

Benito Arruñada*
Universitat Pompeu Fabra

Catholic Confession of Sins as Third-Party Moral Enforcement**

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Abstract

Catholicism has built up a legalistic religion based on two pillars: salvation by works and “auricular” confession of sins to a priest with judicial functions. Since the Reformation, many consider auricular confession inferior to less institutional and more individual conceptions of faith. This article analyzes how all these historical solutions trade off specialization advantages against exchange costs to produce moral enforcement. After showing the behavioral foundations of confession and the adaptiveness of its historical evolution, it tests hypotheses on its efficacy, exploitation and opportunity cost. Econometric evidence supports the efficacy but not the exploitative character of Catholic confession. It also explains its secular decline as a consequence of two factors. First, the rise in education, which makes moral self-enforcement less costly. Second, the productivity gap suffered by confession, given its necessarily interpersonal nature.

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* Professor of Business Organization. Universitat Pompeu Fabra, Barcelona. Trias Fargas, 25. 08005-Barcelona (Spain). E-mail: benito.arrunada@upf.edu. [Http://www.econ.upf.es/~arrunada](http://www.econ.upf.es/~arrunada).

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1. Introduction

Confession of sins has been a controversial institution, especially after becoming one of the main divides in the Reformation. At that time, attention focused on the form that was to survive in the Catholic church: “auricular” (oral) confession to a priest with the power to forgive sins (the “power of the keys” which, according to Catholic doctrine, Christ granted to His Church). Some thinkers consider auricular confession useful for psychological and social welfare. They also consider the role of free will in its supporting theology of salvation by works to be a stepping stone of Western civilization,¹ and the doctrine of penance, in particular, to be a main source of Western criminal law.² Most, however, see auricular confession as oppressive or ineffective. Among them, Adam Smith, for whom it was “introduced by the Roman Catholic superstition,” led to an impossibly detailed codification of moral behavior (“casuistry”) and gave the clergy too many opportunities for improving their revenues.³ Even better known is the more general thesis of Max Weber (1920a), according to which the Catholic emphasis on salvation by works and grace, accompanied by easy forgiveness through auricular confession, is inferior in terms of motivating individuals’ productivity relative to Protestant salvation by grace alone, especially in its Calvinist version.

The Weber thesis has prompted innumerable works at the macroeconomic level, trying to explain growth differentials as a consequence of the dominance of different religions. It seems to have been refuted in terms of comparative economic growth because, for instance, Catholic communities experienced higher growth rates during the relevant period.⁴ For many, it is also inconsistent with the history of economic thought, as Catholic theologians of the 16th century were the first in justifying the essential traits of capitalism (Hayek, 1989: 5; Rothbard, 1995: 97-133). However, the difficulties of measuring these phenomena, the fact that predominantly Protestant

¹ For instance, White (1978: 146-147), Delumeau (1992) or Hopkins (1999: 130-131).

² See Berman (1983), especially Chapter 4.

³ The critique on casuistry occupies most of the last chapter of *The Theory of Moral Sentiments* (1759). Smith remarks on the agency costs of confession in *The Wealth of Nations* (1776: 789-790).

⁴ Mainly, Samuelson (1993). The debate goes on, however. For instance, Blum and Dudley (2001) find evidence of positive economic consequences of Protestantism in terms of cooperation. A broader defense of Weber’s thesis has been offered by Landes (1998).

countries have until recently experienced higher growth rates, and the current dominance of individualistic forms of ethics and religiosity keep the Weber thesis alive. More generally, variants of the Weber thesis are invigorated by the accumulating evidence on the effects of religion on behavior (for instance, on crime, addictions, physical and mental health, marriage or fertility), despite the considerable, albeit unsuccessful, efforts of many scholars to show that the observed statistical effects are spurious because of self-selection biases and the presence of common causal factors.

In contrast, little work has been done on confession institutions at the microeconomic and micro-analytical levels. Previous analyses of the confession of sins have studied some of its important elements and episodes. For instance, the theology of purgatory, seen by Ekelund, Hébert and Tollison (1992) as an invention designed to facilitate price discrimination. Likewise, the establishment by the Pope of mendicant orders is conceived by Schmidtchen and Mayer (1997) as a device to extract the rents enjoyed by parishes. These works, like most of the modern literature on the economics of religion,⁵ apply standard assumptions about human behavior—in particular, perfect rationality at the level of the individual or the church. Consequently, they tend to see penance as the price paid for a service consisting of eternal salvation, this being a mere consumption good whose quality is constant, whatever the production process used to provide it. As shown in section 4.2, this perspective is useful for analyzing some specific features of confession at a particular time but it seems insufficient for understanding the function and persistence of confession. In particular, the argument by Ekelund, Hébert and Tollison, who see Catholic confession purely as a rent extraction device, looks incomplete. Rent seeking, and transaction costs more generally, are inherent in all kinds of trade and specialization between self-interested individuals transacting in a world of imperfect information. Therefore, the

⁵ See Iannaccone (1998) for a survey of the economics of religion. Most models are based on Becker's theory of household production. Individuals allocate resources among religious and secular activities using a utility function with afterlife and life-time components, in which religious activity provides afterlife consumption. The theory has been extended to a "club" theory of churches which has considerable explanatory power for some aspects of behavior, such as church attendance and religious strictness. It does not deal, however, with the interesting issues of how religious membership and beliefs may provide material, life-time benefits for individual members and adaptive (competitive) advantage for human groups. As pointed out by Wilson in his analysis of Iannaccone (1994b), without such benefits religion would be a mere exploitative device (2002: 165-71). To some extent, this ties in with more recent

presence of even systematic rent seeking, by itself, does not tell us all about the function or efficiency of an institution.

This article draws a more balanced and fuller picture by conceiving confession of sins as an adaptive institution that produces self- and social-control services. Section 2 formulates the analytical framework, which sees auricular confession as a form of specialization burdened with transaction costs. It focuses on the superior incentives that this specialization makes possible, the presence of agency costs and the dependence of its achievements on exogenous economic variables, in particular, the education level of the laity and unbalanced productivity growth.⁶ The remaining sections expound and prove this argument relying on behavioral, historical and quantitative evidence. First, Section 3 justifies the function of moral enforcement and confession, relying on basic insights from evolutionary and experimental psychology, which show the potential productive advantages of religious beliefs and confession practices. Section 4 summarizes the historical evolution and nature of Christian moral enforcement solutions, focusing on confession of sins and showing the adaptiveness of its three main stages: high medieval practices, which relied on public confession and worldly satisfaction; auricular confession, adopted in the 13th century in conjunction with a full set of innovations in beliefs and organization; and the Protestant substitution of auricular confession by moral enforcement exercised by other believers, the whole community and, to some extent, self-examination. Section 5 formulates more specific hypotheses and tests them using two sets of contemporary data: a survey on religious practice and values on a sample of 4,554 Catholics and an international cross-section of the supply of Catholic religious and health professionals. Results support that confession is effective in encouraging compliance with the ethical code. It also seems to have less exploitative power than other religious practices usually considered less prone to abuse, such as attending mass. Confession is practiced less frequently by educated Catholics, however, which suggests that alternative systems of moral enforcement are likely to become less costly with more education. This, together with the finding that the density of priests decreases at high levels of

models which, also following Becker, treat religion as a rational or myopic addiction (Iannaccone, 1990 and 1995a; Durkin and Greeley, 1991).

⁶ The focus on the costs and benefits of specialization also separates this work from Allen (1995), who stresses that churches organize themselves in ways that avoid the particular forms of opportunism

economic development, could explain the current decline of confession. On the contrary, results do not support substitution between moral and legal enforcement. Section 6 concludes by discussing the limitations of the analysis and exploring some broader issues.

2. The basic trade-off: specialization versus transaction costs

As with any other set of rules, moral rules need effective enforcement, which can be provided by different mechanisms. Given that rules of behavior are usually defined with respect to social interactions between parties, three possibilities can be distinguished depending on which party is responsible for enforcement. Under *first-party enforcement*, it is the individual in breach who evaluates and sanctions her own conduct. Evaluation takes place in relation to her own reading of the moral code and the sanction consists of a certain psychological suffering which takes different forms, often related to guilt. *Second-party enforcement* is based on verification and sanction by the party suffering to some extent the consequences of breach. In the moral sphere, these second parties are usually members of a group or community of peers, who exert pressure on non-compliant members through diverse means, from shaming to ostracizing or even killing them. Lastly, under *third-party enforcement*, specialized agents, usually priests, verify behavior of group members and punish those who do not follow the rules. Auricular confession of sins is a version of third party enforcement in which repentant believers confess their sins orally to priests in order to be examined and eventually forgiven, thus improving their chances of attaining salvation in the afterlife.

A key difference between these three solutions for moral enforcement lies in the degree of specialization. Auricular confession uses more specialized resources, the priests who act as confessors. Their specialization is enhanced by training and by the extra commitment achieved

triggered by the theological freedom they grant to their members, but disregards the role of specialization as the driving force of both productivity and opportunism.

through the stricter celibacy requirement.⁷ In contrast, other types of Christian enforcement rely more on mutual control, in the case of second-party enforcement (for example, through public confession and satisfaction; sectarian policing, ostracism and reputational losses), or on self-service, in the case of pure self-examination. Specialization generally produces better outcomes at lower costs. This is also the case for auricular confession, which could produce more effective self- and social-control for a variety of reasons, mainly related to lower costs, a superior scope of services and finer-tuned incentives.

With respect to costs, auricular confession probably requires less effort in self-evaluation of believers than a system of pure self-examination. Confessing to a specialist also avoids the collective action problem that is typical of active mutual control and peer pressure, which makes cooperation less feasible (Alchian and Demsetz, 1972; Kandel and Lazear, 1992), especially in anonymous and large societies, as argued by club models of sects and churches (Iannaccone, 1988, 1992 and 1994a; Montgomery, 1996).

Regarding the scope of services, in contrast to public confession and penance as well as to voluntary informal confession, the auricular version maintains secrecy, discouraging gossip,⁸ and increasing the scope of sins covered by the system to those whose disclosure would damage the penitent's reputation. Compared to self-examination, its inter-personal nature offers greater possibilities for psychological counsel and consolation.⁹ In particular, face-to-face interaction between priest and penitent reduces the risk of self-deception, by utilizing innate psychological structures.¹⁰ It also reduces the symmetric risk that strong-willed individuals will give themselves

⁷ In the past, there was even greater specialization: it is no coincidence that the mendicant orders, originally dedicated to preaching (Dominicans) and teaching believers by example (Franciscans) and later to confession, became so important during the 13th century, after annual confession was made mandatory and its theology and practice had been much refined.

⁸ On the role of gossip, see Barrow (1992).

⁹ This consolation function is given equal status to the control function by Tentler (1977).

¹⁰ Human brains have evolved innate difficulties for lying (Damasio, 1994), often fall prey of self-deception (Trivers, 1985 and 2000), reach self-serving judgments about fairness (Kahneman and Tversky, 1995) and are well-equipped to detect cheaters (Trivers, 1971 and 1985; Cosmides, 1985 and 1989; Cosmides and Tooby, 1992), all of these being traits that are significantly affected by direct personal contact.

rigorist rules in the process of self-controlling their behavior.¹¹ Similarly, it reduces the problems posed by the categorical and contradictory structure of moral rules that have to be applied to a wide variety of situations in which compliance is not always socially optimal.¹² Moreover, specialization makes the judicial nature of confession possible, increasing the certainty of salvation with respect to self-examination and thus obtaining a superior psychological service. Finally, the information gathered in confession and its secret nature enhance the capacity of priests to act as implicit mediators and alleviate social conflicts, a point underscored by medieval historiography (e.g., Biller, 1998a, 23).

Less obviously, auricular confession made it possible to develop a more sophisticated structure of incentives, based on subjective evaluation of performance, individual tailoring of moral standards and additional incentives created through changes in the structure of beliefs. First, the economic theory of incentives easily explains in terms of optimal deterrence some apparent ambiguities and contradictions in the theology of confession. The latter has been criticized as confused (Lea, 1896) and paradoxical (Tentler, 1977: 365) in that its ambiguity leaves substantial uncertainty and discretion easily leads to abuse. However, ambiguous rewards seem reasonable when considered as a subjective evaluation of performance, because they may contain the dysfunctional “gaming” behavior induced by a more explicit and objective evaluation.¹³ Second, negotiated penance allows adjustment of the parameters of the incentive function to each specific individual situation. Establishment of discretionary penances resembles a relational contract while the fixed tariff of the Penitential books was more like an explicit contract, with all the limitations an explicit contract entails. Under private confession, it is the role of the confessor to set standards of behavior adjusted to individual circumstances, thus increasing motivation for recurring sinners and making Church membership appeal to a greater

¹¹ As shown by Bénabou and Tirole (2001), both risks are greater when individuals have difficulties in ascertaining the veracity of excuses and ex-post rationalizations. As two sides of the same phenomenon, weak-willed individuals may end up under-controlled, while strong-willed individuals fall into compulsive self-restraint. In this line, compulsively puritan morals could result from the same process as miserliness, workaholism or anorexia.

¹² Emphasized by Kaplow and Shavell (2001 and 2002) and Shavell (2002).

¹³ See, for instance, Baker, Gibbons and Murphy (1994). In our context, subjective evaluation of performance offers the added advantage of not suffering the risk that the principal might renege on the reward.

range of people.¹⁴ Thirdly, the theology of purgatory also allowed the development of a complex system of accounting of sins and trading of merits between believers and the Church. This made it possible to keep incentives alive even after absolution, as it motivated penitents to produce additional satisfaction during their lives and after death. It also provided additional incentives to saints, as they can now transfer their merits to sinners.

Greater specialization, however, is not free but incurs additional transaction costs. Despite its potential productive advantages, auricular confession can easily become an exploitative device for the benefit of the priesthood. The history of auricular confession can therefore be understood as a constant struggle to reach the advantages of specialization while implementing costly safeguards to contain moral hazard. In terms of effort, opportunism went from not providing sufficient access to confession services, to performing the function inadequately and taking penance and absolution decisions that were too lenient or too strict. Priests can also abuse their privileged position to obtain personal benefits, from sexual access or inheritance rights to promoting their own ideology. Furthermore, transaction costs are present not only at the level of the confessing priests but also at higher levels in the hierarchy. Some Popes, for instance, sold indulgences conferring salvation, not only remission of temporal punishment. All kinds of safeguard were also implemented including, among many others: training priests to “manage shame” and “not teach evil” when questioning; secrecy, which is binding on both priests and penitents, making confession first-party enforcement; hierarchical control, by subjecting priests to stricter confession practice; jurisdiction, perhaps to avoid absolution shopping; confessional boxes, to physically separate priest and penitent, in use—significantly—since the second half of the 16th century; and for many centuries compensating confessors with alms given by penitents, which probably motivated priests to perform such a tedious task. Despite all these safeguards, as in any exchange, opportunism was never fully controlled and often caused scandals. Those relating to the sale of indulgences (for instance, by promising salvation and not only remission

¹⁴ See, for instance, Delumeau (1992: 293-295) and Tentler (1977: 17 and 318). This compares dramatically with the emphasis of Calvin on applying a uniform standard. An additional strategy of the Catholic church to avoid losing followers demanding stricter standards included promoting stricter internal organizations. This ties in with spatial-location models of church positioning (Pita-Barros and Garoupa, 2002: 570).

from temporal punishment) were only the most famous, thanks to their role in Martin Luther's Theses.

In addition to facing substantial transaction costs, the specialization advantages of auricular confession may disappear with economic development. The personal nature of confession services means that their productivity lags behind the rest of the economy.¹⁵ Given resource mobility, the cost of confession would tend to grow over time, in a chronic case of Baumol's disease (Baumol, 1967). In most personal services, from medicine to music, technological change is possible, even if it usually involves some degree of self-service and drastic changes in the nature of the service. However, innovation is severely constrained in sacramental confession because physical capital is not a good substitute. In fact, the Catholic church requires a personal encounter, precluding confession via e-mail or even the telephone, confining new technologies to sending prayers and providing conversation. The consequences of this constraint can be illustrated by considering the productivity and price of health care if there were no pills or machinery. From this perspective, the recent evolution of confession—and moral enforcement, more generally—can be seen as an adjustment to environmental changes that modify its production costs. While the costs of controlling confessors have probably changed little over the centuries, production costs have risen substantially because confession requires costly and well-matched human capital in a personal interaction, with scant possibilities for technical change.

3. Behavioral evidence

The previous account assumed that the product of confession services may have positive value. This is far from clear from a rationalistic perspective, from which even the existence of morality is hard to explain. Findings in Evolutionary Psychology, however, suggest that having a moral sense and, in particular, religious beliefs and practice may improve fitness. Biology thus provides an effective substitute for the perfect rationality assumption by clarifying the potential,

adaptive (in this sense, efficient) role of beliefs, irrespective of whether they are true or false. We are evolved for fitness, not for truth, and beliefs may be adaptive despite being contrary to truth. This helps in correcting the misunderstanding, so dominant in all but Austrian economics, of scientific rationality as a superior, or even the only, adaptive mechanism.

More importantly, functional hypotheses about religious institutions emerge naturally from such a view. Just like any other product of evolution, instincts are adaptive to a certain environment.¹⁶ However, many of them may have become non-adaptive since human beings modify their environments faster than the pace of adaptation attainable by natural selection. For instance, strong sex drive and appetite for food were probably more adaptive for hunter-gatherers living in the Pleistocene than they are for modern human beings now, given the shorter life expectancy and riskier environment of our ancestors. Since then, human beings have drastically modified their environment, increasing their life expectancy and making living less risky. But meanwhile, their genetically-wired instincts have not kept up. The demand for non-genetic control devices is therefore clear, be they moral or pharmaceutical. Similar arguments can be drawn up not only for other instincts in the individual sphere (such as fear or happiness) but also in the social domain, for emotions related to wrath, rage, guilt, regret, revenge, contempt, honor, love, compassion or envy (Frank, 1988). Religions may thus be cultural adaptations that help “modern” human beings to socially- and self-control ancient instincts. A classic example comes from Adam Smith’s remark that “[i]n the Decalogue we are commanded to honour our fathers and mothers. No mention is made of the love of our children” (Smith, 1759: 266). Moreover, instincts are not only something to control but are also important in the functioning of the cultural control mechanisms themselves. Religions generally recruit ancestral instincts to back beliefs—thus fear, a natural aversion to danger, might well be the driving force behind beliefs in the afterlife, the most universal recurring theme of religions (Boyer, 1994 and 2001).¹⁷

¹⁵ Confession is definitely labor-intensive. Jesuit priests at a New York parish confessed an average of 11,142 confessions in a year at the end of the 19th century and this average was not exceptionally high (O’Toole, 2000).

¹⁶ See, for a summary, Pinker (1997: 363-424).

¹⁷ Conflicting evolutionary views are held, however, as to whether religious institutions can or cannot be expected to be adaptive at the individual and group level. The controversy is also intense between adaptive and exploitative functionalities, as many scholars interpret religion in terms of a more or less exploitative use of mental tools previously designed to solve other problems, considering it a cultural

Confession of sins fits neatly in this framework. In both Christian and non-Christian cultures, it provides incentives and articulates enforcement mechanisms that may well inhibit free-riding, an essential ingredient for intra-group cooperation, by detecting and punishing cheaters and by promoting conformity. It is no coincidence that primitive Christianity, which was relatively tolerant in accepting new members through baptism, was tough on deviating behavior after baptism, but allowed reconciliation through severe penitential exercises. Secondly, it may improve individual rationality and fitness, by helping to control possibly ill-adapted emotions in rapidly-changing environments. Finally, when understood as group adaptation, not only confession but, more generally, moral enforcement has also been (and may still be) constrained by our ecology to use a double standard for relating with group members and with outsiders, solving the old puzzle posed by religious hypocrisy that is characteristic of most religious groups.

Confession also makes intensive use of motivational mechanisms grounded in genetically-engineered, mental building-blocks. Emotions such as guilt and shame play fundamental roles (Haidt, 2003). Shame management was also a particularly important aspect of the education of confessors, who had to draw a fine line, using shame to motivate sinners without alienating them. In addition, emotions often moonlight as code enforcers. For instance, disgust at the sight of blood and body fluids plays a prominent role in many sex-related taboos and this was used until recently for controlling sexual behavior.

Finally, evidence accumulates that repentance and forgiveness produce cooperative and psychological benefits. Game theory experiments show that forgiveness improves many cooperation strategies. It also enhances psychological well-being (Krause and Ellison, 2003) and may even have positive health consequences, as suggested by McCullough, Pargament and Thoresen (2000). Confession may have similarly cathartic effects. It is well established that reconciliation also happens among primates, supporting the view that it helps social animals to

parasite or a by-product. Compare, for example, Boyer (2001), who emphasizes parasitism and questions the linkage between religion and moral sense, with Wilson (2002), who sustains a group selection, adaptive explanation.

cope with conflict.¹⁸ Substantial demand for the relief given by confession is also apparent from the creation of substitutes and the current proliferation of anonymous confession services.¹⁹

Considering these behavioral foundations, it comes as no surprise that “confession [of sins] is one of the most widespread practices in the world, represented on every continent in every known period of history” (Sullivan, 1987: 233),²⁰ and should help to dispel the common misconception that sees it as a Catholic invention.

4. Historical evidence

Skipping its Judaic roots, three main stages can be distinguished in the history of Christian confession.²¹ These are characterized by public confession and penance in the high middle ages, mandatory auricular confession with a priest since the low middle ages and up to today within the Catholic tradition, and the greater role played by second-party moral enforcement and self-examination in Protestant churches since the Reformation.

Their history supports two of my claims: the adaptive character of the institution and the presence of costs and benefits. Adaptiveness is clear in the transition from public to private forms of confession, with a parallel increase in specialization and introspection; as well as in the updating of the moral code in synchrony with important environmental changes. The tradeoff of costs and benefits is also visible in the constant struggle maintained between abuse and

¹⁸ See Flack and Waal (2000: 10-12) and the accompanying discussion.

¹⁹ See, for example, the fee-based “Confession line” telephone service that advises callers to “let go guilt and shame” (<http://confession900line.com/2395827/>, accessed September 8, 2002).

²⁰ Summary descriptions of practices in different religions are given by Aune (1987) and Bianchi (1987). The common element is the verbalization of wrongs committed in order to repair a breach in the relation of the individual or the group with God. In primitive cultures, it was often a restorative and purifying requirement in rites of passage (circumcision, marriage, childbirth, new year), in the preparation of crucial stages of the production cycle (the hunting season) and in the treatment of sickness.

²¹ There are plenty of studies on Christian confession, written from different positions, such as those by Lea (1896) and Hanna (1911). The classic general reference is Tentler (1977). Studies in Biller and Minnis (1998) contain many references to more recent and narrower historiographical studies. Biller (1998a) surveys some of them.

reinforced safeguards, in the recurrent cycles of laxity and reform and, lastly, in the durability of the institution.

4.1. Primitive and high medieval church

The primitive Church was very willing to forgive sinners at baptism, but very tough with sinning members, who were often expelled. Hints of second-party enforcement are abundant in the first century, with mentions of the use of letters of recommendation written by Christians in good standing, occasional mutual confession, community sanctions and correction before witnesses.²² From 150 to 650, a system of “Canonical Penance” developed to reconcile sinners with the Church. Authors differ in their accounts but it seems that confession was mostly public, penances were extremely harsh and reconciliation was partial in its effects and non-reiterable. Confession was made before the congregation, the bishop and the council of presbyters. Even if the public reading of sins was declared unnecessary in 459, penance and reconciliation for many sins were still public much later, and penitents were allowed access only to the vestibule of the church. Penance was also arduous and protracted, initially lasting several years, and had to be performed before absolution. After some controversy in the 3rd century, even capital sins such as murder, adultery and apostasy could be forgiven, but capital sinners lost good standing in the Church and remained permanently disabled for the priesthood, marriage or the enjoyment of conjugal rights. Understandably, as the rite of penance could only be performed once in a lifetime, many postponed it until they were dying. In the 5th century, confessions were commonly heard at the beginning of Lent and penitents were absolved on Holy Thursday after public penance that still included fasting, public humiliation, the wearing of sackcloth and the denial of sacraments during Lent. Fulfilment of penance was in some cases checked by requiring the penitent to bring witnesses.

By the 4th century, at the time of Augustine, bishops preferred the practice of private (secret) confession for private sins, while maintaining public confession or at least public penance for public sins or when the confessor thought that publicity would be useful. As a consequence, in

the 6th century, the previous system of Canonical penance was increasingly exceptional, being reserved for the elderly and the moribund. Furthermore, alternative forms of reconciliation had appeared: private confession practiced by monks; entering a monastery, with cleansing consequences similar to those of Baptism; and even, after showing repentance, taking communion without confession. Private penance, characterized by being secret and reiterable, with lighter penances, became predominant in many areas during the 7th century.

Eventually, after the 7th century, a series of manuals known as *Penitentials*, which originated from Irish monasteries and prescribed appropriate penance for each sin, became increasingly popular. Confession was private and penance was reiterable but still required hard penitential exercises, including fasting, abstinence, corporal punishment, pilgrimages, entering a monastery and exile. With their examination questions and tariffs for sins, the *Penitentials* introduced method and standardization, while emphasizing a judicial view that sacrificed the moral reform of believers. However, perhaps because of its privacy, the system was soon plagued with corruption, which took the form of commutation of penances by paying alms and masses, as well as substitution of penitents. As from the 9th century, Carolingian reform attempted to correct these abuses.

4.2. Auricular confession to priests

Features introduced by the Penitential system were gradually reinforced between the 9th and 13th centuries, resulting in greater privacy, psychological penance and greater discretion for confessors. The *Penitentials* had already established private confession and reiterability but now the system became less rigorous with the gradual introduction of absolution before completion of penance, a practice that had become well established by the 11th century. Performance of penance was left to the penitent and often commuted into prayer and almsgiving, even though a weaker form of Canonical Penance was still used for the most serious sinners. Penance also became more casuistic. Instead of strictly following a tariff set *ex ante*, they were established freely by the confessor for each case, after consideration of aggravating and extenuating circumstances.

²² See sources in Fernández Rodríguez (2000: 136). See also Hopkins (1999: 93-95 and 121-131) for the

Penitential books, with their fixed tariffs of sins, were replaced by *Summas for Confessors*, which adopted this casuistic approach. As from the 12th century, priests were advised to bargain with penitents: instead of the penance being imposed on the sinner, it had to be accepted and, to some extent, negotiated, with penances being set in proportion to the individual's strength. At the same time, as from the second half of the 12th century, a more prominent role was given to purgatory, this being a situation of temporal punishment for sinners who were absolved but were not completely free from venial sins, or had not fully paid "satisfaction" for their sins. It was only on this temporal punishment that trade of merits (mainly, the achievement and purchase of indulgences) was, at least in principle, possible. Finally, annual confession was eventually made obligatory at the 4th Lateran Council in 1215, completing a model that is essentially still in place in the Catholic church.

All these changes radically altered the relative importance of the different types of enforcement and developed a more sophisticated system. Privacy eliminated the role of second parties; discretion and casuistry enhanced the role of priests; and the psychological nature of penance (based on doubt, shame and guilt) plus the requirements of examination of conscience, sorrow and amendment reinforced individual introspection. Except for restitution, enforcement was left to the conscience of penitents, especially to their faith and understanding of the always unclear requirements of sorrow and purpose of amendment. Greater introspection did not necessarily mean weaker incentives, however, because forgiveness continued to be conditioned not only by fulfillment of the set penance but also by prior examination of conscience, sincere sorrow for sin (oscillating ambiguously between contrition and attrition), intention to amend, and, when judged necessary by the confessor, restitution to those harmed by the penitent. In addition, mandatory annual confession, perhaps the most controversial reform, also boosted both introspection and third-party enforcement, in a move that seems consistent with a "laxer-but-broader" argument.

These changes in beliefs and their supporting organization fit well in the context of more general and rapid changes taking place in the societies of the low middle ages. Moving from the primitive public systems and the fixed tariff of the *Penitentals* to more private, psychological, casuistic and adjustable penances ties in with the growing specialization of the church and civil

first steps from second- to third-party enforcement and the early conflict between rigorism and laxism.

branches of the legal system (Berman, 1983) and the ensuing reduced scope of the Church's jurisdiction, which, in addition, separated at the same time the *internal forum* of sacramental confession judging sins from the *external forum* of ecclesiastical judges judging crimes. Confession thus becomes more specialized, and allegedly more effective, while public enforcement was reserved for other jurisdictions. The case for environmental adaptation is also clear with respect to the contents of the Christian moral code. Historical studies of confession manuals show, for instance, how such manuals increasingly focused on sins committed by professionals in the exercise of their trade, in response to the economic growth and greater specialization achieved during the 13th century (Le Goff, 1980). A similar adaptation in the discussion of sins related to birth control is reported by Biller (1998b). More importantly, the whole idea of purgatory has been linked to economic changes during the first two centuries of the millennium (Le Goff, 1984). The new theology is also contemporary with the reappropriation of ancient Greek science, with changes in Christian ethics in favor of technological change (Benz, 1968; White, 1978), and with an explosion of theological ideas that have been considered essential for human dignity and liberty (Novak, 1998). Later, the liberal reversal of the scholastic treatment of usury and many other commercial issues by the theologians of the Salamanca school were also in step with the problems posed by inflation during the 16th century (Grice-Hutchinson, 1952; Rothbard, 1995: 97-133). Lastly, these theological and organizational changes in beliefs were also supported by substantial, simultaneous investments in their production and sustainment. The innovations were introduced at the same time as the building of the Gothic cathedrals, the artistic production of the 13th century,²³ and the explosion of poverty or mendicant orders, whose members credibly led believers not only by preaching but also by example.²⁴

This "adaptationist" interpretation of the evolution of confession in the low middle ages departs drastically from the view held in several works by Ekelund, Hébert and Tollison (1992 and 2002), who see purgatory, the sale of indulgences and, apparently, the whole institution of auricular confession purely as rent extraction devices. The refinement of confession in the 13th

²³ Duby (2000: 49) stresses the difference between this art and that of the monasteries, in which investments were made with a view to achieving salvation by having monks pray for the believers buried there, often after paying for their sepulchers in a flourishing market for afterlife services.

century surely created new transaction costs, but this might have only been the price of additional specialization advantages over and above transaction-costs. Without denying that such innovations provided additional scope for rent seeking, it is unlikely that such a vast, and lasting, restructuring of beliefs and organization can be explained as mere rent seeking. In addition, the explanation in terms of price discrimination and rent seeking also runs against the historical context. In their 1992 work, Ekelund, Hébert and Tollison explain the greater role given to purgatory and the restructuring of confession in the 13th century as price discrimination. However, these innovations took place at a time of substantial heretical competition, and this does not tie in with a price discrimination purpose. A simple, lower-price interpretation does not fit the facts either, both because the reform upgraded a more lenient practice and because contemporaneous heresies held both higher and even lower standards (Biller, 1998a, 18-23). Again, this does not preclude an evolution in the direction of leniency in later centuries. Similarly, Ekelund, Hébert and Tollison (2002) argue that rent seeking through price discrimination was the main feature of the system in the 16th century, causing the Reformation.²⁵ However, optimal-deterrence sanctions (including both some penances and the prices of indulgences) also increase with wealth and rank (Becker, 1968). This makes it difficult to distinguish optimal sanctions from a price discriminating schedule when sanctions took the form of monetary compensation going to the Church (and also, usually, to the Crown). Furthermore, in such instances, when using explicit prices in the remission of time in purgatory, the Church was following a practice that has been widely recommended in the economic analysis of criminal law at least since Becker (1968), namely, that fines are more efficient than other forms of punishment (for example, Posner, 1998: 246).

²⁴ Compare with Schmidtchen and Mayer (1997), who model the licensing of the mendicants as a way of appropriating rents by the Pope, an argument inconsistent with the greater discretion given to confessors compared to the earlier penitential system.

²⁵ Ekelund, Hébert and Tollison (2002) recognize, however that, in itself, rent seeking does not account for the failure of the Reformation in much of Europe. They therefore introduce the *ad hoc* assumption that rent seeking was more prevalent in countries where the Reformation failed and then test this assumption indirectly, through laws on primogeniture. This poses two problems. In addition to the debatable link between primogeniture and rent seeking, their source of data (Swanson, 1967) describes a map of European inheritance customs that runs counter to most published work on the subject (see Le Roy Ladurie [1976: 27], Thirsk [1976: 179, citing Abel, 1958: 154] and Todd [1990: 35]), leading them, for instance, to wrongly classify Sweden and Denmark as areas of partible-inheritance and France and Spain as jurisdictions under primogeniture, which was not the case for most of their regions.

4.3. Protestant churches

Initially, Lutheran churches maintained the duty of confessing to a minister before communion,²⁶ even if they revoked the annual obligation to confess, required less detail and changed the liturgy to emphasize that forgiveness came from God and not from the priest or the Church. In most places, however, different versions of general confession and absolution soon became dominant, favored by political decisions and despite believers' occasional opposition. This soon became almost general practice and today most Protestants confess silently directly to God, most often through the general statements of confession and absolution of the Communion service, with only some evangelical churches allowing for public confession of sins.

The distinguishing feature of mainstream Protestantism is the lesser importance of specialized third-party enforcement by the clergy,²⁷ in connection with a theology that greatly diminished the privileged role of the Church as an intermediary between God and the people. It correspondingly developed substitute enforcement mechanisms, increasing mutual enforcement by second parties (other believers and citizens) and/or by the first party (self-examination).²⁸ In addition, the Reformation strengthened political and legal, that is, non-moral, enforcement.

The particular solutions adopted were diverse, but, with respect to moral enforcement, many Protestant groups reinforced mechanisms of mutual control, introducing radical sectarian practices.²⁹ These are best illustrated by the selection and enforcement practices of the American

²⁶ For a summary, see Caspari (1950: 222-223). Among the main reformers, Luther considered it essential, Zwingli opposed it and Calvin was hesitant about abolishing it (Tentler, 1977: 349-350), but all condemned its theology (p. 351).

²⁷ This is clearer in its evolved forms, after the demise or growth of clergy-dominated regimes, such as some sects or the theocracy established by Calvin in Geneva.

²⁸ This hypothesis about substitution between enforcement mechanisms has been confirmed empirically by measuring the differences in the sets of values held by Catholics and Protestants with respect to different enforcement mechanisms (Arruñada, 2003). The emphasis on second-party enforcement is highly visible in the prominent role played by elders in the practice of "family visitation," instituted by Calvin and followed to this day by some reformed churches, by which teams of two elders (or an elder and a minister) regularly visit the home of each church member to discuss the spiritual health of the family (see, for instance, Jong, 1992-1994).

²⁹ See Glaeser and Glendon (1998), who model Calvinist predestination theology as soft second-party enforcement.

sects described by Weber (1920b).³⁰ Even Calvin's Geneva relied on elected laymen for controlling individual behavior. In their more severe forms, these mutual control institutions generally survived only in small groups, but large communities also kept depending for moral enforcement on milder forms of mutual control, with self-examination oriented toward mutual control. These two elements were also prominent in non-religious ethics developed in Protestant environments. A major example is Adam Smith's *Theory of Moral Sentiments* (1759), and his advice that we should evaluate our own deeds from the perspective of the "impartial spectator," being well aware of the constant activity of this second-party enforcer.

4.4. Catholic confession now

Since the last third of the 20th century, auricular confession has been in crisis, as many Catholics do not comply with the annual duty to confess and those who do have moved away from detailed confession.³¹ Furthermore, many communities have substituted individual auricular confession with general absolution before confession, using a loophole in Canon law that was originally devised for cases of danger-of-death or grave necessity, such as soldiers in time of war. Strictly speaking, serious sins should be confessed individually before another general absolution is received. However, general absolution is most often used in normal situations without subsequent individual confession and this practice has become widespread, despite opposition by the hierarchy of the Church.³² More importantly, the innovation seems to respond well to the

³⁰ Notice that it is difficult to separate here the role of voluntary confession *to* the community and mutual monitoring of behavior *by* the community. In principle, a pure system of mutual monitoring should not be seen as a variety of confession but, in practice, it often leads to forced confessions. This was the case, for instance, in the Salem trials in 1692, in which public confession was used to escape accusation of witchcraft and again during the revivalist Great Awakening movement in New England in 1734 (Aune, 1987: 638).

³¹ Estimates of compliance with the annual duty to confess are around 50% for American Catholics (Davidson *et al.*, 1997; Lee *et al.*, 2000).

³² General absolution is regulated as the third rite of the *Ordo Paenitentiae* (Code of Canon Law, 961-963). In some areas (Australia or Chicago) and for some periods (Advent, Lent), it has been widespread, as evidenced by the numerous controversies and confirmation of the formal rules. See, for example, McClory (2001) and Congregation for Divine Worship (1999 and 2000), as well as, for the official position of the Church, Pope John Paul II's post-synodal apostolic exhortation *Reconciliatio et*

preferences of both the laity and the clergy, at least in developed countries.³³ These changes in Catholic practice could be seen as part of the same historical tendency that reached a critical point with the Reformation, especially considering the movement of younger Catholics away from an institutional conception of faith towards an individual one, with greater reliance on second- and probably first-party enforcement.³⁴

5. Quantitative evidence

5.1. Hypotheses and data

The previous analysis suggests several testable hypotheses with respect to the relative effectiveness and the evolution of confession. First, considering specialization advantages, auricular confession should be more effective than other religious practices, such as prayer or mass attendance. It should also provide greater scope for priests to condition penitents' behavior to the benefit of themselves or the Church.

These “effectiveness” and “rent extraction” hypotheses will be tested by examining how auricular confession and other religious practices (prayer, communion, mass attendance) interact with several significant stated actions, which are assumed to provide benefits directly for the needy (helping the poor) or the Church (religious volunteering and money given to the Church). Survey data collected in 1994 on 4,554 Catholics (summarized in Table 1) will be used to estimate ordered probit regressions, given that answers were categorical, unless specified otherwise. Demographic controls for marital status, income level, sex and age of the respondent

Paenitentia (1984), which urged a return to the frequent and regular practice of individual confession, reiterated, for instance, in his 2001 and 2002 Letters.

³³ The universal character of these tendencies is unclear, however, as many poor Christians (both Catholics and Protestants) living in less-developed countries demand a traditional and solidly institutionalized religion, as argued by Jenkins (2002).

³⁴ Younger Catholics “emphasize a direct, intimate relationship with God. They view faith as very personal, having little to do with pronouncements of the *magisterium* or participation in the sacraments [... For them,] concern with whether an individual is a ‘good person’ dominates their discussions...

will be introduced, as well as the intensity of their beliefs in heaven and hell. Regressions will be presented with and without belief variables, however.

On the other hand, auricular confession should play a smaller role when its costs increase or when alternative enforcement systems, at both individual and social levels, become more efficient. Quantitative data allow the testing of three hypotheses related to better education of believers, increased costs of auricular confession and competition from legal enforcement.

The “education” hypothesis maintains that the comparative advantage of confession decreases with the level of education of the laity. Two reasons can be given for this. On the one hand, better education could facilitate self-examination and first-party enforcement that may thus substitute third-party enforcement by priests. Such movement away from specialization may be optimal when there are economies of scope in the investments in human capital required for different activities (Rosen, 1983). This may well be the case with respect to acquisition of the abilities needed for general productive activities and moral self-enforcement. The most important economies of scope in this field may have been those caused by literacy, which allowed greater access to printed matter, including the Bible. On the other hand, educated believers may demand confessors of higher quality, on a level with their human capital. This conjecture ties in with the historical practice of the Church, which used to match penitents and confessors, as described by Tentler (1977: 62-63). The education hypothesis will be tested by considering how confession practice changes with education level in the same sample of Catholics referred to above. Confession practice will be measured in two ways, as a binary variable (defined as zero if the respondent does not confess at all and as one, otherwise) and as a polychotomous variable measuring the frequency of confession, which will be compared to frequency of prayer, communion and mass attendance. In order to discriminate between the two rationales, the opinions of laypersons on the role of the laity and the quality of priests will be studied to see how they change with respondents’ education. If education enhances self-enforcement, educated Catholics should think that the role of the laity is more important. If education causes an increasing mismatch between the quality of penitents and priests, more educated Catholics should hold worse opinions on priests.

Instead of learning church teaching, their religious education consisted of learning to be a ‘nice person’” (Williams and Davidson, 1996: 274 and 286).

The “cost disease” hypothesis contends that third-party moral enforcement through priests is vulnerable to economic development in the rest of the economy. It will be tested by examining how the supply of Catholic priests changes with economic growth both in a US time series and in a cross-section of countries. Country-level data on the supply of religious and healthcare professionals for years 1998-2001, collected from several public sources, will be used to examine how they change with Gross Domestic Product (GDP).

Finally, the “legal enforcement substitution” hypothesis maintains that greater reliance on the rule of law could also be a substitute for lesser moral enforcement, making religion, and consequently confession, less necessary in motivating good behavior. This potential effect of legal substitution will be tested by examining how the supply of Catholic priests per Catholic varies across countries with their degree of political development, measured by the index of political rights built by Freedom House.

5.2. Results

Econometric results confirm the effectiveness of confession and do not support the rent extraction argument, as both the practice and frequency of confession seem to be more closely related to charitable activities by the faithful than to transfer of resources from them to the Church. This is observed by comparing the models presented in Table 2. With respect to helping the poor, only prayer shows slightly higher (but not significantly higher) coefficients than confession frequency. The opposite happens with contributions to the Church, both in time (measured by the *Volunteer* variable) and, especially, money (*ChurcGive*) with respect to communion and, with even more significant differences, mass attendance. These results seem inconsistent with the argument that confession is exploitative relative to other religious practices. Furthermore, the presence of belief variables in the models discards an obvious candidate for a common cause. Estimations using binary variables for religious practice and seemingly unrelated regression give similar results.

Models shown in Table 3 support the hypothesis that improved education for the laity reduces the demand for confession. Above all, education presents a negative coefficient on confession frequency that contrasts with its positive coefficients on prayer and communion frequencies. The

coefficient on communion frequency (but not that on mass attendance, perhaps as a consequence of the weekly obligation to attend mass) is consistent with a result obtained by Sacerdote and Glaeser (2001) who explain it as a consequence of social interaction. When compared with confession, the most revealing result is the positive coefficient of education on prayer frequency, given that no social interaction is in play. This, therefore, seems driven by complementarity with education, just the opposite of confession. Furthermore, Catholic education only partially counterbalances the effect of non-religious education. Also, those who think the laity should play a greater role and hold doubts on the quality of men going into the priesthood tend to quit confession and to receive communion and attend masses less often. This contrasts with the effects, respectively insignificant or small, that these two variables have on praying.

The findings that more educated Catholics think the role of the laity is more important and hold a *better* opinion on the quality of their new priests (Table 4) suggest that the negative effect of education on the practice of confession is probably due more to enhanced self-enforcement than to an increased mismatch between the qualities of confessors and educated penitents. This is also consistent with the previous finding that education increases prayer frequency.

Data on Catholic priests is consistent with the cost disease hypothesis as, above a certain level of economic development, density of priests starts to decrease. Figure 1 depicts this evolution for the USA, where Catholic priests per thousand Catholics increased before 1945 but fell afterwards. Table 5 shows the generality of this pattern in an international cross-section of countries, for which the density of Catholic priests also increases at low levels of GDP. However, above a certain point, it decreases, as revealed by the negatively significant sign of squared GDP. The same happens for health personnel. In fact, all the professions considered reach their maximum density in the same range of GDP per capita. However, in religious services, and particularly in Catholic confession, there are probably fewer possibilities than in healthcare for making up for this decline with more physical capital. The percentage of Catholics in the regressions controls for the existence of fixed costs. Its significance suggests that the alleged cost disease problem is likely to worsen with a decline in the proportion of Catholics actively practicing their religion. In any case, the removal of this variable does not materially modify the results obtained for the other coefficients. Admittedly, the observed relationship between economic growth and the number of priests is compatible with other explanations, such as a decrease in demand. A fully exogenous “vocation crisis” seems less likely, however.

Finally, the positive sign of the political rights variable in the third model in Table 5 does not support the hypothesis about substitution between moral enforcement by third parties and legal enforcement.

Summing up, despite its apparent effectiveness, auricular confession seems to face difficulties in coping with increases in education and to suffer a productivity gap. These demand and supply factors complement each other in explaining the recent decline of auricular confession. The likely permanence of these trends suggests that survival of the institution is uncertain.

Even though the key hypotheses deduced from the analytical framework are empirically confirmed and provide a picture that is consistent with historical records, the nature of the data may raise some doubts. For instance, the measurement of exploitation is not complete: it may take place at other levels, especially, through bequests. In addition, current data may say little about the degree of rent extraction in the past. However, the empirical analysis stands up well against these criticisms. First, the tests measure rent extraction relative to other religious practices. There are no obvious reasons why one should expect substantial differences in the relationships between these practices and rent-extraction across forms of contribution over time. Second, confidence in the results is enhanced by their consistency, not only in terms of the quantitative evidence provided by two different data sets but from historical records, which have been interpreted as a process of environmental adaptation. This might be more important than it seems, because, in the end, rigor in the analysis of these complex institutions must probably be judged on grounds of general consistency.

6. Summary and concluding remarks

Overcoming more simple accounts in terms of rent seeking, this article develops a theory of Catholic confession practice based on a trade-off of specialization advantages and exchange costs. Specialization advantages come from having priests acting as first-instance judges of moral conduct, both completing and enforcing a moral code for the purpose of self and social control. As with any specialization, confession is also subject to moral hazards—those triggered by the sale of indulgences being only the most prominent.

The argument relies on three sets of evidence—behavioral, historical and econometric.

Evidence from cognitive sciences provides a solid ground to the starting claim that confession of sins, and religious institutions more generally, may have adaptive properties, thus overcoming the narrow perspective of rationalistic assumptions. In particular, these findings from behavioral science show that the moral sense, religion and, in particular, confession both use and serve to control ancient instincts that may have become maladapted in our current environment. Experimental psychology also shows that repentance and forgiveness produce cooperative and psychological benefits.

The history of confession also supports the adaptive character of the institution and the presence of both costs and benefits in its functioning. Adaptiveness is clear from observing the transition from public to private forms of confession, with a parallel increase in specialization and introspection; as well as in the updating of the moral code in synchrony with environmental changes. The tradeoff of costs and benefits is observable in the permanent struggle between abuse and reinforced safeguards at the individual level and the recurrent cycles of laxity and reform at the general level.

Econometric results support the view that auricular confession to a priest is relatively effective but not that it is more exploitative than other religious activities, such as praying, taking communion or attending masses. Both specialization advantages and exchange costs, as well as their net balance, were hypothesized to change with certain environmental factors. Econometric tests confirm these effects and are consistent with an explanation of the recent decline of confession on the basis of changes in demand and supply. Demand for confession decreases because better education of the laity makes first-party enforcement (self-examination) easier. Supply decreases because, given the relative difficulty of increasing confessors' productivity, confession services, like many other personal services, become costlier at higher levels of economic development.

The argument has centered on auricular confession but it is applicable more widely. In a superficial view, other activities of priests seem to be unaffected. For instance, in contrast with confessors, preachers can use physical capital to reach larger audiences and increase their productivity. However, these innovations radically transform the service provided. Confession is a particular case because the service is intrinsically personal. However, to the extent that many

priests' services are also personal, they suffer the same constraints and competition as confession. On the one hand, priests' productivity cannot be increased without diluting the personal dimension of most of their services. On the other hand, education facilitates first-party moral enforcement. It is likely that these two factors are pushing the priesthood in the same direction: higher capital investments (including human capital) to provide services of a less personal nature, which are then used by the laity with greater doses of self-service. Instead of confession and other personal interactions with a small community, the new "priests" (TV preachers, public figures, self-help authors) will tend to interact impersonally with their huge communities using mass media. Personalized services, such as third-party moral enforcement, will tend to be provided only to the wealthy or for the support of the most important personal decisions. Something similar may be happening out of religion: while anti-depressants are widely available, psychotherapy remains a secondary service.

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Table 1. Description and summary statistics of religious practice among Catholics

<i>Variable</i>	<i>Description in terms of the original survey question</i>	<i>Name of variables in survey</i>	<i>Observations</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
<i>GoConfess</i>	0, if answer to “How often do you go to private confession with a priest?” was “Never, almost never”; 1, otherwise	45) <i>doconfes</i>	4,314	.5348	.4988	0	1
<i>ConfesFrq</i>	How often do you go to private confession with a priest? ^{a, b, c}	45) <i>doconfes</i>	4,314	0	1	-0.811	5.864
<i>PrayerFrq</i>	How often do you start and end the day with a prayer? ^{a, b, c}	54) <i>doprayer</i>	4,352	0	1	-1.688	0.857
<i>CommunFrq</i>	How often do you receive communion? ^{a, b, c}	43) <i>docommun</i>	4,321	0	1	-2.605	1.657
<i>MassFrq</i>	How often do you attend mass? ^{a, b, c}	41) <i>domass</i>	4,356	0	1	-3.565	1.866
<i>HelpPoor</i>	How often do you actively work to help the poor? ^{a, b, c}	50) <i>helppoor</i>	4,278	0	1	-0.899	2.729
<i>Volunteer</i>	Sum of answers to the questions “To what extent are you active in any of the following parish activities... Parish administration; evangelization; social outreach?” ^{b, c, d}	84) <i>oncouncil</i> , 87) <i>evangel</i> , 89) <i>outreach</i>					
<i>ChurGive</i>	How much money did you give to the Church in 1993? ^{b, c, e}	90) <i>churgive</i>	4,175	0	1	-1.966	3.463
<i>EducLevl</i>	Highest number of years of schooling you have completed ^{c, f}	246) <i>educlevl</i>	4,421	0	1	-1.666	2.233
<i>CathEduc</i>	Built by adding total or partial attendance to Catholic schools at different levels, from answers to several questions ^c	247) <i>gradskul</i> 248) <i>highskul</i> 250) <i>inrcskul</i>	4,370	0	1	-1.218	2.114
<i>LayRole</i>	How much you agree or disagree with the statement: “The laity’s role in the Church is just as important as what priests do” ^{b, c, g}	2) <i>layrole</i>	4,443	0	1	-1.942	1.222
<i>BadPrist</i>	How much you agree or disagree with the statement: “I worry about the type of men who are going into the priesthood these days” ^{b, c, g}	31) <i>badprist</i>	4,317	0	1	-1.383	1.749
<i>Single</i>	1, if marital status single; 0, otherwise	262) <i>marystat</i>	4,352	.1245	.3302	0	1
<i>Income</i>	Personal and spouse’s income received in 1993 before taxes ^{c, h}	277) <i>income</i>	4,015	0	1	-1.613	2.393
<i>Male</i>	1, for men; 0, women	158) <i>gender</i>	4,166	.3584	.4796	0	1
<i>Age</i>	Age of the respondent ^c	159) <i>yrborn</i>	4,183	0	1	-1.891	2.614
<i>Heaven</i>	How much you agree or disagree with the following statement: “There is a heaven” ^{b, c, g}	6) <i>heaven</i>	4,487	0	1	-0.315	7.209
<i>Hell</i>	How much you agree or disagree with the following statement: “There is a hell” ^{b, c, g}	25) <i>hell</i>	4,359	0	1	-3.543	0.666

Source of data: Survey of Indiana Catholics, 1994. Originally collected by James D. Davidson in 1994, made available at the /American Religion Data Archive. For information, visit www.thearda.com.

Notes: ^a Possible answers were: 1, Daily, almost daily; 2, Several times a week; 3, Weekly; 4, 2 or 3 times a month; 5, About once a month; 6, Several times a year; 7, 1 or 2 times a year; 8, Never, almost never. ^b Variables were recoded to make them consistent with their names. ^c Variables standardized to be mean zero variance one. ^d Possible answers were: 1, Very active; 2, Quite active; 3, Somewhat active; 4, Not active. ^e Eight possible answers ranging from 1 for “did not give to this” to 8 for “\$10,000 or more”. ^f Possible answers were: 1, Grade school or less; 2, High school; 3, Vocational training after high school; 4, Attended college, but did not graduate; 5, Graduated from college; 6, M.A, M.S., M.B.A., or equivalent master’s degree; 7, Ph.D., M.D., LL.B., or equivalent doctorate degree. ^g Possible answers were: 1, Strongly agree; 2, Agree somewhat; 3, Uncertain; 4, Disagree somewhat; 5, Strongly disagree. ^h Twelve possible answers ranging from 1 for “less than \$10,000” to 12 for “\$150,000 or more”.

Table 2. Behavior and religious practice among Catholics

	(1) <i>HelpPoor</i>		(2) <i>Volunteer</i>		(3) <i>ChurGive</i>	
	(a)	(b)	(a)	(b)	(a)	(b)
<i>ConfesFrq</i>	0.123*** (0.023)	0.121*** (0.023)	0.213*** (0.048)	0.218*** (0.048)	0.044* (0.023)	0.039* (0.023)
<i>PrayerFrq</i>	0.158*** (0.022)	0.158*** (0.022)	0.340*** (0.048)	0.334*** (0.049)	0.060*** (0.022)	0.054** (0.022)
<i>CommunFrq</i>	0.055* (0.031)	0.057* (0.031)	0.350*** (0.067)	0.331*** (0.068)	0.204*** (0.031)	0.199*** (0.032)
<i>MassFrq</i>	-0.033 (0.030)	-0.029 (0.031)	0.436*** (0.074)	0.448*** (0.074)	0.424*** (0.032)	0.413*** (0.032)
<i>EducLevl</i>	0.138*** (0.024)	0.136*** (0.024)	0.042 (0.050)	0.046 (0.050)	0.088*** (0.024)	0.092*** (0.024)
<i>CathEduc</i>	0.018 (0.020)	0.015 (0.020)	0.057 (0.042)	0.058 (0.042)	0.012 (0.020)	0.010 (0.020)
<i>LayRole</i>	0.049** (0.020)	0.046** (0.020)	0.173*** (0.043)	0.176*** (0.043)	0.027 (0.020)	0.037* (0.020)
<i>BadPrist</i>	0.037* (0.020)	0.035* (0.021)	0.060 (0.043)	0.068 (0.044)	-0.063*** (0.021)	-0.051** (0.021)
<i>Single</i>	0.242*** (0.069)	0.243*** (0.069)	-0.042 (0.151)	-0.026 (0.152)	-0.159** (0.070)	-0.163** (0.071)
<i>Income</i>	0.082*** (0.024)	0.077*** (0.024)	0.107** (0.052)	0.109** (0.052)	0.573*** (0.026)	0.584*** (0.026)
<i>Male</i>	-0.151*** (0.042)	-0.147*** (0.042)	0.151* (0.089)	0.155* (0.090)	0.180*** (0.043)	0.170*** (0.043)
<i>Age</i>	0.146*** (0.025)	0.152*** (0.025)	0.099* (0.053)	0.106** (0.054)	0.398*** (0.026)	0.414*** (0.026)
<i>Heaven</i>		0.024 (0.022)		0.029 (0.053)		0.009 (0.023)
<i>Hell</i>		-0.039* (0.022)		-0.011 (0.047)		0.091*** (0.023)
Constant			-1.126*** (0.066)	-1.131*** (0.066)		
Observations	2,935	2,910	2,776	2,760	2,842	2,819
Pseudo R ²	0.02	0.03	0.07	0.07	0.20	0.20
Wald tests:						
<i>ConfesFrq</i> = <i>PrayerFrq</i>	1.09	1.21	3.04	2.51	0.25	0.20
<i>Prob</i> > <i>Chi</i> ²	0.2966	0.2704	0.0815	0.1134	0.6186	0.6579
<i>ConfesFrq</i> = <i>CommunFrq</i>	2.93	2.55	2.62	1.76	16.19	15.62
<i>Prob</i> > <i>Chi</i> ²	0.0870	0.1102	0.1053	0.1850	0.0001	0.0001
<i>ConfesFrq</i> = <i>MassFrq</i>	15.30	13.89	5.79	6.11	85.47	80.87
<i>Prob</i> > <i>Chi</i> ²	0.0001	0.0002	0.0162	0.0135	0.0000	0.0000

Notes: Models (1) and (3) ordered probit; model (2), tobit, for which also *Prob* > *F*.

Standard errors in parentheses. *, **, *** significant at 10, 5 and 1%.

Table 3. Determinants of religious practices among Catholics

	(1)		(2)		(3)		(4)		(5)	
	<i>GoConfess</i>		<i>ConfesFrq</i>		<i>PrayerFrq</i>		<i>CommunFrq</i>		<i>MassFrq</i>	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
<i>EducLevl</i>	-0.053*	-0.047*	-0.051**	-0.045*	0.041*	0.053**	0.038	0.056**	-0.022	-0.008
	(0.028)	(0.028)	(0.024)	(0.025)	(0.024)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)
<i>CathEduc</i>	0.043*	0.037	0.030	0.021	0.038*	0.032	0.074***	0.066***	0.059***	0.047**
	(0.023)	(0.024)	(0.021)	(0.021)	(0.020)	(0.020)	(0.020)	(0.021)	(0.021)	(0.021)
<i>LayRole</i>	-0.104***	-0.092***	-0.097***	-0.081***	0.018	0.029	-0.078***	-0.057***	-0.082***	-0.063***
	(0.024)	(0.024)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
<i>BadPrist</i>	-0.085***	-0.069***	-0.044**	-0.030	-0.036*	-0.013	-0.176***	-0.154***	-0.138***	-0.120***
	(0.024)	(0.024)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.022)
<i>Single</i>	0.446***	0.456***	0.401***	0.380***	-0.019	0.024	-0.006	0.007	0.001	0.012
	(0.081)	(0.082)	(0.070)	(0.071)	(0.069)	(0.070)	(0.069)	(0.070)	(0.071)	(0.073)
<i>Income</i>	-0.084***	-0.076***	-0.079***	-0.075***	-0.130***	-0.115***	-0.025	-0.012	-0.034	-0.016
	(0.029)	(0.029)	(0.025)	(0.026)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.026)
<i>Male</i>	0.032	0.022	0.015	0.008	-0.305***	-0.296***	-0.208***	-0.209***	-0.091**	-0.093**
	(0.049)	(0.049)	(0.043)	(0.043)	(0.042)	(0.043)	(0.042)	(0.043)	(0.044)	(0.044)
<i>Age</i>	0.249***	0.243***	0.258***	0.249***	0.406***	0.418***	0.341***	0.348***	0.395***	0.400***
	(0.028)	(0.028)	(0.024)	(0.024)	(0.025)	(0.025)	(0.025)	(0.025)	(0.026)	(0.026)
<i>Heaven</i>		0.056**		0.062**		0.166***		0.156***		0.158***
		(0.027)		(0.025)		(0.022)		(0.022)		(0.022)
<i>Hell</i>		0.153***		0.144***		0.062***		0.109***		0.139***
		(0.026)		(0.024)		(0.022)		(0.022)		(0.023)
Constant	-0.018	-0.020								
	(0.59)	(0.63)								
Observations	3,045	3,016	3,045	3,016	3,055	3,025	3,023	2,993	3,044	3,013
Pseudo R ²	0.04	0.06	0.03	0.04	0.04	0.05	0.04	0.05	0.05	0.07

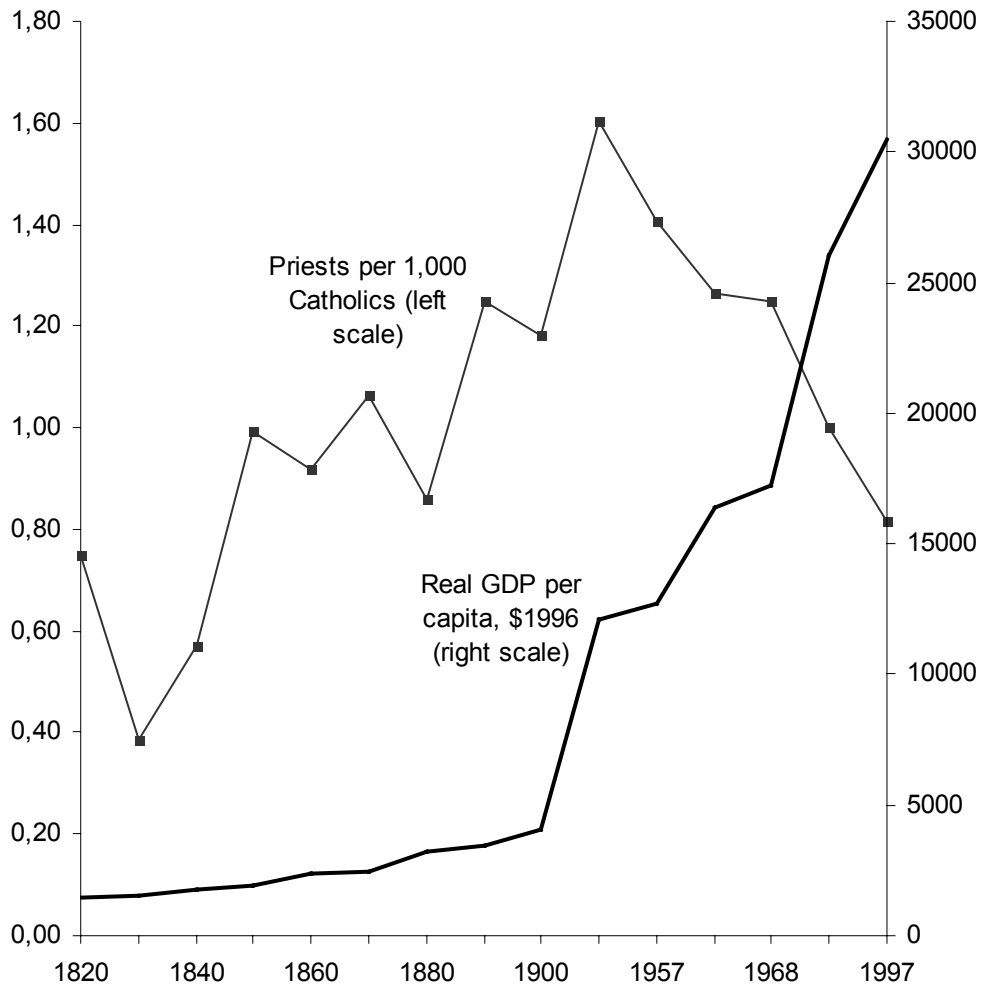
Notes: All models are ordered probit regressions except model 1 (probit). Standard errors in parentheses. *, **, *** significant at 10, 5 and 1%.

Table 4. Determinants of asserted agreement with important role of the laity and worry regarding the quality of new priests

	<i>Laity's role as important as that of priests</i> (Dependent variable: <i>LayRole</i>)		<i>Are worried about quality of new priests</i> (Dependent variable: <i>BadPrist</i>)	
	(1)	(2)	(3)	(4)
<i>EducLevl</i>	0.058** (0.023)	0.052** (0.023)	-0.085*** (0.023)	-0.091*** (0.023)
<i>CathEduc</i>	0.031 (0.019)	0.034* (0.020)	0.010 (0.019)	0.014 (0.019)
<i>BadPrist</i>	0.076*** (0.020)	0.073*** (0.020)		
<i>LayRole</i>			0.080*** (0.019)	0.076*** (0.019)
<i>Single</i>	-0.001 (0.067)	0.041 (0.067)	0.180*** (0.066)	0.147** (0.067)
<i>Income</i>	-0.066*** (0.024)	-0.062*** (0.024)	0.048** (0.023)	0.037 (0.024)
<i>Male</i>	-0.056 (0.040)	-0.044 (0.041)	0.010 (0.040)	0.010 (0.040)
<i>Age</i>	-0.034 (0.022)	-0.026 (0.023)	0.064*** (0.022)	0.060*** (0.023)
<i>Heaven</i>		0.032 (0.021)		-0.050** (0.021)
<i>Hell</i>		-0.091*** (0.021)		-0.085*** (0.021)
Observations	3,075	3,044	3,075	3,044
Pseudo R ²	0.004	0.006	0.005	0.008

Notes: All models are ordered probit regressions. Standard errors in parentheses. *, **, *** significant at 10, 5 and 1%.

Figure 1. Supply of Catholic priests in the USA, 1820-1997



Source of data: Priests, Finke and Stark (1992); GDP, Economic History Services,
http://www.eh.net/hmit/gdp/gdp_answer.php, visited July 24, 2002.

Table 5. Supply of Catholic religious and health professionals in a cross-section of countries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>Total Catholic Priests per million Catholics</i>			<i>Healthcare professionals per 100,000 population</i>			
				<i>Physicians</i>	<i>Nurses</i>	<i>Dentists</i>	<i>Pharmacists</i>
<i>GDP per capita in 1999 (constant 1995 US\$)</i>	1.032*** (0.242)	1.035*** (0.190)	0.769*** (0.205)	0.688** (0.260)	1.044*** (0.323)	0.612** (0.246)	0.546** (0.248)
<i>Square of GDP per capita in 1999 (constant 1995 US\$)</i>	-0.151** (0.060)	-0.161*** (0.047)	-0.120** (0.048)	-0.115* (0.060)	-0.146* (0.075)	-0.097* (0.057)	-0.094* (0.053)
<i>Percentage of Catholics in the population</i>		-0.014*** (0.002)	-0.014*** (0.002)	-0.000 (0.003)	-0.014*** (0.004)	-0.001 (0.003)	0.006** (0.003)
<i>Index of political rights (the higher the index, the freer the country)</i>			0.188*** (0.065)	0.002 (0.084)	0.019 (0.104)	0.032 (0.080)	0.052 (0.102)
Constant	5.361*** (0.162)	6.096*** (0.182)	6.691*** (0.269)	4.881*** (0.336)	5.723*** (0.418)	3.445*** (0.319)	3.292*** (0.361)
Observations	68	66	64	62	62	62	36
Adjusted R-squared	0.39	0.62	0.67	0.21	0.50	0.24	0.39

Source of data: Priests and density of Catholics, <http://www.catholic-hierarchy.org/>. WHO Estimates of Health Personnel around 1998, http://www3.who.int/whosis/health_personnel/health_personnel.cfm?path=whosis.health_personnel. GDP data from the World Development Indicator 2001, World Bank. Index of political rights from Freedom House, <http://www.freedomhouse.org/research/freeworld/2000/table1.htm>, recoded so that the freest countries score higher in the index). All web pages accessed on July 9, 2002.

Notes: All models are OLS regressions. Standard errors in parentheses. *, **, *** significant at 10, 5 and 1%.