims about the gentry's role in the English Civil War.

TABLE VI
THE DISSOLUTION AND OCCUPATIONAL STRUCTURE

Dep. var.: Share of working population in	Agriculture		Trade/ handicraft	
	1831	Agriculture	1831	Trade/ handicraft
Model:	OLS	Long-diff	OLS	Long-diff
	(1)	(2)	(3)	(4)
Monastic (yes/no)	-0.03*** (0.005)		0.02*** (0.003)	
Monastic (yes/no) * Post-Dissolution		-0.07** (0.027)		0.02* (0.013)
Control for lay subsidy revenue	Y	Y	Y	Y
Control for parish area	Y	Y	Y	Y
County fixed effects	Y	N	Y	N
Parish fixed effects	N	Y	N	Y
Post-Dissolution fixed effect	N	Y	N	Y
Conley standard error	0.005	0.027	0.003	0.013
Mean dep. var.	0.62	0.47	0.18	0.16
Observations	12,831	1,754	12,831	1,754
No. fixed effects	42	877	42	877
R ²	0.10	0.63	0.03	0.71

Notes. All regressions are estimated using OLS. The unit of observation is a parish. For our long-diff models, columns (2) and (4), we observe parishes twice, before and after the Dissolution. Share in agriculture is the share of the population (male, over 20 years old) employed in agriculture, for 1831. For 1381, it is the share of the total working population employed in agriculture, male and female, in the 1381 poll tax. Share in trade/handicraft is the share of the population (male, over 20 years old) employed in trade or handicraft, for 1831. For 1381, it is the share of the total working population employed in trade or handicraft, male and female, in the 1381 poll tax. Monastic (yes/no) is an indicator equal to 1 if a parish contained at least one manor owned by a monastery in 1535. Post-Dissolution is an indicator equal to 1 for observations measured after the Dissolution. Lay subsidy revenue is the natural log of total tax revenue divided by total population in the 1525 lay subsidy returns. Parish area is the geographical area of a parish. County fixed effects are indicators for ancient counties. Parish fixed effects are indicators for ancient parishes. Standard errors correcting for heteroskedasticity at the parish level are in parentheses. In columns (2) and (4) these are clustered at the parish level. * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.

agriculture in the 1381 poll tax as our pre-Dissolution observation. Note that due to the different divisors (adult male population, or total population), the share of the labor force employed is higher in 1831. Naturally, we difference these means out. In columns (3) and (4) we study more commercialized professions. In the 1831 census, these are individuals employed in trade and handicraft. We code professions in the 1381 poll tax to match this category.

In [Table VI](#), as before, odd columns present estimates of [equation \(1\)](#) and even columns present estimates of [equation \(2\)](#). In column (1) we show the cross-sectional estimated effect of the Dissolution on employment in agriculture. We find a negative and

statistically significant effect of being monastic on the fraction of men over 20 in agriculture. This effect is virtually all absorbed by a commensurate increase in the fraction of men over 20 in trade or handicraft, which goes up. Monastic parishes see a 3 percentage point reduction in employment in agriculture and a 2 percentage point increase in employment in trade and handicraft. Relative to its mean of 62%, the reduction in agricultural employment does not appear to be large. But most of this decrease goes into an increase in employment in trade and handicraft. A 2 percentage point increase in employment in trade and handicraft is about 11% of its mean. In columns (2) and (4), we estimate long-diff effects. We find similar effects, especially for employment in trade and handicraft. We find a larger estimated negative effect for employment in agriculture, which may be due to the smaller sample size as a consequence of the lower number of parishes enumerated as part of the fourteenth-century poll tax.

The commercialization thesis's objective is to explain industrialization. In the next section, we directly estimate the reduced-form effect of the Dissolution on industrialization.

IV.C. Textile Mills

In this section we estimate the effect of the Dissolution on industrialization. We code an indicator equal to 1 if a parish was home to a textile mill in 1838 to capture the location of the Industrial Revolution. We also construct a count variable for the number of mills. When we report estimates of [equation \(1\)](#), we measure these variables in 1838. When we show estimates of [equation \(2\)](#), we measure mills in either the fifteenth century or in 1838, as described earlier.

[Table VII](#), column (1) provides estimates of [equation \(1\)](#) using the mill indicator as the dependent variable. The estimated effect of the Dissolution is in row 1. Column (2) provides estimates of [equation \(2\)](#), using the same outcome variable. The estimated effect of the Dissolution is in row 2. Columns (3) and (4) follow the same structure but use the number of mills as the dependent variable. We find a strong, positive relationship between the Dissolution and the location of industrial activity, using either model. Take the estimated effect in column (1), 0.01 (std. err. 0.004). This estimate implies that monastic parishes are more likely to have a textile mill in 1838, with the effect size about equal to one-quarter of the sample mean. In column (2), we reestimate the effect of the

TABLE VII
THE DISSOLUTION AND INDUSTRIALIZATION

Dep. var.:	Mill (yes/no)	Mill (yes/no)	No. mills 1838	No. mills
	1838			
Model:	OLS (1)	Long-diff (2)	OLS (3)	Long-diff (4)
Monastic (yes/no)	0.01*** (0.004)		0.11** (0.052)	
Monastic (yes/no) * Post-Dissolution		0.01** (0.006)		0.11** (0.052)
Control for lay subsidy revenue	Y	Y	Y	Y
Control for parish area	Y	Y	Y	Y
County fixed effects	Y	N	Y	N
Parish fixed effects	N	Y	N	Y
Post-Dissolution fixed effect	N	Y	N	Y
Conley standard error	0.004	0.006	0.052	0.052
Mean dep. var.	0.04	0.05	0.16	0.09
Observations	16,243	18,642	16,243	18,642
No. fixed effects	43	9,321	43	9,321
R^2	0.05	0.53	0.02	0.50

Notes. All regressions are estimated using OLS. The unit of observation is a parish. For our long-diff models, columns (2) and (4), we observe parishes twice, before and after the Dissolution. Mill (yes/no) is an indicator equal to 1 if a parish had a textile mill in 1838, or a water mill in the fifteenth century. No. of Mills is the number of textile mills a parish had in 1838, or the number of water mills in the fifteenth century. Monastic (yes/no) is an indicator equal to 1 if a parish contained at least one manor owned by a monastery in 1535. Post-Dissolution is an indicator equal to 1 for observations measured after the Dissolution. Lay subsidy revenue is the natural log of total tax revenue divided by total population in the 1525 lay subsidy returns. Parish area is the geographical area of a parish. County fixed effects are indicators for ancient counties. Parish fixed effects are indicators for ancient parishes. Standard errors correcting for heteroskedasticity at the parish level are in parentheses. In columns (2) and (4) these are clustered at the parish level. * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.

Dissolution in our two-period panel, where we control for parish fixed effects. Since we have data on pre-Dissolution mills, we study whether the Dissolution differentially increased the presence of mills. We find a very similar treatment effect, 0.01 (clustered std. err. 0.006). Monastic parishes are about 20% more likely to have a textile mill than nonmonastic parishes. This estimate also suggests that the presence of wrights in some parts of the country does not confound our results (Mokyr, Sarid, and van der Beek 2020). When we look at the scale of industrialization in columns (3) and (4), monastic parishes are also more industrialized on the intensive margin, although these results are less precisely estimated.

Our results on textile mills and employment speak most directly to the hypothesis advanced by Pirenne (1927, 1936), Polanyi (1944), and Hicks (1969). Their argument was that the commercialization or marketization of the English economy led to factors of production being able to be reallocated freely to new economic opportunities when they arose. Consistent with these ideas, we find that the Dissolution affects the composition of the labor force and, ultimately, industrialization.

IV.D. Robustness

In the [Online Appendix](#), we undertake a large number of robustness checks, which we only briefly mention here. In Section 4 of the [Online Appendix](#), we discuss all robustness checks at length. The most important exercise we do is to vary our fixed effects. In our baseline tables, we compare parishes in 44 counties. In [Online Appendix](#) Tables A-3 and A-4, we vary this. In [Online Appendix](#) Table A-3 we report our results without any covariates. Not only do we find similar results in sign, our estimated effects are very similar. In [Online Appendix](#) Table A-4 we first tighten our fixed effects, using hundred fixed effects (hundreds are an administrative unit in between counties and parishes; there are about 900 hundreds). Then we construct a grid that we overlay on England and use to add 10-by-10 kilometer grid cell fixed effects and 5-by-5 kilometer grid cell fixed effects. In our full sample, there are about 5,100 5-by-5 kilometer grid cells, which means that we have on average about three parishes in each cell. In these exercises, our estimated effects are very similar to our baseline effects, showing that unobservables that vary above the parish level are unlikely to confound our results. This finding is consistent with the idea that the parish is a natural historical economic unit of analysis, as it coincides with historical manors.

In [Online Appendix](#) Table A-5 we include a large number of additional geographical covariates. Our results are unchanged, but some of our estimated effects are of independent interest. In line with the arguments made by Pomeranz (2000), Allen (2009), and Wrigley (2010), for example, we find that parishes closer to coalfields are more likely to industrialize.³⁰ This effect operates

30. Though it is not the focus of our analysis, our findings also support other channels, such as the importance of the presence of natural resources emphasized by Clark and Jacks (2007), Allen (2009), Crafts and Wolf (2014), and Fernihough and O'Rourke (2021).

independently from the effect of the Dissolution. In [Online Appendix Table A-6](#) we show that we can substitute our monastic parish indicator with a continuous measure of the impact of the Dissolution without repercussions for our results.

In [Online Appendix Table A-7](#), we follow [Andersen et al. \(2017\)](#) and study the Cistercians. They argue that the Cistercians were involved in human capital transmission, which may have had a long-run effect. We expect this effect to be muted in our data because we focus on variation in where the monasteries owned land, rather than where the monks lived. Nevertheless, we show that our results are robust to removing all manors owned by Cistercians from our sample.

V. MECHANISMS

In the previous section we showed that the Dissolution is positively associated with the rise of the gentry, with the decline of Catholicism, and—ultimately—industrialization. Here we focus on several plausible mechanisms linking the Dissolution to these outcomes, and especially the gentry to industrialization. Specifically, we study innovation, enclosure, capital investment, and agricultural yields. Each outcome captures a form of investment or innovation, which is the type of change that would be facilitated by better developed factor markets or more commercially minded gentry.

In [Table VIII](#), column (1), we use the number of agricultural patents filed by residents of parish p in the period 1672–1852. In total we have 388 patents in our data, and 95% of patents are filed after 1780. The majority of the patents have to do with machinery. For example, we observe several patents for improved ploughs, seed drills, or for finishing wool. For 234 patentees we have occupation data, and 52 (22%) of these patentees are members of the gentry, which constitute the largest single occupation group. This number is far larger than, for example, engineers (16). When we aggregate smaller professions such as cloth manufacturer and cotton spinner into elite (nobility, lawyers, professors), gentry, skilled artisans, and farmers, the artisans constitute the largest occupational category. In column (2) we measure enclosure during the parliamentary enclosure movement. [Heldring, Robinson, and Vollmer \(2021a\)](#) provide an introduction to these data. Enclosure was a legal procedure which assigned private property rights to commonly owned and governed

TABLE VIII
MECHANISMS

Dep. var.:	No. patents (1)	Enclosure (2)	No. of threshing machines (3)	Wheat yield (4)
Monastic (yes/no)	0.02*** (0.007)	0.08*** (0.008)	0.01*** (0.004)	0.24* (0.134)
Control for lay subsidy revenue	Y	Y	Y	Y
Control for parish area	Y	Y	Y	Y
County fixed effects	Y	Y	Y	Y
Conley standard error	0.007	0.008	0.004	0.133
Mean dep. var.	0.02	0.37	0.03	21.71
Observations	16,243	16,243	16,243	4,025
No. fixed effects	43	43	43	42
R^2	0.00	0.19	0.05	0.30

Notes. All regressions are estimated using OLS. The unit of observation is a parish. No. of patents filed by residents is the number of agricultural patents filed by residents between 1672 and 1852. Enclosure (yes/no) is an indicator equal to 1 if a parish was enclosed at any point between 1750 and 1830. No. of threshing machines is the number of threshing machines in a parish between 1800 and 1830. Wheat yield (bushels per acre) is the number of bushels of wheat that a typical acre yields in 1840. Monastic (yes/no) is an indicator equal to 1 if a parish contained at least one manor owned by a monastery in 1535. Lay subsidy revenue is the natural log of total tax revenue divided by total population in the 1525 lay subsidy returns. Parish area is the geographical area of a parish. County fixed effects are indicators for ancient counties. Standard errors correcting for heteroskedasticity at the parish level are in parentheses. * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.

lands. The enclosure process had to be initiated by landowners, and more commercially minded individuals, such as the gentry, may be more likely to push for enclosure. [Heldring, Robinson, and Vollmer \(2021a\)](#) find that enclosure is associated with higher productivity in agriculture. Here we ask whether enclosure is more likely to occur in monastic parishes. In column (3), we directly measure capital investment, by measuring the number of threshing machines in a parish. We observe 409 parishes with threshing machines, and the median parish with a threshing machine has one. Finally, in column (4), we measure wheat yield in bushels per acre. We do not have pre-Dissolution observations for these variables, and we therefore estimate [equation \(1\)](#) for these outcomes.

VI. COMPARING CATHOLICS AND GENTRY

In [Table IX](#) we take our intermediate results on the Catholics and the gentry and study their correlation with industrialization.

TABLE IX
MECHANISMS COMPARISON: INDUSTRIALIZATION

Dep. var.:	Mill (yes/no) 1838			
	(1)	(2)	(3)	(4)
Share Catholic 1767	-0.11*** (0.016)		-0.10*** (0.016)	-0.10*** (0.016)
Number of gentry in 1700		0.01*** (0.002)	0.01*** (0.002)	0.01*** (0.002)
Monastic (yes/no)				0.01*** (0.004)
Control for lay subsidy revenue	Y	Y	Y	Y
Control for parish area	Y	Y	Y	Y
County fixed effects	Y	Y	Y	Y
Mean dep. var.	0.04	0.04	0.04	0.04
Observations	12,522	16,243	12,522	12,522
R ²	0.05	0.05	0.05	0.05

Notes. All regressions are estimated using OLS. The unit of observation is a parish. Mill 1838 is an indicator equal to 1 if a parish had a textile mill in 1838. Catholic 1767 is the number of Catholics in a parish normalized by population in the 1831 census. Gentry 1700 is the number of members of the gentry in a parish in 1700. Monastic (yes/no) is an indicator equal to 1 if a parish contained at least one manor owned by a monastery in 1535. Lay subsidy revenue is the natural log of total tax revenue divided by total population in the 1525 lay subsidy returns. Parish area is the geographical area of a parish. County fixed effects are indicators for ancient counties. Standard errors correcting for heteroskedasticity at the parish level are in parentheses. * indicates significance at the 10% level, ** at the 5% level, *** at the 1% level.

Both variables capture potentially important channels of transmission from the Dissolution to the Industrial Revolution, but they capture different aspects. We interpret the presence of gentry, following Tawney, as a direct outcome of increased economic dynamism and commercialization of the countryside. The presence of Catholics plausibly also affects economic development through other mechanisms, such as discrimination.

In column (1) we simply estimate [equation \(1\)](#) with our mill indicator as the dependent variable and the share of the population that is Catholic in 1767 as the right-hand-side variable. We find a negative and significant correlation with economic development. The mean share of Catholics is about 3%. The estimated coefficient implies that an increase in the share of Catholics in a parish by its mean of 3% is associated with a decline in the probability of having a mill of about 10% of its sample mean. This effect is consistent with both repression of Catholics, as well as arguments that put an emphasis on cultural attitudes of Catholics being less conducive to investment ([Weber 1905](#)). For gentry, we observe the opposite correlation (column (2)). Having an

additional member of the gentry is associated with a higher probability of having a mill by about 25% of its sample average, consistent with the evidence on the involvement of the gentry in funding and engaging in industrialization. It is important to note that neither of these results are interpretable as causal.

An interesting question is whether these mechanisms operate separately, or whether in parishes where people remained Catholic fewer gentry rose. In column (3) we include both measures simultaneously. Both point estimates are unchanged and equally precisely estimated, suggesting that the presence of Catholics and gentry are orthogonal correlates of industrialization. A final question we ask is whether the Catholics and gentry jointly explain the full effect of the Dissolution. We do not expect this to be the case because our hypothesis is that the increased dynamism of the land and labor markets affected farmers as much as gentry by freeing them from the legacy of feudal land tenure relationships. In column (4) we include our indicator for monastic parishes as an additional regressor, and we find that it correlates with industrialization, even when we include the share of Catholics and number of gentry.

VII. CONCLUSIONS

In this article, we conducted what to our knowledge is the first empirical investigation of a central aspect of the salient commercialization thesis about the causes of industrialization and the Industrial Revolution in England. Though we cannot test the idea that it was commercialization that caused the Industrial Revolution, we used the effect of the Dissolution of the Monasteries in England between 1536 and 1540 as a source of variation in the extent of commercialization within England. [Tawney \(1941a, 1941b\)](#) first proposed that the Dissolution and subsequent sell-off of Church land, representing around one-third of agricultural land in England, created a huge shock to the English economy and social structure with profound consequences. We argue that this can be viewed as a natural experiment in the potential commercialization of economic institutions because monastic lands were not encumbered with customary tenures emanating from feudalism. Instead they could be commercially exploited with a major positive impact on resource allocation and incentives. To investigate this we digitized the 1535 Valor

Ecclesiasticus, the census that Henry VIII commissioned on monastic incomes.

Using the presence of monastically owned land at the parish level as our main explanatory variable, we showed that the Dissolution had significant positive effects on industrialization, which we measured using data from the 1838 mill census, the first time the British government collected systematic data on this driving sector of the Industrial Revolution. We also showed that the Dissolution was associated with structural change, specifically the movement of labor out of agriculture and into more commercialized sectors of the economy.

We examined several channels that might link the Dissolution to these long-run outcomes. We showed that the Dissolution was associated, as Tawney hypothesized, with social change and the rise of a new class of commercially minded farmer. It was also associated with faster conversion from Catholicism, another factor plausibly linked to better economic performance.

We further found the Dissolution to be associated with greater agricultural investment, measured by patenting and land enclosures, and higher wheat yields.

All in all, our findings support a traditional theory of the Industrial and perhaps the Agricultural Revolution: that it was at least partially caused by the increasing commercialization of the economy, which had a series of institutional, social, and economic effects.

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SUPPLEMENTARY MATERIAL

Supplementary material is available at *The Quarterly Journal of Economics* online.

DATA AVAILABILITY

Data and code replicating the tables and figures in this article can be found in [Heldring, Robinson, and Vollmer \(2021b\)](#) in the Harvard Dataverse, <https://doi.org/10.7910/DVN/YZO7DV>.

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